MMM 2019

November 4-8, 2019

LAS VEGAS

NEVADA

64th Annual Conference on Magnetism and Magnetic Materials

PROGRAM

AIP Publishing

IEEE MAGNETICS

Jointly sponsored by AIP Publishing, LLC and the IEEE Magnetics Society

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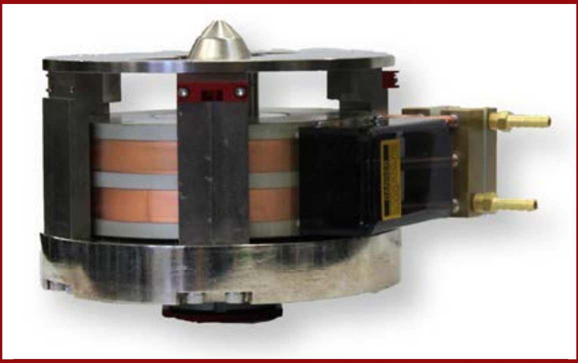
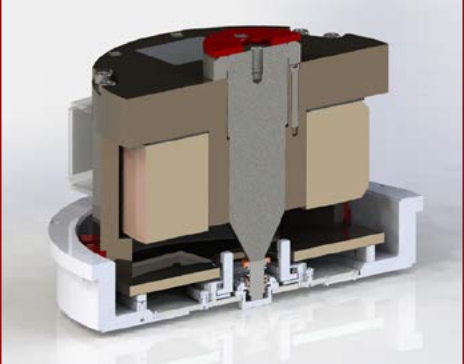
See us at Booth 23!



5207 Projected Field Electromagnet

- Peak Field, Continuous (35A): >1.3T
- Peak Field, Triangle (60A): >2T
- Pole face location can be precicesly adjusted to be located relative to DUT with high accuracy.



5207 Probe Station Integration

- 5207 with custom Magnetic Pole Extender integrated with a Celadon Non-Ferrous VersaCore™

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GENERAL CONFERENCE INFORMATION

SCOPE OF THE CONFERENCE

The 64th Annual Conference on Magnetism and Magnetic Materials (2019 MMM) is sponsored jointly by AIP Publishing and the IEEE Magnetics Society, in cooperation with the American Physical Society. Members of the international scientific and engineering communities interested in recent developments in fundamental and applied magnetism are invited to attend and contribute to the technical sessions. The technical program will include invited and contributed papers in oral and poster sessions, invited symposia, and an evening session, with about 1800 presentations overall. This Conference provides an outstanding opportunity for worldwide participants to meet their colleagues and collaborators and discuss developments in all areas of magnetism research.

LAS VEGAS, NEVADA

Welcome to Las Vegas, Nevada! Las Vegas is the (other) city that never sleeps. There are simply not enough hours in the day to check out all there is to do, from world class restaurants, spas, shopping and golf courses, to THE MOST INCREDIBLE live entertainment, comedy, magic, music, and MUCH, MUCH MORE! Madonna, Penn & Teller, Blue Man Group, Cirque du Soleil just to name a few!

And if you have the opportunity to get off the strip for the day, take it! Breathtaking views, helicopter tours of the Grand Canyon and Hoover Dam, river rafting, hiking in picturesque canyons and even more outdoor adventure await you in the desert.

Just remember—*what happens in Vegas, stays in Vegas!*

Go to www.visitlasvageas.com for more information.

HOTEL

All Conference sessions will be held at the Rio All-Suites Hotel & Casino. The hotel is conveniently located less than one mile from the famous Las Vegas Strip. A quick taxi ride will take you right into the center of all the action.

A block of discounted hotel rooms has been reserved for attendees at the Rio Hotel. Please support our efforts to keep registration fees low by booking your room here.

SPECIAL CONFERENCE SESSIONS

Tutorial: Non-von Neumann Computing

Monday, November 4 2:30 pm - 5:00 pm
Rio Pavilion 2

Chair: Pallavi Dhagat, *President, IEEE Magnetics Society*
Oregon State University

Speakers: **Neuromorphic Computing with Spintronic Devices**
Damien Querlioz, *Université Paris-Sud*

Quantum Computing
Kohei M. Itoh, *Keio University*

Benchmarking Quantum Computers and Future Directions for Superconducting Quantum Hardware
Hanhee Paik, *IBM T. J. Watson Research Center*

Symposia

There will be eight symposia during the Conference which consist entirely of invited talks by experts in the field.

Tuesday 8:30 am	**AA**	Magnets in Flatland: 2D Magnetic Materials
Tuesday 1:30 pm	**BA**	Magneto-ionics: New Phenomena, Materials, and Applications
Wednesday 8:30 am	**CA**	Machine Learning in Magnetism
Wednesday 1:30 pm	**DA**	Giant Spin Orbit Torques Beyond Spin Hall
Thursday 8:30 am	**EA**	Physics and Applications of Synthetic Antiferromagnets (SAFs)
Thursday 1:30 pm	**FA**	Hybridized Magnons
Friday 8:30 am	**GA**	Magnetic Control and Sensing in Biomedicine
Friday 1:30 pm	**HA**	Novel Spin Textures: Skyrmions 2.0 and Beyond

Meet the Experts

Supported by:

Students and post-doctoral researchers are invited to register for and attend one of the Meet the Experts sessions to be held over the lunch hour on both Tuesday and Thursday. This event provides young researchers with an exclusive opportunity to get expert advice on career planning, technical paper writing and publication, job searches and interviews, society involvement, and more. Attendees will have a unique opportunity to have a small-group discussion with their Expert (each table will have room for one Expert and nine students). Lunch will be provided at no extra cost to attendees. **Space is limited so advance registration is required.**

Chair: Dafine Ravelosona, *2019 MMM Program Co-Chair, University of Paris Saclay-CNRS*

Tuesday, November 5 12:30 pm - 1:30 pm
Miranda 1

Experts: Dr. Guohan Hu, *IBM*
(MRAM Materials and Devices)

Prof. Kohei Ito, *Keio University*
(Quantum Information, Quantum Computing)

Prof. Teruo Ono, *Kyoto University*
(Spintronics and Spinorbitronics in Ferrimagnets and Antiferromagnets)

Prof. Claudio Serpico, *University of Naples Federico II*
(Micromagnetics, Spintronics, Nonlinear Dynamics)

Prof. Jordi Sort, *ICREA/ Autonomous University of Barcelona*
(Nanomagnetism, Nanomechanics, Voltage-Controlled Magnets)

Thursday, November 7 12:30 pm - 1:30 pm
Miranda 1

Experts: Prof. Russell Cowburn, *Cambridge University (Nanomagnetism, Nanomechanics, Voltage-Controlled Magnets)*

Prof. Christopher Leighton, *University of Minnesota (Magnetic Materials Growth and Characterization; Oxides, Alloys, Spintronics, Neutron Scattering, Electrolyte Gating)*

Prof. Nadya Mason, *University of Illinois, Urbana-Champaign (Magnetism and Superconductivity in Reduced Dimensional and Topological Systems)*

Dr. Mark Stiles, *NIST Gaithersburg (Theory of Nanomagnetism, Neuromorphic Computing, Spintronics)*

Prof. Yayoi Takamura, *University of California, Davis (Complex Oxide Thin Films and Heterostructures)*

Special Video Screening of "Magnetic Fields"

Tuesday, November 5 12:30 pm - 1:30 pm
Miranda 5

All Conference attendees are invited to attend this special video screening! We hope you'll feel an "attraction" to this new four-episode web series, "Magnetic Fields" which follows a group of high school students as they work on a science project and visit the Illinois Materials Research Science and Engineering Center. This series was inspired by "Stranger Things" meets "3-2-1 Contact" and incorporates scientific research and process, as well as mystery and drama. Created by the Illinois Materials Research Science and Engineering Center at the University of Illinois at Urbana-Champaign. Watch the trailer here: https://www.youtube.com/watch?v=0pIKyX5aK7g

Seminar on How to Publish Your Science: A Guide to Writing Your First Research Article, and Every Article After That

Tuesday, November 5 6:00 pm - 7:00 pm
Miranda 1-4

Chair: Yukiko Takahashi, *2019 MMM Program Co-Chair, NIMS*

Speaker: Luigi Longobardi, *Executive Editor, Applied Physics Reviews*

Light food and drinks will be served.

Seminar on Reviewing Papers: How to Be a Good Reviewer

Tuesday, November 5 7:00 pm - 8:00 pm
Miranda 1-4

Chair: Yukiko Takahashi, *2019 MMM Program Co-Chair, NIMS*

Speaker: Ronald Goldfarb, *NIST*

Light food and drinks will be served.

Writing Successful Proposals for Research Grants: A Guide for Young Professionals

Wednesday, November 6 12:00 pm - 1:30 pm
Miranda 1-4

Chair: Ikenna Nlebedim, *Iowa State University*

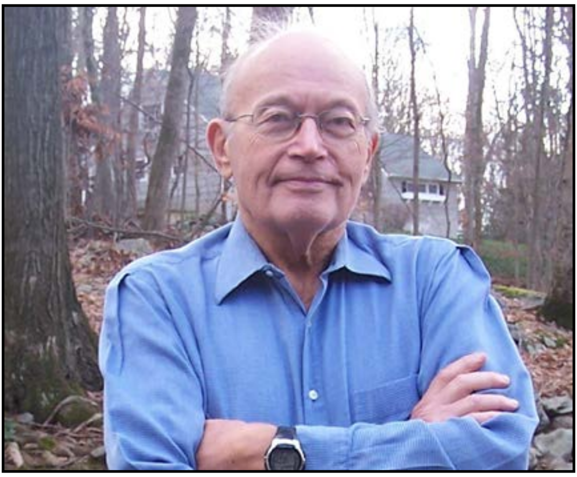
Speaker: Donn Forbes, *Proposal Consultant and Strategist*

If you have just recently entered the professional workforce, please join us for this special session. Lunch will be provided at no extra cost to attendees. **Space is limited so advance registration is required.**

Evening Session: A Memorial to John Slonczewski

Wednesday, November 6 6:00 pm - 7:45 pm
Rio Pavilion 2

Chair: Alina Deac, *HZDR*



John Slonczewski
1929-2019

At the beginning of this session, awards and recognition will be given to the Best Student Presentation Finalists, Magnetism as Art Finalists, and Student Travel Grant Recipients.

Speakers: **Spin-transport Physics – A Gift from John, a New Field of Science**
Jonathan Sun, Professor, *IBM T. J. Watson Research Center*

J. C. Slonczewski: From Bubble to MRAM
Sadamichi Maekawa, *Center for Emergent Matter Science, Riken; Kavli Institute for Theoretical Sciences, Beijing, China*

Meet the Employers Special Poster Session

Thursday, November 7 6:00 pm - 8:00 pm
Miranda 3&4

Chair: Mingzhong Wu, *Colorado State University*

If you or your organization are planning to hire faculty, staff members, or post-doctoral researchers, we highly encourage you to attend this session to meet and talk with the students and postdocs participating and presenting posters. No registration is necessary for employers to attend this special event, however, all participants must be registered for the 2019 MMM Conference.

SPECIAL CONFERENCE EVENTS

Welcome Reception—Viva Las Vegas!

Monday, November 4 5:00 pm - 7:00 pm
Rio Hotel Voo Doo Beach and Pool

Join us for this kickoff event at the outdoor pool deck at the Rio Hotel, with music, food, drinks, and maybe even a visit from The King!

Bierstuben

Join us Tuesday, Wednesday and Thursday from 4:30 pm - 6:00 pm for a taste of the best local beers as you network among the poster sessions and exhibits.

Tuesday Bierstube supported by:

MATERION

Magnetism as Art Showcase

Supported by:

AIP Advances

The Magnetism as Art Showcase is designed to highlight the beauty of magnetism and magnetic materials. Selected submissions will be displayed at the Conference and all submissions will be posted to the Conference Facebook page. Four finalists will be determined by popular vote and of those finalists, one winner will be selected by a panel of judges. Finalists will receive a $200 cash prize, and the winner will receive a $400 cash prize, presented at the beginning of the Evening Session on Wednesday. **Don't forget to take a look at the selected submissions on display and vote for your favorite! Submit your ballot by 12:30 pm on Wednesday, November 6.**

Women in Magnetism Networking Reception

Wednesday, November 6 4:30 pm - 6:00 pm
Miranda 1&2

Expand your professional network! Don't miss the Women in Magnetism Networking Reception, sponsored by the IEEE Magnetics Society. This is an opportunity to become acquainted with women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. All students, researchers and retirees are encouraged to attend.

Student Networking Reception

Thursday, November 7 4:30 pm - 6:00 pm
Kiss by Monster Mini Golf Course

This is a fun and interactive opportunity for students to meet up with friends, old and new, at the Kiss Band-themed 18-hole, glow-in-the-dark, mini golf course at the Rio Hotel! Kiss is an American rock band that rose to prominence in the late 1970s and is one of the best-selling bands of all time. This indoor mini golf course is truly unique and is not to be missed!

Coffee

Complimentary coffee service will be available Tuesday through Friday mornings from 8:15 am - 9:45 am in the Exhibit/Poster Hall.

REGISTRATION

Registration Hours:

Monday	12:30 pm - 6:30 pm
Tuesday	7:00 am - 7:00 pm
Wednesday	8:00 am - 7:00 pm
Thursday	8:00 am - 2:00 pm
Friday	8:00 am - 12:00 pm

Onsite Registration Rates:

Full	$520
Student	$225
Retired/Unemployed	$225

CAMERA, CELL PHONE AND VIDEO RECORDING POLICIES

By registering for this meeting, all attendees acknowledge that they may be photographed by Conference personnel while at events, and that those photos may be used for promotional purposes, in Conference publications and websites, and on social media sites. Any recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright is strictly prohibited. Attendees violating this policy may be asked to leave the session.

NAME BADGE POLICY

Attendees are required to wear name badges to enter all Conference events.

CODE OF CONDUCT

The objective of the Conference organizers is to create a collegial, inclusive, and professional environment at the Conference in order to facilitate and support open scientific discourse and advance knowledge in the field of magnetism. Creating this environment is the responsibility of all participants, including attendees, speakers, vendors, exhibitors, Conference management staff and organizers. It is the policy of the Conference that all meeting and Conference participants will conduct themselves in a professional manner that is welcoming and free from any form of bias, discrimination, harassment, or retaliation.

Accordingly, participants are required to treat each other with respect and consideration and avoid any actions or statements based on individual characteristics such as age, ancestry, color, disability or handicap, national origin, race, religion, gender, sexual or affectional orientation, gender identity, gender expression, appearance, matriculation, political affiliation, marital status, veteran status, or any other characteristic protected by law. Discriminatory or harassing behavior of any kind will not be tolerated. Harassment includes but is not limited to inappropriate or intimidating behavior and language, unwelcome jokes or comments, unwanted touching or attention, offensive images, and stalking.

Violations of this policy, or those additionally referred to in the IEEE Code of Conduct, should be reported to the Conference organizers, management staff, or to the IEEE Magnetics Society President. Sanctions may range from verbal or written warning, to ejection from the meeting without refund. Retaliation for complaints of inappropriate conduct will not be tolerated.

PRIVACY POLICY

By registering for the 2019 MMM Conference, you agree to receive emails related to this Conference for a period up to three months after the Conference concludes. Your personal information is for Conference use only and will not be shared with anyone else. During the registration process, you will also have the option to join the mailing list for future MMM, Joint, Intermag and ICM Conferences. If you do not select this option, you will not receive any emails for future Conferences. You can modify your email preferences at any time by contacting us at info@mmmconference.com.

WIRELESS INTERNET ACCESS

Wi-Fi for attendees is supported by the IEEE Magnetics Society.

SESSION CHAIRS

Oral and Poster Session Chairs should attend the Session Chair Breakfast at 7:15 am in the Tropical Ballroom **on the day of their session**. Timer slides will be pre-loaded on the session laptops in each oral session room, however, Session Chairs should bring their laptop to be used as a backup.

SPEAKER REHEARSAL ROOM

Speakers are strongly encouraged to test their laptop connections and screen resolution settings in the Speaker Rehearsal Room, Lambada C, prior to the start of their session. This room is available from Monday at 1:00 pm until Friday at 1:00 pm.

PUBLICATIONS

Peer-reviewed Conference papers will be published in early 2020 in *AIP Advances* as a special topic. All accepted papers are identified by presentation ID and will be open access at no additional cost to the authors.

To check the status of their papers, authors should refer to the AIP submission site at http://mmm.peerx-press.org. For all other publication questions, visit the Conference Office in Lambada AB.

AIP Advances will sponsor the first annual Advances in Magnetism Award presented at the 2020 MMM Conference in Palm Beach, Florida. The Award will be presented to the best paper submitted as part of the 2019 MMM Conference in Las Vegas. To be eligible to win this exciting new Award, you must submit your 2019 Conference paper to AIP Advances. The winner will receive a cash prize of $3,500!

ORAL SESSIONS

Nine simultaneous oral sessions will be held daily from 8:30 am - 11:30 am and 1:30 pm - 4:30 pm. **Speakers must bring their presentation on their own laptop computer and any necessary adapters, especially for Mac users.** If you are unable to bring your laptop with you, speakers should alert their Session Chair and arrange to share their presentation in advance.

In each oral session room there will be a multi-port switchbox so that speakers can connect their laptop during the question and answer period of the previous speaker. The presentation timer will begin immediately after the introduction by the Session Chair. No extra time will be given in the event of technical difficulties as session timing must be strictly maintained to allow attendees to attend talks in multiple parallel sessions. There will be a dedicated audio-visual technician in each oral session room to assist speakers as needed.

BEST STUDENT PRESENTATION AWARD

Supported by:

The Best Student Presentation competition recognizes and encourages excellence in graduate studies in the field of magnetism. There will be a $1000 one-year fellowship for the winner and $250 one-year fellowship for the remaining finalists, who will be announced at the beginning of the Evening Session on Wednesday. **Conference attendees are encouraged to attend the finalists' talks and support these young scientists.**

Finalists:

AI-12 **Ferrimagnetic Domain Wall Dynamics Driven by Spin Orbit Torques Revealed by In-Plane Fields through the Compensation Points in GdFeCo**
Eloi Haltz, *Laboratoire de Physique des Solides*

BE-06 **Surface Acoustic Wave Induced DC Spin Current in Spin-Orbit Heterostructures**
Takuya Kawada, *The University of Tokyo*

CC-11 **Stimulated, Continuous, and Wave Vector Selective Magnon Excitation using Rapid Demagnetization from High Repetition Rate Femtosecond Laser Pulse Trains**
Shreyas Muralidhar, *University of Gothenburg*

CF-09 **Tunable Long-Term and Short-Term Memories in a Single Magnetic Tunnel Junction Based Synapse**
Nitin Prasad, *University of Texas at Austin*

DB-04 **Efficient Magnetization Switching and Dzyaloshinskii-Moriya Interaction in WTe_2/ferromagnet Heterostructures**
Shuuyuan Shi, *National University of Singapore*

Congratulations to the Best Student Presentation Award Winner at the 2019 Joint MMM-Intermag Conference:

CE-03 ***Single Domain Magnetoelastic Terfenol-D Microdisks for Particle and Cell Manipulation***
Zhuyun Xiao, *University of California, Los Angeles*

EDUCATION, OUTREACH, AND PUBLIC ENGAGEMENT POSTERS

This year we are introducing a new topic to the scientific program at MMM: "Education, Outreach, and Public Engagement in Magnetism." These posters, featured in a special poster session in the Exhibit/Poster Hall, will be on display all week at the Conference and will highlight new ideas and best practices in these critical areas for growth and sustainability of the science and application of magnetism. Please make sure you find time to visit these posters and also to attend the associated screening of "Magnetic Fields," on Tuesday, November 5 at 12:30 pm in Miranda 5.

POSTER SESSIONS

Poster Sessions will be held daily from 9:30 am - 12:30 pm and 2:30 pm - 5:30 pm. On Friday there will only be a morning Poster Session. Poster presenters should set up their materials at least 30 minutes before their session starts, and must be present at their poster, at a minimum, for the first *and* last hour of each Poster Session. Presenters must remove all of their materials promptly at the end of their session. Any poster materials not removed will be discarded.

BEST POSTER PRESENTATION AWARD

Supported by:

GMW Associates

All posters will be eligible for nomination for this award, however, it is required that at least one author is registered for the Conference and is **present during the entire three-hour poster session** to give details and answer questions. The winner will be selected by the Poster Session Chairs and will be based on the level of the research, quality of the poster, and clarity of the presentation. The winning poster presenter will receive a $100 cash award, certificate, and ribbon, to be to be presented during the last hour of each poster session. All of the winning posters will be prominently displayed for the remainder of the Conference.

A list of the Best Poster Award Winners from the 2019 Joint Conference is available at www.magnetism.org.

STUDENT TRAVEL SUPPORT

Travel grants are offered to a limited number of students who are presenting their work at the Conference. Students who have not previously received a Conference or IEEE Magnetics Society travel grant are eligible for this program. Only one application per research group is accepted. Postdoctoral fellows and non-students are not eligible. Travel grant recipients for this Conference have already been informed about their selection. If you are interested in applying for a travel grant to attend a future MMM Conference, go to www.magnetism.org.

FUTURE CONFERENCES

2020 Intermag Conference
May 4-8, 2020, Montreal, Canada

2020 Magnetism and Magnetic Materials Conference
November 2-6, 2020, Palm Beach, FL

2021 Intermag Conference
April 26-30, 2021, Lyon, France

2021 International Conference on Magnetism
July 4-9, 2021, Shanghai, China

2022 Joint MMM-Intermag Conference
January 10-14, 2022, New Orleans, LA

2022 Magnetism and Magnetic Materials Conference
October 31-November 4, 2022, Minneapolis, MN

2023 Intermag Conference
May 15–19, 2023, Sendai, Japan

2023 Magnetism and Magnetic Materials Conference
October 30-November 3, 2023 Dallas, TX

CHILD CARE SUPPORT

Child care grants are offered to a limited number of attendees who are bringing young children to the Conference or who incur extra expenses in leaving their children at home. The recipients for this Conference have already been informed about their selection. If you are interested in applying for child care support at a future MMM Conference, go to www.magnetism.org.

SOCIAL MEDIA

Be sociable—share! **#2019 MMM Conference**

Follow us on Twitter
@MMMConf

Like our Facebook page!
www.facebook.com/MMMConference

CONFERENCE ORGANIZATION

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PROGRAM COMMITTEE

I. **Fundamental Properties and Cooperative Phenomena**
Ezekiel Johnston-Halperin, Athanasios Chantis, Sabine Wurmehl

II. **Magnetoelectronic Materials and Phenomena**
Daniel Phelan, Sylvia Matzen, Yuri Suzuki

II. **Magnetoelectronic Materials and Phenomena**
Paul Crowell, Vojtech Uhlir, Rie Umetsu

III. **Spintronics – Fundamentals and Devices**
Paul Crowell, Vojtech Uhlir, Rie Umetsu

III. **Spintronics – Fundamentals and Devices**
Jean Anne Incorvia, Lisa Herrera Diez, Shinji Miwa

III. **Spintronics – Fundamentals and Devices**
Thomas Moore, Emilie Jue, Julie Karel

III. **Spintronics – Fundamentals and Devices**
Jeanie Lau, Mairbek Chshiev, Takahiro Moriyama

III. **Spintronics – Fundamentals and Devices**
Greg Fuchs, Chiara Ciccarelli, Rie Matsumoto

III. **Spintronics – Fundamentals and Devices**
Benjamin Jungfleisch, Mathias Klaui, Hiromi Yuasa

IV. **Magnetization Dynamics and Micromagnetics**
Dan Wei, Igor Barsukov, Luis Lopez Diaz, Ezio Iacocca

IV. **Magnetization Dynamics and Micromagnetics**
Adekunle Adeyeye, Roopali Kukreja, Phillip Pirro, André Thiaville

V. **Soft Magnetic Materials**
Nian Sun, Sang Ho Lim, Rafael Perez del Real

VI. **Hard Magnetic Materials**
Jeff Shield, Arjun Pathak, Pelin Tozman

VI. **Hard Magnetic Materials**
Amanda Petford-Long, Hideto Yanagihara, Feliz Jimenez-Villacorta

VII. **Structured Materials**
Brian Maranville, Seiji Mitani, Jai-Lin Tsai

VII. **Structured Materials**
Zoe Boekelheide, Arantxa Fraile Rodriguez, Alagarsamy Perumal

VIII. **Special Magnetic Materials**
Zbigniew Celinzky, Yoshito Ashizawa, Jia Yan Law, Denys Makarov

VIII. **Special Magnetic Materials**
Karl Sandeman, R. Gopalan, Martino Lo Bue

IX. **Magnetic Recording**
Stephane Mangin, Olav Hellwig, Pin-Wei Huang, Tiffany Santos

X. **Sensors, High Frequency Devices and Power Devices**
Stephane Mangin, Olav Hellwig, Pin-Wei Huang, Tiffany Santos

X. **Sensors, High Frequency Devices and Power Devices**
Zbigniew Celinzky, Yoshito Ashizawa, Jia Yan Law, Denys Makarov

X. **Sensors, High Frequency Devices and Power Devices**
Masahiro Yamaguchi, Scooter Johnson, Arkady Shukov

X. **Sensors, High Frequency Devices and Power Devices**
Joe Davies, Elena Lomonova, Chiharu Mitsumata

XI. **Interdisciplinary Topics**
Galina Kurlyandskaya, Shin Yabukami, Gary Zabow

XII. **Interdisciplinary Topics**
Joe Davies, Elena Lomonova, Chiharu Mitsumata

XIII. **Magnetic Characterization**
Henrik Ohldag, Neil Dilley, Christy Kinane

MMM ADVISORY COMMITTEE

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Chair-Elect ....Shinji Yuasa
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Recording Secretaries ....Molly Bartkowski, Regina Mohr

Term expiring December 1, 2019:
Pallavi Dhagat, Victorino Franco, Chris Leighton, Philip Pong, Mark Stiles, Yayoi Takamura, Maria Varela, Manuel Vazquez, Randall Victora, Mingzhong Wu

Term expiring December 1, 2020:
Adekunle Adeyeye, Petru Andrei, Liesl Folks, Atsufumi Hirohata, Xiaofeng Jin, Mark Kief, Kai Liu, Yoshichika Otani, Tiffany Santos, Tom Thomson

Term expiring February 1, 2022:
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SPONSORING SOCIETY REPRESENTATIVES

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IEEE Magnetics Society .... Rudolf Schäfer

ADDITIONAL INFORMATION

To join our mailing list, please visit www.magnetism.org or contact info@mmmconference.com.

EXHIBITORS

An exhibition of magnetism-related services, equipment, materials, and software will be held in Rio Pavilion 8,9,10,11.

Exhibit Hall Hours:
Tuesday, Wednesday, Thursday .... 8:15 am - 12:30 pm
and 2:30 pm - 6:00 pm

AJA INTERNATIONAL, Inc.

Booth 1

Thin Film Deposition Systems (Sputtering, E-beam, Thermal, Ion Beam, PLD and Multi-Technique). Ion Beam Etch Systems with SIMS (Ion Milling, RIBE). R&D and Pilot Scale Equipment. UHV and HV Magnetron Sputter Sources and Thermal Evaporation Sources. Wide range of Substrate Holders featuring Azimuthal Rotation, RF/DC Biasing, Heating, Water Cooling, LN2 Cooling and Tilting. Sputter Targets and Evaporation Materials. RF/DC Power Supplies.

Contact: Jim Hannon
Email: topgun@ajaint.com
Website: www.ajaint.com

AMI

Booth 20

American Magnetics, Inc. (AMI), a veteran owned company in Oak Ridge, TN, has been a manufacturer of superconducting magnet systems and cryogenic equipment for over 45 years. Founded in 1968, AMI has become a world leader in supplying turn-key cryogen free and liquid helium based superconducting magnet systems with literally thousands of magnets in the field. Our custom solutions range from completely conduction cooled multi-axis systems combined with an integrated variable temperature insert to large room temperature bore zero boil off helium recondensing systems (Recon™).

Contact: Kurtis Fagan
Email: kurtis.fagan@americanmagnetics.com
Website: www.americanmagnetics.com

Booth 21

Founded in 1899, the American Physical Society (APS) is a non-profit membership organization working to advance and diffuse the knowledge of physics. APS publishes the Physical Review collection, the world's most widely read physics research and review journals. Please stop by our booth in the exhibit hall to learn more about Physical Review Materials as well as our newest journal Physical Review Research an exciting new broad scope, open access journal from APS.

Contact: Kenny Newberry
Email: Newberry@aps.org
Website: www.aps.org

Booth 15

attocube is technology leader for nanoscale cryogenic measurement instrumentation, including low vibration closed-cycle cryostats, a cryo-optical table and various low temperature & high magnetic field compatible measurement inserts, allowing for research techniques such as AFM, MFM, SHPM, confocal & RAMAN microscopy. The attoTMS is attocube's powerful all-in-one solution for transport measurements based on the Nanonis Tramea™ electronics. Nano-precise piezo positioning stages and a laser displacement sensor with picometer resolution complete attocube's portfolio.

Contact: Joanna Kelkile
Email: Johanna.Kelkile@attocube.com
Website: www.attocube.com

Booth 22

High current, high stability, highly accurate. Less than 1 ppm/K TC and less than 10 ppm ripple on wide current ranges are among some of our specs. CAEN ELS magnet power supplies are designed with a completely digital control and feedback loop, allowing for software-based adjustment of PID parameters, synchronizing fully and behaving nicely with your reactive loads (up to 100 H). Supporting large installations at many synchrotrons and colliders around the world, our offerings include standard and custom products. Home-grown DCCT current sensors are implemented within the supplies for aiding in such performance, or are available separately in various models with a complete digitizing current measurement system for your own setups. CAEN ELS is represented in the U.S. by CAEN Technologies.

Contact: Erik Soiman
Email: erik@caentechnologies.com
Website: www.caenels.com

GMW Associates

Booth 23

GMW offers Electromagnet Systems for magnetic material, thin film, and spintronics studies including the Miniature Projected Field Electromagnet family of: 5201 for in-plane fields; 5203 for vertical fields; 5204 for true 3-axis vector field; 5205 series for larger volume, modest vertical fields; and 5207 for vertical fields to +/-1T. Dipole magnets for FMR applications and full-wafer test are available with fields to +/-2T and true bipolar operation, along with HTS-110 compact Electromagnets including Short Solenoids to +/-3T and Projected Field magnets to +/- 2T. We also offer One- and Three-component Magnetic Sensors, Transducers and Field Mappers, including: Metrolab Three-Component Magnetic Field Probes with USB Interface and LabView software, full-scale, calibrated ranges of +/-100uT, +/-8mT, +/-3T and +/-14T; Senis One-, Two and Three-Component Hall Transducers with analog output, full-scale field ranges to +/-20T and frequency response from dc to 75kHz that can be used stand-alone or in Senis Magnetic Field Mapping Systems; and Group3 High Precision Digital Probes with traceable calibration to 12T.

Contact: Viki Beatty
Email: vbeatty@gmw.com
Website: www.gmw.com

HINDS™ INSTRUMENTS

Booth 16

The robustness and convenience of Hinds photoelastic modulator (PEM) technology allows sensitive detection of magneto-optic signals produced by thin magnetic films. Hinds Instruments' products for magnetic thin film development are the MOKE kits and Photoelastic Moudlators (PEMs). Both the MOKE kits and the PEMs allow the user to create a set-up which will plot hysteresis loops and determine coercivity values. The MOKE kit options include photo detectors, lock-in amplifiers, polarizers, and PEMS that allow experimenters to build their own MOKE system.

Contact: Connie Wimmer
Email: cwimmer@hindsinstruments.com
Website: www.hindsinstruments.com

Booth 7

Intlvac Thin Film provides customers with machinery needed for creating coatings including ion source and all parts needed to make it function. Additionally, we manufacture high quality PVD coatings using techniques such as Ion Assisted Thermal and Electron Beam Evaporation, Reactive and non-Reactive Magnetron Sputtering and Diamond Like Carbon by Plasma Enhanced Chemical Vapor Deposition. Research and development is key in giving our technology competitive advantage. We provide prototype and production run coating services to customers around the world. Intlvac Thin Film has become an authority in Ion Beam Etch/Sputter systems and reactive sputter systems for precision optical coating.

Contact: Dino Deligiannis
Email: jill@intlvac.com
Website: www.intlvac.com

Booth 19

We're at the nexus of electron and photon optics, sensor technology and artificial intelligence. From raw wafer to next-gen chip to world-altering idea, we help enable what's next. We develop and manufacture process-control and process-enabling solutions that accelerate tomorrow's electronic devices. Last year we invested over $600 million in R&D. That's a measure of our commitment to solving the most daunting technical challenges. From our ground-breaking mask inspection tool in 1975 that signaled the dawn of semiconductor process control, to today's broadband plasma technology that discovers defects at the speed of light, we like to arrive first.

Contact: Tom Karpowicz
Email: thomas.karpowicz@kla.com
Website: www.KLA.com

Kurt J. Lesker Company

Booth 10

We are a fully integrated manufacturer of thin film deposition systems for UHV and we offer a variety vacuum components and high purity materials. Our High-Power IMPULSE™ Magnetron (HIPIMS) power supply and UHV TORUS® Mag Keeper magnetron sputter source combination delivers films with better adhesion, improved grain structure, and fewer defects than conventional sputtering. Lesker's thin film deposition systems include the LabLine Sputter 5 and Sputter 12 for magnetic thin film applications, as well as Atomic Layer Deposition systems and fully integrated cluster tools. Powered by our proprietary eKLipse™ system control, platform recipe management and execution are vastly enhanced. Materials for research include chalcogenide alloys for phase change memory, CoFeB and Mn related alloys for MRAM and precious metals such as Au, Pt, Ir, Ru, and others. Additional materials include: Co, Fe, and Ni; and alloys and oxides such as Ni-Fe, $BiFeO_3$, YIG, FeCoMn, MoS_2, Fe_3O_4, and LaSrMnO.

Contact: Bill Zinn
Email: salesUS@lesker.com
Website: www.lesker.com

Lake Shore Cryotronics

Booth 5

Lake Shore offers electromagnet-based VSMs for characterizing magnetic properties over a range of temperatures (4.2 K to 1273 K) and fields to 3.42 T. Among these is the award-winning 8600 Series VSM, which combines high sensitivity (33 nemu), measurement speed (10 ms/pt), and simple operation in a system capable of accurately characterizing a broad range of materials with unprecedented ease. Also available: magnetic test and measurement instruments, including gaussmeters and a new line of dependable, precise, easy-to-use teslameters, as well as cryogenic probe stations with integrated field magnets for on-wafer magneto-transport, DC, RF, or microwave measurements.

Contact: Andy Phllips
Email: sales@lakeshore.com
Website: www.lakeshore.com

Booth 11

NanoMagnetics Instruments Ltd. (NMI) is one of the world leading companies in the field of Scanning Probe Microscopes (SPMs) and measurement systems for various field of science and technology. Founded in 1999 as the first nanotechnology spin off in Turkey, markets its products in the world under NanoMagnetics Instruments Ltd. brand, which is a fully owned subsidiary. Prestigious universities like Oxford, MIT, Kyoto, and Harvard, research labs like Los Alamos National Lab., Argonne National Lab., TATA-Institutes, government institutes like NASA and companies like Seagate, Microsoft, and Samsung are among our customers. Four universities in the top 10 list and 20 universities in the top 100 list are our customers.

Contact: Aydin Pinar
Email: sales@nanomagnetics-inst.com
Website: www.nanomagnetics-inst.com

Booth 6

NanoScan is a member of the IONTOF group of companies. We are specialized in high-vacuum Scanning Probe Microscopes and our flagship microscope, the VLS-80, offers a high-end standalone solution for high-vacuum SPM. It runs all SPM modes of imaging and is equipped with two phase-locked loops to enable dual frequency modes. Magnetic imaging is a key strength of the VLS-80, with 550 mT out-of-plane, 200 mT in-plane magnetic field options and 10-nm lateral resolution guaranteed; an industry best. The large stage offers excellent positioning repeatability over the complete range of 100mm x 100mm.

Contact: Marco Corbetta
Email: m.corbetta@nanoscan.ch
Website: www.nanoscan.ch

Booth 24

Serving as the North American Sales Agent for Futek Furnace, Hprobe and Nordiko Technical Services, North American Nanotech President, Daniel Montag, will be manning the exhibit booth and will be eager to respond to any/all questions re: Futek's high field magnetic anneal process tools, Hprobe's magnetic wafer level testers and and Nordiko's PVD & ion beam deposition process tools. Even if you're not currently in the market we'd be eager to discuss your current and future process and test requirements to determine if our clients process and test expertise can serve your needs going forward.

Contact: Daniel Montag
Email: northamericananotech@icloud.com
Website: www.northamericananotech.com

Quantum Design

Booths 2 & 3

Quantum Design manufactures automated material characterization systems providing temperatures from 0.05 to 1000 K, magnetic fields up to 16 tesla, and a wide range of measurements., including: VSM magnetometry, magneto resistance, sample rotator, thermal expansion, Raman spectroscopy, FMR and SPM. Platforms include the PPMS®, MPMS®3, VersaLab, and DynaCool. Quantum Design also recently introduced an innovative 7 tesla magneto-optical cryo- stat (OptiCool™). All systems have cryogen free options. Quantum Design also manufactures advanced heliiuheliumfiers (ATL80, ATL160) and recovery systems. They distribute direct write, e-beam and nanolithography systems, NanoMOKE, single crystal furnaces, AFM for SEM/FIB, SNSPD based single photon detectors and time tagging electronics.

Contact: Dan Polancic
Email: info@qdusa.com
Website: www.qdusa.com

SMARTTIP PROBE SOLUTIONS

Booth 25

SmartTip has extended its range of magnetic analysis tools with the SmartProber P1, a 300 mm capable 6 kOe perpendicular field CIPT tool. Find out more about this and our other affordable CIPT analysis tools at our booth. As the world's only AFM probe provider specializing in MFM probes, we also continue to offer a range of MFM probe solutions fit to your specific application: hard magnetic media, soft magnetic structures, applied field measurements, etc. Our Smart Coating technology guarantees very high resolution and reproducible results.

Contact: Daniel Bijl
Email: d.bijl@smarttip.nl
Website: www.smarttip.nl

Zurich Instruments

Booth 4

Zurich Instruments is a manufacturer of test and measurement equipment for advanced research and development applications. The instruments use LabOne® control software that sets a benchmark for efficient instrumentation control and a good user experience. This progressive approach reduces the complexity of laboratory setups, removes sources of problems and supports new measurement strategies that accelerate the progress of research. Zurich Instruments' portfolio comprises lock-in amplifiers, arbitrary waveform generators, impedance analyzers, quantum computing control systems, phase-locked loops, and boxcar averagers.

Contact: Jelena Trbovic
Email: info@zhinst.com
Website: www.zhinst.com

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Invited and contributed papers presented at the 64th Annual Conference on Magnetism and Magnetic Materials will be published in AIP Publishing's journal *AIP Advances* (aipadvances.aip.org). *AIP Advances* is a peer-reviewed, open access journal that has an inclusive scope covering all areas of physical science. The journal is freely accessible to the global public and therefore offers a high level of visibility to the magnetism research presented at the 64th Annual Conference on Magnetism and Magnetic Materials. Conference presenters who submit their paper to *AIP Advances* will be able to publish without paying the open access fee.

IEEE MAGNETICS

The IEEE Magnetics Society is the leading international professional organization for magnetism and related professionals throughout the world. The IEEE Magnetics Society promotes the advancement of science, technology, applications and training in magnetism. It fosters presentation and exchange of information among its members and within the global technical community, including education and training of young engineers and scientists. It seeks to nurture positive interactions between all national and regional societies acting in the field of magnetism.

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CONFERENCE PROGRAM-AT-A-GLANCE

MONDAY, NOVEMBER 4, 2019

2:30 pm to 5:00 pm

TU	Tutorial: Non-von Neumann Computing	*Rio Pavilion 2*

TUESDAY, NOVEMBER 5, 2019

8:30 am to 11:30 am • Oral Sessions

AA	Magnets in Flatland: 2D Magnetic Materials	*Rio Pavilion 2*
AB	Antiferromagnetic Spintronics I	*Rio Pavilion 6*
AC	Magnetic Logic	*Brasilia 2*
AD	Spin-Orbit Torques I	*Brasilia 1*
AE	Topological Spin Transport	*Brasilia 3*
AF	Magnetic Characterization I: Bulk, Surfaces, and Interfaces	*Rio Pavilion 1*
AG	Dzyaloshinskii-Moriya Interaction and Interfacial Phenomena	*Rio Pavilion 3*
AH	Magnetoelectric Devices and Magneto-Ionics	*Miranda 7*
AI	Damping, Interfaces, and Anisotropy I	*Miranda 5*

9:30 am to 12:30 pm • Poster Sessions *Rio Pavilion 8-11*

AP	Spin Caloritronics and Spin Transport Phenomena
AQ	Magneto-Caloric and Magneto-Elastic Materials I
AR	Ferrites and Rare-Earth Magnets
AS	Education, Outreach, & Public Engagement in Magnetism
AT	Nano-Arrays, Novel Structures, and Self-Assembly I
AU	Nanoparticles and Nanowires
AV	Origins of Magnetic Order I
AW	Skyrmions

1:30 pm to 4:30 pm • Oral Sessions

BA	Magneto-ionics: New Phenomena, Materials, and Applications	*Rio Pavilion 2*
BB	Antiferromagnetic Switching	*Rio Pavilion 6*
BC	Spin-Orbit Torque MRAM	*Brasilia 2*
BD	Magnetization Dynamics: Ultrafast and Quasiparticle Coupling I	*Brasilia 1*
BE	Spin Caloritronics	*Brasilia 3*
BF	Nano-Arrays, Novel Structures, and Self-Assembly II	*Rio Pavilion 1*
BG	Magnetic Characterization II: Scanning Probe, and Resonance Techniques	*Rio Pavilion 3*
BH	Patterned Structures and Artificial Spin Ice	*Miranda 7*
BI	Non-Traditional Magnetic Materials	*Miranda 5*

2:30 pm to 5:30 pm • Poster Sessions		*Rio Pavilion 8-11*
BP	2:14:1 Permanent Magnet Materials	
BQ	Voltage-Controlled Magnetic Anisotropy and Switching I	
BR	Ferrites	
BS	Education, Outreach, & Public Engagement in Magnetism	
BT	Magnetoelectric Behavior	
BU	Magnetic Tunnel Junctions	
BV	Spin-Orbit Torques II	
BW	Biomagnetism, Biomedical, and Magnetic Fluids I	

WEDNESDAY, NOVEMBER 6, 2019

8:30 am to 11:30 am • Oral Sessions		
CA	Machine Learning in Magnetism	*Rio Pavilion 2*
CB	Spin Transport in Antiferromagnets	*Rio Pavilion 6*
CC	Magnetic Textures and Magnetization Dynamics I	*Brasilia 2*
CD	Spin-Orbit Torques III	*Brasilia 1*
CE	Spin Waves: Excitation & Manipulation	*Brasilia 3*
CF	Tunnel Magnetoresistance and Giant Magnetoresistance	*Rio Pavilion 1*
CG	Interfaces: Perpendicular Anisotropy and DMI	*Rio Pavilion 3*
CH	Integrated Inductors, Transformers and Power Electronics	*Miranda 7*
CI	2:14:1 Permanent Magnets: Processing and Properties/High Frequency Devices	*Miranda 5*
9:30 am to 12:30 pm • Poster Sessions		*Rio Pavilion 8-11*
CP	Antiferromagnetic Spintronics II	
CQ	Biomedical Applications I	
CR	Damping, Interfaces, and Anisotropy II	
CS	Education, Outreach, & Public Engagement in Magnetism	
CT	Magnetic Alloys and Compounds	
CU	Magnetic Characterization III: Instrumentation	
CV	Magnetoresistance, Magnetoimpedance, and Hall Effect	
CW	Rare-Earth-Free Magnets	
1:30 pm to 4:30 pm • Oral Sessions		
DA	Giant Spin Orbit Torques Beyond Spin Hall	*Rio Pavilion 2*
DB	Spin Transport and Magnetism in 2D Materials	*Rio Pavilion 6*
DC	Skyrmions in New Materials	*Brasilia 2*
DD	Ultrafast Control of Magnetism	*Brasilia 1*
DE	Skyrmions in Multilayers I	*Brasilia 3*
DF	Neuromorphic Computing	*Rio Pavilion 1*
DG	Biomedical Applications II	*Rio Pavilion 3*
DH	Emergent Phenomena in Complex Oxides	*Miranda 7*
DI	Spin, Magnetism, and Superconductivity	*Miranda 5*

WEDNESDAY, NOVEMBER 6, 2019 *(Continued)*

2:30 pm to 5:30 pm • Poster Sessions — *Rio Pavilion 8-11*

DP	2D and Topological Materials	
DQ	Magnetocaloric Materials I	
DR	Heusler Alloys and Magnetic Semiconductors I	
CS	Education, Outreach, & Public Engagement in Magnetism	
DT	Magnetic Characterization IV: Photon, Electron and Neutron Based Techniques	
DU	Biomedical Applications III	
DV	Sensors I	
DW	Soft Magnetic Materials	

6:00 pm to 7:45 pm

XA	Memorial Session for John Slonczewski	*Rio Pavilion 2*

THURSDAY, NOVEMBER 7, 2019

8:30 am to 11:30 am • Oral Sessions

EA	Physics and Applications of Synthetic Antiferromagnets (SAFs)	*Rio Pavilion 2*
EB	Spins and Magnetism in Topological Materials	*Rio Pavilion 6*
EC	Spin Currents and Resulting Spin Torques I	*Brasilia 2*
ED	Skyrmions in Multilayers II	*Brasilia 1*
EE	Antiferromagnetic Order and Domains	*Brasilia 3*
EF	Applications of Spin-Torques including Neuromorphic Computing	*Rio Pavilion 1*
EG	Voltage-Controlled Magnetic Anisotropy and Switching II	*Rio Pavilion 3*
EH	Rare-Earth-Free Permanent Magnets	*Miranda 7*
EI	Effects of Dimensionality	*Miranda 5*

9:30 am to 12:30 pm • Poster Sessions — *Rio Pavilion 8-11*

EP	MRAM, Magnetic Logic, Neuromorphic Computing, and Related Devices	
EQ	Magnetic Textures and Magnetization Dynamics II	
ER	Magnetization Dynamics: Ultrafast and Quasi-Particle Coupling II	
ES	Education, Outreach, & Public Engagement in Magnetism	
ET	Micromagnetics and Hysteresis Modeling I	
EU	Power Magnetics - Inductors and Transformers	
EV	Sensor, High Frequency, and Power Devices	
EW	Spin Waves: Localization & Manipulation	

1:30 pm to 4:30 pm • Oral Sessions

FA	Hybridized Magnons	*Rio Pavilion 2*
FB	Spintronics in 2D, Topological Materials, and Heterostructures	*Rio Pavilion 6*
FC	MRAM Thermal Effects / Spin Currents	*Brasilia 2*
FD	Magneto-Caloric and Magneto-Elastic Materials II	*Brasilia 1*
FE	Quantum Magnetic Phases	*Brasilia 3*
FF	Biomagnetism, Biomedical, and Magnetic Fluids II	*Rio Pavilion 1*
FG	Thin Films: Exchange Bias and Chirality	*Rio Pavilion 3*
FH	Rare-Earth Permanent Magnets	*Miranda 7*
FI	Micromagnetics and Hysteresis Modeling II	*Miranda 5*

2:30 pm to 5:30 pm • Poster Sessions *Rio Pavilion 8-11*

FP	Magnetics for Kinetic Manipulation and Transportation
FQ	Magnetocaloric Materials II
FR	Power Magnetics - Motors and Actuators
FS	Education, Outreach, & Public Engagement in Magnetism
FT	Patterned Films, Perpendicular Anisotropy, and DMI
FU	Multiferroic Materials and Phenomena
FV	Spin Currents and Resulting Spin Torques II
FW	Spin Materials and Devices

FRIDAY, NOVEMBER 8, 2019

8:30 am to 11:30 am • Oral Sessions

GA	Magnetic Control and Sensing in Biomedicine	*Rio Pavilion 2*
GB	Generating and Enhancing Spin Currents	*Rio Pavilion 6*
GC	MRAM and Related Devices	*Brasilia 2*
GD	Spin Orbit Coupling and Topology	*Brasilia 1*
GE	Spin Waves: Propagation & Detection	*Brasilia 3*
GF	Skyrmions in B20 Materials and Skyrmion Devices	*Rio Pavilion 1*
GG	Magnetic Interactions and Structures	*Rio Pavilion 3*
GH	Soft Magnetic Materials - Metallic	*Miranda 7*
GI	Sensors and High Frequency Devices	*Miranda 5*

9:30 am to 12:30 pm • Poster Sessions *Rio Pavilion 8-11*

GP	Domain Walls and Spin-Orbit Torque
GQ	Interfaces: Surface Effects and Exchange Bias
GR	Magnetic Recording I
GS	Education, Outreach, & Public Engagement in Magnetism
GT	Origins of Magnetic Order II
GU	Power Magnetics - Advanced Machines
GV	Sensors II

1:30 pm to 4:30 pm • Oral Sessions

HA	Novel Spin Textures: Skyrmions 2.0 and Beyond	*Rio Pavilion 2*
HB	Spin-Orbit Torques IV	*Rio Pavilion 6*
HC	Magnetoelectric Phenomena in Films, Heterostructures, and Composites	*Brasilia 2*
HD	Magnetic Recording II	*Brasilia 1*
HE	Molecular and Nanoparticle Magnetism	*Brasilia 3*
HF	Heusler Alloys and Magnetic Semiconductors II	*Rio Pavilion 1*
HG	Domain Walls and Domain Wall Devices	*Rio Pavilion 3*
HH	Ferrites and Soft Magnetic Alloys	*Miranda 7*
HI	Sensors and Magnetic Recording	*Miranda 5*

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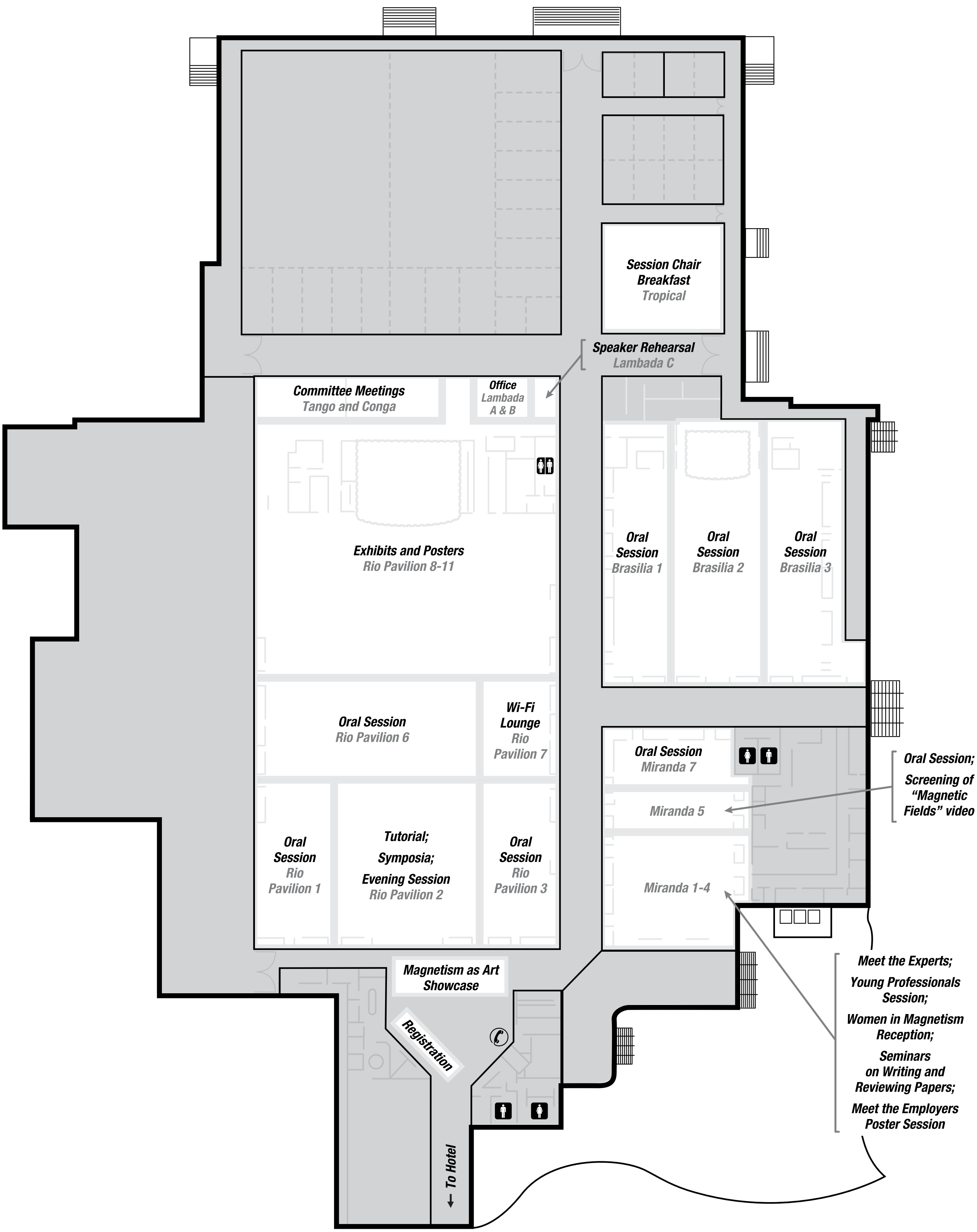

Session TU
TUTORIAL: NON-VON NEUMANN COMPUTING
Pallavi Dhagat, Chair
Oregon State University, Corvallis, OR, United States

2:30

TU-01. **Neuromorphic Computing with Spintronic Devices.** ***(Invited)*** *D. Querlioz*[1] *1. Centre de Nanosciences et de Nanotechnologies, Univ Paris-Sud, Palaiseau, France*

3:20

TU-02. **Quantum Computing.** ***(Invited)*** *K. Itoh*[1] *1. Applied Physics and CSRN, Keio University, Yokohama, Japan*

4:10

TU-03. **Benchmarking Quantum Computers and Future Directions for Superconducting Quantum Hardware.** ***(Invited)*** *H. Paik*[1] *1. IBM Q, IBM T J Watson Research Center, Yorktown Heights, NY, United States*

TUESDAY MORNING 8:30 RIO PAVILION 2

Session AA
MAGNETS IN FLATLAND: 2D MAGNETIC MATERIALS
Wei Han, Chair
Peking University, Beijing, China

8:30

AA-01. **Fundamental Spin Interactions Underlying the Magnetic Anisotropy in the Kitaev Ferromagnet CrI_3.** ***(Invited)*** *I. Lee*[1], F.G. Utermohlen[1], K. Hwang[1,2], D. Weber[1], C. Zhang[1], J.V. Tol[3], J.E. Goldberger[1], N. Trivedi[1] and P.C. Hammel[1] *1. The Ohio State University, Columbus, OH, United States; 2. Korea Institute for Advanced Study, Seoul, The Republic of Korea; 3. National High Magnetic Field Laboratory, Tallahassee, FL, United States*

9:06

AA-02. **Optical and electrical control of 2D magnets.** ***(Invited)*** *C. Jin*[1], Z. Tao[2], K.F. Mak[1,2] and J. Shan[1,2] *1. Kavli Institute at Cornell for Nanoscale Science, Cornell University, Ithaca, NY, United States; 2. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States*

9:42

AA-03. **Magnon Transport in Quasi-Two-Dimensional Van Der Waals Antiferromagnets.** ***(Invited)*** *W. Xing*[1] *1. Peking University, Beijing, China*

10:18

AA-04. **Epitaxial Growth and Magnetic Properties of Room Temperature 2D van der Waals Ferromagnets.** ***(Invited)*** *R. Kawakami*[1] *1. Dept. of Physics, The Ohio State University, Columbus, OH, United States*

10:54

AA-05. **Magnetic Order Near Room Temperature in Fe_5GeTe_2.** ***(Invited)*** *A. May*[1] *1. Oak Ridge National Lab, Oak Ridge, TN, United States*

TUESDAY MORNING 8:30 | RIO PAVILION 6

Session AB

ANTIFERROMAGNETIC SPINTRONICS I

Lorenzo Baldrati, Chair
Johannes Gutenberg-Universität Mainz, Mainz, Germany

8:30

AB-01. **Resonant Raman Spectroscopy of the Chiral Antiferromagnet $CoNb_3S_6$.** *N. Hassan*[3,1], A. McCreary[1], N. Ghimire[2] and A.R. Hight Walker[1] *1. The National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Department of Physics & Astronomy, George Mason University, Fairfax, VA, United States; 3. Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD, United States*

8:42

AB-02. **Large Interfacial Spin-Orbit Torques in Permalloy/$NiPS_3$ Bilayers.** *C. Schippers*[1], H. Swagten[1], B. Koopmans[1] and M. Guimarães[2] *1. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Zernike Institute for Advanced Materials, University of Groningen, Groningen, Netherlands*

8:54

AB-03. **Vortex-antivortex dynamics in easy plane antiferromagnetic materials.** *G. Finocchio*[1], R. Tomasello[2], F. Garesci[1], M. Carpentieri[3], P. Khalili Amiri[4] and V. Lopez[4] *1. University of Messina, Messina, Italy; 2. FORTH, Heraklion, Greece; 3. Politecnico di Bari, Bari, Italy; 4. Northwestern University, Evanston, IL, United States*

9:06

AB-04. **Anomalous transport properties of hexagonal Mn_3Sn thin films.** *P. Zilske*[1], S. Kurdi[2], G. Reiss[1] and J. Koo[1] *1. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 2. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom*

9:18

AB-05. **Direct Probe of Uncompensated Magnetization at the Surface of an Antiferromagnetic FeF Layer.** *P.N. Lapa*[1], I.V. Roshchin[2] and I.K. Schuller[1] *1. Department of Physics, University of California San Diego, La Jolla, CA, United States; 2. Department of Materials Science and Engineering, Texas A&M University, College Station, CA, United States*

9:30

AB-06. **Coherent Magnetic Small Angle Soft X-Ray Scattering for Structural and Dynamic Characterization of a Free-Standing B2-Ordered FeRh Thin Film.** *J. Massey*[1], R.C. Temple[1], T. Almeida[2], R. Lamb[2], N. Peters[1], R. Campion[3], R. Fan[4], D. McGrouther[2], P. Steadman[4] and C.H. Marrows[1] *1. University of Leeds, Leeds, United Kingdom; 2. University of Glasgow, Glasgow, United Kingdom; 3. University of Nottingham, Nottingham, United Kingdom; 4. Diamond Light Source, Didcot, United Kingdom*

9:42

AB-07. **Long-range chiral interlayer exchange coupling in synthetic antiferromagnets for 3D spin structures.** *D. Han*[1,2], K. Lee[1], J. Hanke[1,3], Y. Mokrousov[1,3], K. Kim[2], W. Yoo[4], Y. van Hees[5], T. Kim[6], R. Lavrijsen[5], C. You[7], H. Swagten[5], M. Jung[4] and M. Kläui[1] *1. Institute of Physics, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Center for Spintronics, Korea Institute for Science and Technology, Seoul, The Republic of Korea; 3. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, Jülich, Germany; 4. Department of Physics, Sogang University, Seoul, The Republic of Korea; 5. Department of Applied Physics, Institute for Photonic Integration, Eindhoven University of Technology, Eindhoven, Netherlands; 6. Department of Advanced Materials Engineering, Sejong University, Seoul, The Republic of Korea; 7. Department of Emerging Materials Science, DGIST, Daegu, The Republic of Korea*

9:54

AB-08. **Signal-to-Noise Ratio and Maximum Detected Frequency of Terahertz-Frequency Spectrum Analyzer Based on an Antiferromagnetic Tunnel Junction.** P. Artemchuk[1], S. Louis[2], O. Prokopenko[1], *V. Tiberkevich*[3] and A.N. Slavin[3] *1. Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 2. Department of Electrical and Computer Engineering, Oakland University, Rochester, MI, United States; 3. Department of Physics, Oakland University, Rochester, MI, United States*

10:06

AB-09. **Anisotropic Magnetoresistance and Unidirectional Magnetoresistance in Pt/FeRh Bilayers.** *J. Sklenar*[1], H. Saglam[2], J. Oh[1], G. Hamilton[1], Y. Li[2], W. Zhang[3], S. Zhang[2], M. Gilbert[1], A. Hoffmann[2] and N. Mason[1] *1. University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Argonne National Laboratory, Lemont, IL, United States; 3. Oakland University, Rochester, MI, United States*

10:18

AB-10. **Topological Hall effect in weakly canted antiferromagnets.** *J.J. Nakane*[1], K. Nakazawa[2] and H. Kohno[1,3] *1. Physics, Nagoya University, Nagoya, Japan; 2. Earth and Space Science, Osaka University, Osaka, Japan; 3. Center for Spintronics Research Network (CSRN), Osaka University, Osaka, Japan*

10:30

AB-11. **Extraordinary magnetic anisotropy and relaxation dynamics in the non-collinear antiferromagnet $IrMn_3$.** *S. Jenkins*[1], R.W. Chantrell[1] and R.F. Evans[1] *1. Physics, University of York, York, United Kingdom*

10:42

AB-12. **Magnetic and Electrical Transport Properties in Epitaxial Thin Films of the Non-Collinear Antiferromagnet Mn_3Sn.** *J.M. Taylor*[1], A. Markou[2], E. Lesne[1], C. Felser[2] and S.S.P. Parkin[1] *1. NISE, Max Planck Institute of Microstructure Physics, Halle (Saale), Germany; 2. Solid State Chemistry, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany*

10:54

AB-13. **Magneto-optical Spectra of a Strained Non-collinear Antiferromagnet: Ab Initio Theory.** *J. Zemen*[1,2], H.K. Singh[3], H. Zhang[3], F. Johnson[2], D. Boldrin[2], A. Mihai[4], B. Zou[4], L. Beran[5], J. Zázvorka[5], M. Veis[5], O. Heczko[1,6] and L. Cohen[2] *1. Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czechia; 2. Department of Physics, Imperial College London, London, United Kingdom; 3. TU Darmstadt, Darmstadt, Germany; 4. Department of Materials, Imperial College London, London, United Kingdom; 5. Faculty of Mathematics and Physics, Charles University, Prague, Czechia; 6. Institute of Physics, Prague, Czechia*

11:06

AB-14. **Antiferromagnetic Skyrmion Crystals in Frustrated Triangular Lattices.** *A.S. Raeliarijaona*[1], W. Fang[1], P. Chang[1,2], K. Belashchenko[1] and A. Kovalev[1] *1. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 2. Computational and Data Sciences, George Mason University, Fairfax, VA, United States*

11:18

AB-15. **Magneto-transport properties in the chiral antiferromagnet Mn_3X(X=Sn, Ge) thin films.** *A. Kobayashi*[1], D. Qu[1,2], T. Higo[1,3], S. Nakatsuji[1,3] and Y. Otani[1,3] *1. ISSP, University of Tokyo, Kashiwa, Japan; 2. Institute of Physics, Academia Sinica, Taipei, Taiwan; 3. JST-CREST, Kawaguchi, Japan*

Session AC
MAGNETIC LOGIC
Joseph Friedman, Chair
The University of Texas at Dallas, Richardson, TX, United States

8:30

AC-01. **Spintronics Based RF Systems for Wireless Communication and Signal Processing.** ***(Invited)*** *A. Litvinenko*[1], P. Sethi[1], V. Iurchuk[1], S. Louis[2], C. Murapaka[1], V. Cros[3], P. Bortolotti[4], V. Tiberkevich[2], A.N. Slavin[2], A. Jenkins[5], R. Ferreira[5], B. Dieny[1] and U. Ebels[1] *1. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Grenoble, France; 2. Oakland Univ., Rochester, MI, United States; 3. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Paris, France; 4. Thales TRT, Palaiseau, France; 5. International Iberian Nanotechnology Laboratory (INL), Braga, Portugal*

9:06

AC-02. **Computational Random Access Memory and Applications for Artificial Intelligence (AI).** ***(Invited)*** *J. Wang*[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

9:42

AC-03. **Perpendicular Magnetic Anisotropy Tunnel Rectification Magnetoresistance Effect for In-Memory Computation.** *K. Zhang*[1,2], K. Cao[1,2], Y. Zhang[1,2], J. Nan[1,2], Z. Zheng[1,2], L. Chen[1,2] and W. Zhao[1,2] *1. Fert Beijing Institute, Beihang University, Beijing, China; 2. School of Microelectronics, Beihang University, Beijing, China*

9:54

AC-04. **Spin-Orbit-Torque Field Effect Transistor (SOTFET).** *X. Li*[1], P. Dang[2], J. Casamento[3], Z. Zhang[1], A. Mei[3], D. Schlom[3], D. Jena[1,2], D. Ralph[4,5] and H.G. Xing[1,3] *1. School of Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 2. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 3. Department of Materials Science and Engineering, Cornell University, Ithaca, NY, United States; 4. Kavli Institute at Cornell for Nanoscale Science, Cornell University, Ithaca, NY, United States; 5. Department of Physics, Cornell University, Ithaca, NY, United States*

10:06

AC-05. **Reconfigurable Spin-Orbit Torque Driven Logic Device.** *G.J. Lim*[1], D. Chua[1], W. Gan[1], C. Murapaka[2] and W. Lew[1] *1. Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore; 2. Indian Institute of Technology Hyderabad, Hyderabad, India*

10:18

AC-06. **Proposal of Nonvolatile Logic-gates using Voltage-Control Spintronics Memory cell for AI application.** ***(Invited)***
H. Yoda[1], Y. Ohsawa[1] and Y. Kato[1] *1. Spin-Orbitronics Technologies, Inc., Kawasaki, Japan*

10:54

AC-07. **Development of Domain Wall Type Spin Memristor with Magnetic Fixed Layer.** *T. Ashida*[1], T. Shibata[1], M. Ohta[1], S. Yamada[1], T. Shinohara[1], Y. Terasaki[1] and T. Sasaki[1] *1. Technology & Intellectual Property HQ, TDK Corporation, Ichikawa, Japan*

11:06

AC-08. **Physical unclonable function based on reconfigurable nanoscale spin-orbit torque.** *M. Carpentieri*[1], G. Siracusano[2], S. Chiappini[3], V. Puliafito[4], T. Moriyama[5], T. Ono[5], R. De Rose[6], M. Lanuzza[6], F. Crupi[6], Z. Zeng[7] and G. Finocchio[2] *1. Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 2. Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 3. INGV, Roma, Italy; 4. Engineering, University of Messina, Messina, Italy; 5. Kyoto University, Kyoto, Japan; 6. Informatics, Modeling, Electronics and System Engineering, University of Calabria, Rende, Italy; 7. Suzhou Institute of Nano-Tech and Nano- Bionics, Suzhou University, Suzhou, China*

TUESDAY MORNING 8:30 | BRASILIA 1

Session AD
SPIN-ORBIT TORQUES I

Sergey Dushenko, Chair
University of Maryland, College Park/ National Institute of Standards and Technology, Gaithersburg, MD, United States

8:30

AD-01. **Spin-Orbit Torque in Graphene/Co Hetero-system.** *K. Song*[1], A. Manchon[1] and U. Schwingenschlögl[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

8:42

AD-02. **First-principles calculation of spin-orbit torque in TMD/ferromagnet bilayers.** *F. Xue*[1,2], J. Li[3] and P. Haney[2] *1. Institute for Research in Electronics and Applied Physics & Maryland Nanocenter, University of Maryland College Park, College Park, MD, United States; 2. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Joint Institute for Computational Sciences, University of Tennessee, Knoxville, TN, United States*

8:54

AD-03. **Spin-torque control of the anomalous Hall conductivity in non-collinear antiferromagnets.** G. Gurung[1], *D. Shao*[1] and E.Y. Tsymbal[1] *1. Department of Physics and Astronomy, University of Nebraska Lincoln, Lincoln, NE, United States*

9:06

AD-04. **Sub-terahertz magnetization dynamics in ferrimagnets driven by spin-transfer torques.** *I. Lisenkov*[1], R. Khymyn[2], J. Åkerman[2], N. Sun[3] and B.A. Ivanov[4] *1. Winchester Technologies LLC, Burlington, MA, United States; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. ECE, Northeastern University, Boston, MA, United States; 4. Institute of Magnetism, Kiev, Ukraine*

9:18

AD-05. **Anomalous Spin-Orbit Torques in Magnetic Single-Layer Films.** W. Wang[1], T. Wang[2], V. Amin[3,4], Y. Wang[2], A. Radhakrishnan[1], A. Davidson[5], S.R. Allen[5], T.J. Silva[6], H. Ohldag[7], D. Balzar[5], B.L. Zink[5], P. Haney[4], J. Xiao[2], V. Lorenz[1] and *X. Fan*[5] *1. Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Physics and Astronomy, University of Delaware, Newark, DE, United States; 3. Maryland Nanocenter, University of Maryland, College Park, MD, United States; 4. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Physics and Astronomy, University of Denver, Denver, CO, United States; 6. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 7. 7. Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Menlo Park, CA, United States*

9:30

AD-06. **Cr-induced Perpendicular Magnetic Anisotropy and Field-Free Spin-Orbit-Torque Switching.** *T. Chuang*[1], C. Pai[2] and S. Huang[1] *1. Department of Physics, National Taiwan University, Taipei, Taiwan; 2. Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan*

9:42

AD-07. **Enhanced Spin-Orbit Torque in Co/Pt System with Interfacial Oxidation Layer.** *K. Hasegawa*[1], T. Koyama[2,3] and D. Chiba[2,3] *1. Applied Physics, The University of Tokyo, Bunkyo, Japan; 2. Osaka University, Ibaraki, Japan; 3. Center for Spintronics Research Network, Ibaraki, Japan*

9:54

AD-08. **Anatomy of Intrinsic Spin-Orbit Torque in Pt/Co Bilayer: Effect of Interfacial Co Oxidation.** *F. Mahfouzi*[1] and N. Kioussis[1] *1. Physics and Astronomy, California State University, Northridge, CA, United States*

10:06

AD-09. **Deterministic Spin-Orbit Torque Switching by a Light Metal Insertion.** *A. Razavi*[1], H. Wu[1], Q. Shao[1], C. Fang[2], K. Wong[1], X. Han[2], G. Yu[2] and K. Wang[1] *1. Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

10:18

AD-10. **Enhanced Spin Orbit Torques in Rare Earth Pt/$[Co/Ni]_2$/Co/Tb Systems.** *Q. Wong*[2], C. Murapaka[2,1], W. Law[2], W. Gan[2], G.J. Lim[2] and W. Lew[2] *1. Indian Institute of Technology(Hyderabad), Hyderabad, India; 2. Nanyang Technological University, Singapore, Singapore*

10:30

AD-11. **Spin-orbit-torque induced dynamics and field-free switching in ferromagnet/heavy metal multilayers.** *W. Skowronski*[1], S. Lazarski[1], K. Grochot[1], S. Zietek[1], J. Kanak[1], L. Karwacki[1,2], T. Stobiecki[1], P. Kuswik[2], F. Stobiecki[2] and J. Barnas[2] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Institute of Molecular Physics, Polish Academy of Sciences, Poznan, Poland*

10:42

AD-12. **Influences of interfacial oxidization on surface magnetic energy, magnetic damping and spin-orbit-torques in Pt /ferromagnet /capping structures.** *D. Lee*[1,2], W. Jeong[1,2], D. Yun[1,2], S. Park[3], B. Ju[1], H. Koo[2], B. Min[2], K. Lee[1] and O. Lee[2] *1. Korea University, Seoul, The Republic of Korea; 2. Korea Insutitute of Science and Technology, Seoul, The Republic of Korea; 3. Korea Basic Science Institute, Daejeon, The Republic of Korea*

10:54

AD-13. **Disentanglement of Spin Orbit Torques in Platinum/Colbalt Bilayers with the Presence of Spin Hall Effect and Rashba-Edelstein Effect.** *Y. Du*[1], H. Gamou[1], S. Takahashi[2], S. Karube[1,3], M. Kohda[1,3] and J. Nitta[1,3] *1. Department of Materials Science, Tohoku University, Sendai, Japan; 2. Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

11:06

AD-14. **First-principles calculation of the thickness dependence of spin-orbit torque in Co/Pt and Co/Au bilayers.** *K. Belashchenko*[1], A. Kovalev[1] and M. van Schilfgaarde[2] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 2. Department of Physics, King's College London, London, United Kingdom*

11:18

AD-15. **Magneto-optical detection of spin-orbit torques with oblique incidence angle.** *C.A. Gonzalez-Fuentes*[1] and C. Garcia[1] *1. Physics, UTFSM, Valparaiso, Chile*

Session AE
TOPOLOGICAL SPIN TRANSPORT
Luqiao Liu, Chair
MIT, Cambridge, MA, United States

8:30

AE-01. **Spin-to-charge conversion in magnetic Weyl semimetals.** *S. Zhang*[1], A. Burkov[2], I. Martin[1] and O. Heinonen[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Department of Physics and Astronomy, University of Waterloo, Waterloo, ON, Canada*

8:42

AE-02. **Light–spin conversion through interfacial spin–momentum locked states in semimetal heterostructures.** *H. Hirose*[1], M. Kawaguchi[1] and M. Hayashi[1] *1. Physics, The University of Tokyo, Tokyo, Japan*

8:54

AE-03. **Enhanced Gilbert Damping in Sputter Deposited Topological Insulator/Ferromagnet Heterostructures.** *N. Bhattacharjee*[1], I. Lisenkov[2], J. Wang[1] and N. Sun[1,2] *1. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Winchester Technologies LLC., Burlington, MA, United States*

9:06

AE-04. **Topology and the consequences for spintronics and beyond.** ***(Invited)*** *C. Felser*[1,2] and K. Manna[1] *1. Max Planck Institute, Dresden, Germany; 2. SEAS, Harvard University, Cambridge, MA, United States*

9:42

AE-05. **Spin-mixing conductance of ferromagnet/topological-insulator and ferromagnet/heavy-metal heterostructure: A first-principles Floquet-nonequilibrium Green function approach.** *K. Dolui*[1], U. Bajpai[1] and B.K. Nikolić[1] *1. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States*

9:54

AE-06. **Orthogonality-tuned superconducting spin pumping via perpendicularly magnetized Pt/Co/Pt spin sinks.** *K. Jeon*[1,3], X. Montiel[2], C. Ciccarelli[3], H. Kurebayashi[5], L. Cohen[4], M. Blamire[1] and J. Robinson[1] *1. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom; 2. Royal Holloway, University of London, London, United Kingdom; 3. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 4. The Blackett Laboratory, Imperial College London, London, United Kingdom; 5. London Centre for Nanotechnology and Department of Electronic and Electrical Engineering, University of College London, London, United Kingdom*

10:06

AE-07. **Unidirectional Spin Hall Magnetoresistance in Pt/Co and Ta/Co Bi- and Tri-layer Systems.** *A. Moskaltsova*[1], J. Krieft[1], D. Graulich[1], T. Pohlmann[2,3], S. Francoual[3], J. Schmalhorst[1], T. Kuschel[1] and G. Reiss[1] *1. Center for Spinelectronic Materials and Devices, Department of Physics, Bielefeld University, Bielefeld, Germany; 2. Center of Physics and Chemistry of New Materials, University of Osnabrück, Osnabrück, Germany; 3. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany*

10:18

AE-08. **Observation of Large Unidirectional Rashba Magnetoresistance in Ge(111).** *T. Guillet*[1], C. Zucchetti[2], Q. Barbedienne[3], A. Marty[1], G. Isella[2], C. Vergnaud[1], N. Reyren[3], J. George[3], A. Fert[3] and M. Jamet[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 2. LNESS-Dipartimento di Fisica, Politecnico di Milano, Milan, Italy; 3. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

10:30

AE-09. **Spin transport measurements in metallic Bi/Ni nanowires.** *M. Tokuda*[1], N. Kabeya[1], K. Iwashita[1], H. Taniguchi[1], T. Arakawa[1,2], D. Yue[3], X. Gong[3], X. Jin[3], K. Kobayashi[1,4] and Y. Niimi[1,2] *1. Graduate School of Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. Department of Physics, Fudan University, Shanghai, China; 4. Graduate School of Science, University of Tokyo, Bunkyo-ku, Japan*

10:42

AE-10. **Electrical detection of diffusive spin current absorbed at Ag/Bi Rashba interface.** *D. Ito*[1] and T. Kimura[1] *1. Physics, Kyushu university, Hukuoka, Japan*

10:54

AE-11. **Tunable Spin-charge Conversion Across The Metal-insulator Transition in Vanadium Dioxide.** *T.S. Safi*[1] and L. Liu[1] *1. EECS, Massachusetts Institute of Technology, Cambridge, MA, United States*

11:06

AE-12. **Spin transport in thermally-evaporated polyacene films and the derivative films induced by the spin-pumping.** Y. Tanaka[1], T. Kono[1], M. Yamamoto[1], H. Tsujimoto[1], Y. Teki[2] and *E. Shikoh*[1] *1. Engineering, Osaka City University, Osaka, Japan; 2. Science, Osaka City University, Osaka, Japan*

11:18

AE-13. **Pure spin current manipulation in antiferromagnetically exchange coupled heterostructures.** *L. Avilés Félix*[3], A. Butera[1], D. González Chávez[4], R. Sommer[4] and J.E. Gómez[2] *1. Centro Atómico Bariloche and Instituto Balseiro - Comisión Nacional de Energía Atómica (CNEA) & Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) Universidad Nacional de Cuyo (UNCUYO), San Carlos de Bariloche, Argentina; 2. Centro Atómico Bariloche - Comisión Nacional de Energía Atómica (CNEA) Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), San Carlos de Bariloche, Argentina; 3. Université Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 4. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil*

TUESDAY MORNING 8:30 — RIO PAVILION 1

Session AF
MAGNETIC CHARACTERIZATION I: BULK, SURFACES, AND INTERFACES

Chunhui Du, Chair
University of California, San Diego, La Jolla, CA, United States

8:30

AF-01. **Impact of Surface Laser Treatment on Magnetostriction and Magnetoelastic Properties of the GO FeSi Electrical Single Sheet.** *E. Salloum*[1], M. Nesser[1], O. Maloberti[4], S. Panier[1], P. Klimczyk[2] and J. Dupuy[3] *1. Laboratoire des Technologies Innovantes, Université de Picardie Jules Verne, Amiens, France; 2. Dr. Brockhaus Messstechnik GmbH and Co. KG, Lüdenscheid, Germany; 3. Multitel a.s.b.l, Mons, Belgium; 4. ESIEE, Amiens, France*

8:42

AF-02. **Measurement of Demagnetization Factors and their Distribution in Assemblies of Magnetic Nanoparticles.** S.M. McCann[1] and *T. Mercer*[1,2] *1. Jeremiah Horrocks Institute for Mathematics, Physics & Astronomy, University of Central Lancashire, Preston, United Kingdom; 2. Department of Physics, University of liverpool, Liverpool, United Kingdom*

8:54

AF-03. **A geometry-independent moment correction method for the MPMS3 SQUID-VSM magnetometer.** *C. Amorim*[1], F. Mohseni[1], V. Amaral[1] and J.S. Amaral[1] *1. Physics and CICECO, Universidade de Aveiro, Aveiro, Portugal*

9:06

AF-04. **Broadband (kHz-GHz) visible light imaging of magnetic field with a combination of magnetic losses films and thermofluorescent coatings.** H. Ragazzo[1], S. Faure[2], F. Issac[1], D. Prost[1], J. Carrey[2] and *J. Bobo*[3] *1. DEMR, ONERA, Toulouse, France; 2. INSA, LPCNO, Toulouse, France; 3. CEMES, CNRS, Toulouse, France*

9:18

AF-05. **Dynamic magneto-optical imaging of magnetic materials – bridging the gap from microseconds to nanoseconds.** M.J. Klug[1] and *J. McCord*[1] *1. Institute for Materials Science, Kiel University, Kiel, Germany*

9:30

AF-06. **Microsphere-assisted super-resolution magneto-optic imaging.** *M. Vogel*[1], A. Hendriks[2,1], J. Pearson[1], A. Hoffmann[1] and S.G. te Velthuis[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

9:42

AF-07. **Field dependence chirality in ferromagnetic multilayers probed by dichroism in x-ray resonant magnetic scattering.** *E.O. Burgos Parra*[1,2], J. Chauleau[1,2], W. Legrand[1], N. Reyren[1], F. Ajejas[1], D. Maccariello[1], S. Collin[1], H. Popescu[2], K. Bouzehouane[1], V. Cros[1], A. Fert[1] and N. Jaouen[2] *1. Unité mixte de physique CNRS/Thales, CNRS, Paris, France; 2. Synchrotron SOLEIL, Saint-Aubin, France*

9:54

AF-08. **Topotactic Transformations in Cobaltite Thin Films.** *I. Chiu*[1], Z. Zhang[2], M. Lee[3,6], P. Shafer[4], A. Mehta[5], S. Ramanathan[2], I.K. Schuller[3,6] and Y. Takamura[1] *1. University of California, Davis, Davis, CA, United States; 2. Purdue University, West Lafayette, IL, United States; 3. Materials Science and Engineering Program, University of California San Diego, La Jolla, CA, United States; 4. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 6. Department of Physics and Center for Advanced Nanoscience, University of California San Diego, La Jolla, CA, United States*

10:06

AF-09. **Magnetic singularities in 3D by x-ray magnetic tomography.** A. Hierro-Rodriguez[1], *J. Martín*[2,3], C. Quiros[2,3], A. Sorrentino[4], L. Alvarez-Prado[2,3], J. Alameda[2,3], S. McVitie[1], E. Pereiro[4], M. Velez[2,3] and S. Ferrer[4] *1. SUPA, School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Física, Universidad de Oviedo, Oviedo, Spain; 3. CINN (CSIC-Universidad de Oviedo), El Entrego, Spain; 4. Alba Synchrotron, Cerdanyola del Valles, Spain*

10:18

AF-10. **Determination of fine magnetic structure of magnetic multilayer with quasi antiferromagnetic layer by using polarized neutron reflectivity analysis.** *Y. Zhong*[1], Y. Kurokawa[1], G. Nagashima[1], S. Horiike[1], T. Hanashima[2], D. Schönke[3], P. Krautscheid[3], R.M. Reeve[3], M. Kläui[3] and H. Yuasa[1] *1. Kyushu University, Fukuoka, Japan; 2. Neutron Science and Technology Center, CROSS, Naka, Japan; 3. Institute of Physics, Johannes Gutenberg-University Mainz, Mainz, Germany*

10:30

AF-11. **Soft X-ray Induced Changes at the Exchange Biased NiO/Fe_3O_4 Interface.** *P. Steadman*[1], J. Wollschlager[2], R. Fan[1], T. Pohlmann[2], K. Kuepper[2], P. Bencok[1] and M. Sussmuth[1] *1. Diamond Light Source, Didcot, United Kingdom; 2. University of Osnabrueck, Osnabrueck, Germany*

10:42

AF-12. **Exploring magnetic materials at beamline P09 at PETRA III.** *J. Mardegan*[1], S. Francoual[1], J. Sears[1] and P. Bereciartua-Perez[1] *1. Petra III, DESY, Hamburg, Germany*

10:54

AF-13. **Imaging uncompensated moments and exchange-biased emergent ferromagnetism in FeRh thin films.** *I. Gray*[5], G. Stiehl[1], J. Heron[2], A. Mei[3], D. Schlom[3], R. Ramesh[4], D. Ralph[1] and G. Fuchs[5] *1. Department of Physics, Cornell University, Ithaca, NY, United States; 2. Department of Materials Science and Engineering, University of Michigan, Ann Arbor, Ann Arbor, MI, United States; 3. Department of Materials Science and Engineering, Cornell University, Ithaca, NY, United States; 4. Department of Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States; 5. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States*

11:06

AF-14. **Options for Exchange Stiffness Measurement in Thin Films.** *R.D. McMichael*[1] *1. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States*

11:18

AF-15. **Withdrawn**

TUESDAY
MORNING
8:30

RIO PAVILION 3

Session AG
DZYALOSHINSKII-MORIYA INTERACTION AND INTERFACIAL PHENOMENA

Simone Finizio, Chair
Paul Scherrer Institut, Villigen PSI, Switzerland

8:30

AG-01. **Controlling the Dzyaloshinskii-Moriya Interaction through interface modifications.** ***(Invited)*** *H. Nembach*[1,2] *1. Quantum Electromagnetics, National Institute of Standards and Technology, Boulder, CO, United States; 2. JILA, University of Colorado, Boulder, CO, United States*

9:06

AG-02. **Significant Dzyaloshinskii–Moriya interaction induced by chemisorbed oxygen on ferromagnets.** *G. Chen*[1], A. Mascaraque[2], M. Robertson[1], R. Lo Conte[3,4], M. Angel González Barrio[2], H. Ding[5], R. Wiesendanger[4], E.G. Michel[6], A.K. Schmid[7] and K. Liu[1,8] *1. University of California, Davis, Davis, CA, United States; 2. Depto. Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 3. Department of Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States; 4. Department of Physics, University of Hamburg, Hamburg, Germany; 5. Department of Physics, Nanjing University, Nanjing, China; 6. Depto. de Física de la Materia Condensada, Universidad Autónoma de Madrid, Madrid, Spain; 7. MSD, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 8. Physics Department, Georgetown University, Washington, DC, United States*

9:18

AG-03. **Tuning the properties of zero-field room temperature magnetic skyrmions by interlayer exchange coupling.** *R. Lo Conte*[1,2], A.K. Nandy[3], G. Chen[4,5], A. Fernandes Cauduro[6], C. Ophus[6], K. Liu[5], A.K. Schmid[6] and R. Wiesendanger[2] *1. Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States; 2. Institute of Applied Physics, University of Hamburg, Hamburg, Germany; 3. School of Physical Sciences, National Institute of Science Education and Research Bhubaneswar, Jatni, India; 4. Department of Physics, University of California, Davis, Davis, CA, United States; 5. Physics Department, Georgetown University, Washington, DC, United States; 6. NCEM - Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

9:30

AG-04. **Orientation dependent Current-induced Motion of Skyrmions with various Topologies.** *M. Weissenhofer*[1] and U. Nowak[1] *1. University of Konstanz, Konstanz, Germany*

9:42

AG-05. **Insulator Spin-orbitronics: spin-orbit torque switching and skyrmions stabilized by chiral exchange interactions in thin film garnet heterostructures.** *S. Ding*[1,2], A. Ross[1], R. Lebrun[1], S. Becker[1], K. Lee[1], I. Boventer[1], S. Das[1], J. Yang[2], G. Jakob[1] and M. Kläui[1] *1. Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Physics, Peking University, Beijing, Germany*

9:54

AG-06. **Tuning Dzyaloshinskii-Moriya Interaction In Thin Ferrimagnetic CoGd Films to Create Magnetic Skyrmions.** *Y. Quessab*[1], J. Xu[1], C.T. Ma[2], W. Zhou[2], G.A. Riley[3], J.M. Shaw[3], H. Nembach[3], J. Poon[2] and A.D. Kent[1] *1. Center for Quantum Phenomena, New York University, New York, NY, United States; 2. Department of Physics, University of Virginia, Charlottesville, VA, United States; 3. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States*

10:06

AG-07. **Strain-induced reversible manipulation of orbital magnetic moments in Ni/Cu multilayers on ferroelectric $BaTiO_3$. *(Invited)*** *J. Okabayashi*[1], Y. Miura[2] and T. Taniyama[3] *1. Research Center for Spectrochemistry, The University of Tokyo, Tokyo, Japan; 2. National Institute of Material Science, Tsukuba, Japan; 3. Nagoya University, Nagoya, Japan*

10:42

AG-08. **Origins of Chiral Exchange Interactions in Centro-Symmetric Magnetic Insulators Arising from Rare-Earth Ions.** *L.M. Caretta*[1], E.R. Rosenberg[1], F. Buettner[1], T. Fakhrul[1], P. Gargiani[2], M. Valvidares[2], P. Reddy[1], C. Avci[1], C. Ross[1] and G. Beach[1] *1. MIT, Cambridge, CA, United States; 2. ALBA Synchrotron, Barcelona, Spain*

10:54

AG-09. **Robust skyrmion-bubble textures in single $SrRuO_3$ thin films stabilized by magnetic anisotropy.** P. Zhang[1], A. Das[1], E. Barts[1], L. Si[2], M. Azhar[1], K. Held[2], M. Mostovoy[1] and *T. Banerjee*[1] *1. University of Groningen, Groningen, Netherlands; 2. Institut für Festkörperphysik, TU Wien, Wien, Austria*

11:06

AG-10. **Effect of Spatially Modulated Dzyaloshinskii-Moriya Interaction Confinement on the Néel Skyrmions.** *S. Bhatti*[1] and S. Piramanayagam[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

11:18

AG-11. **Robustness of Skyrmions in Amorphous GdCo with Interfacial Mixings.** *C.T. Ma*[1], B.J. Kirby[2], W. Zhou[1] and J. Poon[1] *1. Physics, University of Virginia, Charlottesville, VA, United States; 2. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States*

TUESDAY MORNING 8:30 — MIRANDA 7

Session AH
MAGNETOELECTRIC DEVICES AND MAGNETO-IONICS
Rajesh Chopdekar, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

8:30

AH-01. **Epitaxial Integration of Multiferroic $LuFeO_3$ onto a Semiconductor Device Platform.** *J. Casamento*[1], P. Dang[3], X. Li[2], H. Lee[2], D. Schlom[1], H.G. Xing[2,1] and D. Jena[2,1] *1. Materials Science Engineering, Cornell University, Ithaca, NY, United States; 2. Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 3. Applied Engineering Physics, Cornell University, Ithaca, NY, United States*

8:42

AH-02. **$GdFe_{0.8}Ni_{0.2}O_3$ as a new multiferroic compound for low-voltage-driven spintronic devices.** K. Chen[1], Y. Huang[1], *S. Chang*[1] and Y. Tseng[1] *1. Materials Science & Engineering, National Chiao Tung University, HSINCHU, Taiwan*

8:54

AH-03. **Multilevel Nonvolatile Memory Effect in amorphous SmCo/(011) PMN-PT Heterostructure.** *W. Liang*[1,3], J. Liu[1,3], F. Hu[1,3], J. Zhang[2,3], J. Wang[1,3], J. Sun[1,3] and B. Shen[1,3] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 3. University of Chinese Academy of Sciences, Beijing, China*

9:06

AH-04. **Voltage-Controlled Superconducting Magnetic Quantum Memory.** *A. Kenawy*[1,2], M. Milosevic[3], W. Magnus[3] and B. Soree[2] *1. Physics Department, KU Leuven, Leuven, Belgium; 2. imec, Leuven, Belgium; 3. University of Antwerp, Antwerp, Belgium*

9:18

AH-05. **Epitaxial Spin-Orbit Torque Materials on Multiferroic $LuFeO_3$ Coupled to a GaN HEMT.** *P. Dang*[1], J. Casamento[2], X. Li[3], H. Lee[3], Z. Zhang[3], J. Singhal[3], Y. Tang[4], D. Ralph[4], D. Schlom[2], H.G. Xing[3,2] and D. Jena[3,2] *1. Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 2. Materials Science and Engineering, Cornell University, Ithaca, NY, United States; 3. Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 4. Physics, Cornell University, Ithaca, NY, United States*

9:30

AH-06. **Smart Magnetoelectric Antennas for Magnetic Sensing and Energy Harvesting.** *M. Zaeimbashi*[1], M. Nasrollahpour[1], X. Liang[1], H. Chen[1], A. Romano[1], Z. Xu[1], A. Mittal[1], N. Mirchandani[1], G. Jha[1], I. Martos-Repath[1], A. Khalifa[2], M. Onabajo[1], A. Shrivastava[1], S. Cash[2] and N.X. Sun[1] *1. ECE, Northeastern University, Boston, MA, United States; 2. Neurology, Massachusetts General Hospital, Boston, MA, United States*

9:42

AH-07. **Novel Magnetoelectric Nano-Plate Resonators for Sensors. *(Invited)*** H. Lin[2], X. Liang[1], N. Sun[1], N. Sun[1], M. Zaeimbashi[1] and *N. Sun*[1,2] *1. Electrical and Computer Engineering Department, Northeastern University, Boston, MA, United States; 2. Winchester Technologies, LLC, Burlington, MA, United States*

10:18

AH-08. **Room-Temperature Voltage Control of Magnetism in Sr(Co,Fe)Ox Thin Films.** *S. Ning*[1] and C. Ross[1] *1. Department of Materials Science and Engineering, MIT, Cambridge, MA, United States*

10:30

AH-09. **Magneto-Ionic Control of Exchange Bias in Gd/NiCoO.** P. Murray[1], *C.J. Jensen*[2], A. Quintana[2], J. Zhang[3], X. Zhang[3] and K. Liu[2,1] *1. Physics Department, University of California, Davis, Davis, CA, United States; 2. Physics Department, Georgetown University, Washington, DC, United States; 3. King Abdullah University of Science & Technology, Thuwal, Saudi Arabia*

10:42

AH-10. **Magneto-Ionic Control of Coercivity and Exchange Bias using Voltage-Tunable FeO_x/Fe Surface Layers.** *J. Zehner*[1], R. Huhnstock[2], S. Oswald[1], S. Schneider[1], I. Soldatov[1], R. Schäfer[1], A. Ehresmann[2], K. Nielsch[1], D. Holzinger[2] and K. Leistner[1] *1. IFW Dresden, Dresden, Germany; 2. Institute of Physics, University of Kassel, Kassel, Germany*

10:54

AH-11. **Boosting Magneto-Ionic Effects in Magnetic Mesoporous Films through Conformal Oxygen Getter/donor Nanocoatings.** *C. Navarro Senent*[1], A. Quintana[1,2], E. Isarain Chávez[1], E. Weschke[3], P. Yu[4], M. Coll[4], E. Pellicer[1], E. Menéndez[1] and J. Sort[1,5] *1. Physics, Universitat Autonoma de Barcelona, Cerdanyola del Valles, Spain; 2. Physics, Georgetown University, Washington, WA, United States; 3. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 4. Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain; 5. Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain*

11:06

AH-12. **Ionic chain size dependence of the low-field magneto-ionic response of ionic liquid/polymer composites.** L. Fernandes[1], *E. Fernandez-Martin*[1], D.M. Correia[2,3] and S. Lanceros[1] *1. BCMaterials - Basque Center for Materials, Applications and Nanostructures, Leioa, Spain; 2. Departamento de Química, Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal; 3. Departamento de Física, Faculdade de Ciências, Universidade do Minho, Braga, Portugal*

11:18

AH-13. **Large Magnetoelectric Effect in Nanoporous Iron Oxide Thin Films Driven by Magneto-Ionics.** S. Robbennolt[1], *A. Nicolenco*[1], P.M. Fernandez[1], S. Aufftet[2], V. Baltz[2], E. Pellicer[1], E. Menéndez[1] and J. Sort[1,3] *1. Physics, Autonomous University of Barcelona, Bellaterra, Spain; 2. SPINTEC, Univ. Grenoble Alpes/CNRS/INAC-CEA, Grenoble, France; 3. Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain*

Session AI
DAMPING, INTERFACES, AND ANISOTROPY I
Eric Montoya, Chair
University of California, Irvine, CA, United States

8:30

AI-01. **Magnetization Reversal Driven by Low Dimensional Chaos in a Nanoscale Ferromagnet.** ***(Invited)*** *I. Krivorotov*[1], E.A. Montoya[1], S. Perna[2], J. Katine[3], Y. Chen[1], M. d'Aquino[4] and C. Serpico[2] *1. Department of Physics and Astronomy, University of California, Irvine, Irvine, CA, United States; 2. Department of Electrical Engineering and Information Technology, University of Naples Federico II, Naples, Italy; 3. Western Digital, San Jose, CA, United States; 4. Engineering Department, University of Naples "Parthenope", Naples, Italy*

9:06

AI-02. **Narrow Total Linewidths in Low-Damping Epitaxial $Fe_{1-x}V_x$ Thin Films.** *D.A. Smith*[1], Y. Lim[1], M. Clavel[2], M. Hudait[2] and S. Emori[1] *1. Physics, Virginia Tech, Blacksburg, VA, United States; 2. Electrical Engineering, Virginia Tech, Blacksburg, VA, United States*

9:18

AI-03. **Anisotropic Damping in Multilayer Spintronic Devices.** *A. Sapkota*[1,2], A. Farrar[3], T. Mewes[1,2] and C.K. Mewes[1,2] *1. Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; 2. Center for Materials for Information Technology (MINT), The University of Alabama, Tuscaloosa, AL, United States; 3. Harvard Medical School, Boston, MA, United States*

9:30

AI-04. **Gilbert damping constant of NiMnSb half-Heusler alloy film with varying annealing temperature.** *R. Mandal*[1], Z. Wen[1], T. Kubota[2,3], K. Takanashi[2,3] and Y. Takahashi[1] *1. Research Center for Spintronics and Magnetics Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

9:42

AI-05. **Time-retarded damping and magnetic inertia in the Landau-Lifshitz-Gilbert equation self-consistently coupled to electronic time-dependent nonequilibrium Green functions.** *U. Bajpai*[1] and B.K. Nikolić[1] *1. Physics and Astronomy, University of Delaware, Newark, DE, United States*

9:54

AI-06. **Conductivity-Like Gilbert Damping due to Intraband Scattering in Epitaxial Iron.** B. Khodadadi[1], A. Rai[2], A. Sapkota[2], A. Srivastava[2], B. Nepal[2], Y. Lim[1], D.A. Smith[1], C.K. Mewes[2], S. Budhathoki[2], A.J. Hauser[2], M. Gao[1], J. Li[1], D. Viehland[1], Z. Jiang[1], J.J. Heremans[1], P. Balachandran[3], T. Mewes[2] and *S. Emori*[1] *1. Virginia Tech, Blacksburg, VA, United States; 2. University of Alabama, Tuscaloosa, AL, United States; 3. University of Virginia, Charlottesville, VA, United States*

10:06

AI-07. **Intrinsic damping of FeRh thin films.** *G.A. Riley*[1,2], M.L. Schneider[1], H. Nembach[1], J.M. Shaw[1], J. Lauzier[3], J. de la Venta[3] and O. Eriksson[4] *1. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 2. Center for Memory and Recording Research, University of California-San Diego, La Jolla, CA, United States; 3. Physics, Colorado State University, Fort Collins, CO, United States; 4. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

10:18

AI-08. **Anisotropic Gilbert Damping in Sputtered $Fe_{0.7}Ga_{0.3}$ Films and Correlation with Crystal Structure.** *W. Peria*[1], H. Yu[2], S. Lee[2], J.G. Barriocanal[3], I. Takeuchi[2] and P.A. Crowell[1] *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Department of Materials Science and Engineering, University of Maryland, College Park, MD, United States; 3. Characterization Facility, University of Minnesota, Minneapolis, MN, United States*

10:30

AI-09. **Choking nonlocal magnetic damping in exchange-biased ferromagnets.** *T. Moriyama*[1], K. Oda[1] and T. Ono[1] *1. Kyoto University, Uji, Japan*

10:42

AI-10. **Effect of Temperature on the Magnetization Dynamics of Amorphous Co-Fe-B Thin Films with Various Thicknesses.** *Y. Endo*[1,2], H. Tanaka[1], T. Nguyen[2,3], H. Sato[2,3], S. Ikeda[2,4] and T. Endoh[2,3] *1. Electrical Engineering, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan; 3. CIES, Tohoku University, Sendai, Japan; 4. CSRN, Tohoku University, Sendai, Japan*

10:54

AI-11. **Engineering Magnetic Properties via Strain in Europium Iron Garnet Thin Films.** V.H. Ortiz[1], B. Arkook[1], J. Li[1], W. Yuan[1], *I. Barsukov*[1] and J. Shi[1] *1. Physics and Astronomy, University of California, Riverside, Riverside, CA, United States*

11:06

AI-12. **Ferrimagnetic domain wall dynamics driven by Spin Orbit Torques revealed by in-plane fields through the compensation points in GdFeCo.** *E. Haltz*[1*], J. Sampaio[1], R. Weil[1], S. Krishnia[1], L. Berges[1] and A. Mougin[1] *1. Laboratoire de Physique des Solides, Orsay, France*

AI-13. **Magnetic damping of non-collinear synthetic antiferromagnets probed by time-resolved magneto-optical Kerr effect.** *A. Kamimaki*[1,2], S. Iihama[2,3], T. Taniguchi[4] and S. Mizukami[2,3] *1. Department of Applied Physics, Tohoku University, Japan, Sendai, Japan; 2. WPI-AIMR, Tohoku University, Japan, Sendai, Japan; 3. CSRN, Tohoku University, Japan, Sendai, Japan; 4. Spintronics Research Center, AIST, Tsukuba, Japan*

TUESDAY MORNING 9:30 | RIO PAVILION 8-11

Session AP
SPIN CALORITRONICS AND SPIN TRANSPORT PHENOMENA (Poster Session)

Peng Li, Chair
Auburn University, Auburn, AL, United States

AP-01. **Thermoreflectance Measurement of the Spin Peltier Effect.** *T. Yamazaki*[1], R. Iguchi[2], T. Ohkubo[2], H. Nagano[1] and K. Uchida[2] *1. Nagoya University, Nagoya, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*

AP-02. **Electrical detection of spin Nernst effect using lateral spin valve structures.** *R. Matsuda*[1], R. Suko[1], D. Ito[1] and T. Kimura[1,2] *1. Depertment of Physics, Kyushu University, Fukuoka, Japan; 2. Research Center for Quantum Nano-Spin Science, Fukuoka, Japan*

AP-03. **Spin diffusion length and polarization of ferromagnetic metals measured by a spin-absorption technique in lateral spin valves.** G. Zahnd[1], *S. Ghosh*[1], L. Vila[1], V. Pham[1], M. Cosset-Cheneau[1], W. Lim[1], A. Brenac[1], P. Laczkowski[1], A. Marty[1] and J. Attané[1] *1. University of Grenoble Alpes, CEA, CNRS, INP-G, IRIG-Spintec, Grenoble, France*

AP-04. **Observation of the spin-dependent Peltier effect in lateral spin valve.** *R. Suko*[1], R. Matsuda[1], D. Ito[1] and T. Kimura[1,2] *1. Dep. Physics, Kyushu University, Fukuoka, Japan; 2. Quantum Spin Research Center of Kyushu Univ., Fukuoka, Japan*

AP-05. **Non-Reciprocal Spin Pumping in Asymmetric Magnetic Trilayers.** *M. Pereiro*[1], Y. Pogoryelov[1], S. Jana[1], A. Kumar[2], S. Akansel[2], M. Ranjbar[3], D. Thonig[1], D. Primetzhofer[1], P. Svedlindh[2], J. Åkerman[3], O. Eriksson[1], O. Karis[1] and D.A. Arena[4] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden; 3. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 4. Department of Physics, University of South Florida, Tampa, FL, United States*

AP-06. **Spin Transport in Disordered Magnetic Insulators.** *L.A. Hernandez*[1], M. Roos[1], D.J. Wesenberg[1] and B.L. Zink[1] *1. Physics and Astronomy, The University of Denver, Denver, CO, United States*

TUESDAY MORNING 9:30

RIO PAVILION 8-11

Session AQ
MAGNETO-CALORIC AND MAGNETO-ELASTIC MATERIALS I (Poster Session)

Radhika Barua, Co-Chair
Virginia Commonwealth University, Richmond, VA, United States
Joao Amaral, Co-Chair
Universidade de Aveiro, Aveiro, Portugal

AQ-01. **Comparison on the ΔE effect in $Fe_{87}Ga_{13}$ alloy by doping Dy and Tb.** *H.W. Chang*[1], S.U. Jen[2], D. Tseng[3], W. Cheng[4], W. Chang[1] and C. Ouyang[5] *1. National Chung Cheng University, Chia-Yi, Taiwan; 2. Academia Sinica, Taipei, Taiwan; 3. Tunghai University, Taichung, Taiwan; 4. NTUST, Taipei, Taiwan; 5. National Tsing Hua University, Hsinchu, Taiwan*

AQ-02. **Extended X-ray Absorption Fine Structure Spectroscopy for Flexible Spintronics.** *S. Ota*[1,2], T. Hirai[1,2], T. Ina[3], T. Koyama[2,4] and D. Chiba[2,4] *1. Applied Physics, The University of Tokyo, Bunkyo, Japan; 2. The Institute of Scientific and Industrial Research, Osaka University, Ibaraki, Japan; 3. Japan Synchrotron Radiation Research Institute, Sayo, Japan; 4. Center for Spintronics Research Network at Osaka University, Toyonaka, Japan*

AQ-03. **Controlling Acoustic Waves using Magnetoelastic Fano Resonances.** *O. Latcham*[1], Y. Gusieva[2], A. Shytov[1], O. Gorobets[2] and V.V. Kruglyak[1] *1. University of Exeter, Exeter, United Kingdom; 2. Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine*

AQ-04. **Simulation Design of Magnetic and Thermal Properties of Magnetorheological Elastomer Bushing.** *W.M. Kiarie*[1], E.J. Barron III[1], M.D. Bartlett[1] and D.C. Jiles[2] *1. Materials Science and Engineering, Iowa State University, Ames, IA, United States; 2. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

AQ-05. **Modeling and Fabrication of a Thin-Film Magnetorheological Elastomer Composite using Iron (III) Oxide Nanoparticles.** *D.A. O'Mahoney*[1], A. El-Ghazaly[2] and J. Bokor[3] *1. Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States; 2. Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 3. Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, United States*

AQ-06. **Hysteresis-free Highly Magnetostrictive Oxides.** *S. Pokharel*[1], Z. Alyousef[1], M. Hassan[1], W. Morgan[1], M. Wuttig[2] and A. Lisfi[1] *1. Physics, Morgan State University, Baltimore, MD, United States; 2. Materials Science and Engineering, University of Maryland, College Park, MD, United States*

AQ-07. **Magneto-optical Studies of Doped Magnetic Shape Memory Heusler alloys.** *D. Kral*[1], V. Kopecky[2], L. Beran[1], J. Zemen[3], O. Heczko[2] and M. Veis[1] *1. Institute of Physics, Charles University, Prague, Czechia; 2. Institute of Physics, Academy of Sciences, Prague, Czechia; 3. Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czechia*

AQ-08. **Effect of film thickness on static and high frequency magnetic properties of $Fe_{100-x}Ga_x$ films with various Ga composition (*x*).** *Y. Kawabe*[1], T. Miyazaki[1,2] and Y. Endo[1,3] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Faculty of Engineering, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation Spintronics, Tohoku University, Sendai, Japan*

AQ-09. **Interplay between magnetic domains and antiphase boundaries in Ni-Mn-Ga compound.** *O. Heczko*[1], L. Straka[1], L. Fekete[1], M. Vronka[1,2] and M. De Graef[2] *1. Magnetic Measurement and Materials, FZU - Institute of Physics CAS, Prague, Czechia; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

AQ-10. **Modeling Low-Frequency Short-Range Mechanical Communication.** *M.E. Goforth*[1] and J.P. Domann[1] *1. Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, WV, United States*

AQ-11. **EXAFS Analysis of SmFe2 Thin Films with Perpendicular Magnetic Anisotropy for Piezoelectric Magnetic Tunnel Junctions.** *Y. Takamura*[1], H. Onozawa[1], S. Urashita[1], M. Tomita[1] and S. Nakagawa[1] *1. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan*

AQ-12. **Fabrication and magnetocaloric effect of Ni_2MnGa Heusler alloy nanowires.** *Y. Zhang*[1], F. Qin[1], D. Estevez[1] and H. Peng[1] *1. Zhejiang University, Hangzhou, China*

AQ-13. **Tuning of second order phase transition of NiMnGa Heusler-type glass-coated microwires.** C. Garcia[1], V. Zhukova[2,3], S. Shevyrtalov[4], M. Ipatov[2,3], P. Corte-Leon[2,3] and *A. Zhukov*[2,5] *1. Dpto de Física, Universidad Técnica Federico Santa María, Valparaiso, Chile; 2. Dept. Phys. Mater., Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 3. Dpto. Física Aplicada, EIG, Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 4. Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 5. Basque Foundation for Science, Ikerbasque, San Sebastian, Spain*

AQ-14. **Substitution effects on the magnetic phase transition and magnetocaloric effects in nanolaminated $AlFe_2B_2$ alloys.** Y. Yan[1], T. Chen[2], *J. Chen*[3], Y. Yang[1], P. Jia[1], W. Cui[1,2] and Q. Wang[1] *1. Northeastern University, Shenyang, China; 2. Lanzhou University of Technology, Lanzhou, China; 3. Institute Of Electronics, CAS, Beijing, China*

AQ-15. **Lattice entropy change evaluated based on Debye approximation for $LaFe_{13-x}Si_x$ magnetocaloric materials.** *Z. Yu*[1,2], J. Hao[1,3], F. Hu[1,2], J. Wang[1,2], J. He[3], J. Sun[1,2] and B. Shen[1,2] *1. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics,Chinese Academy of Sciences, Beijing, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China; 3. Division of Functional Material Research, Central Iron and Steel Research Institute, Beijing, China*

AQ-16. **Withdrawn**

AQ-17. **Magnetostructural Phase Transitions and Magnetocaloric Effects in Sb Doped MnCoGe.** *A. Aryal*[1], I. Dubenko[1], S. Talapatra[1], S. Stadler[2] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL, United States; 2. Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States*

AQ-18. **Hysteresis Loss Reduction and Magnetocaloric Effect Improvement in the Ni-Co-Mn-In Alloys.** *M. Ghahremani*[1], A. Aslani[2], M. Hosseinnia[3] and L.H. Bennett[2] *1. Computer Science, Mathematics, and Engineering, Shepherd University, Shepherdstown, WV, United States; 2. Electrical and Computer Engineering, George Washington University, Washington, DC, United States; 3. Clinical and Administrative Sciences, Notre Dame of Maryland University, Baltimore, MD, United States*

AQ-19. **Magnetostructural transition and large magnetocaloric effect in transition metal-based multicomponent alloy with Ni_2In-type crystal structure.** *A. Biswas*[1], A.K. Pathak[1], Y. Mudryk[1], V. Balema[1] and V.K. Pecharsky[1,2] *1. Ames Laboratory of US DOE, Ames, IA, United States; 2. Materials Science and Engineering, Iowa State University, Ames, IA, United States*

TUESDAY
MORNING
9:30

RIO PAVILION 8-11

Session AR
FERRITES AND RARE-EARTH MAGNETS (Poster Session)

Durga Paudyal, Chair
Ames Laboratory, US DOE, Iowa State University, Ames, IA, United States

AR-01. **Phase modification and coercivity improvement of melt spun $LaCo_5$ ribbons by Ti, Zr, or Hf substitution.** *H.W. Chang*[1], Y. Guo[1], W. Chang[1], Y. Wong[1] and C. Shaw[2] *1. National Chung Cheng University, Chia-Yi, Taiwan; 2. Superrite Electronics Co. Ltd., Taipei, Taiwan*

AR-02. **Structure factor and 3d - valence electron concentration considerations towards stabilization of the $SmFe_{5-y}Co_yNi_z$ phases using the high entropy alloy concept: special case $SmFe_3CoNi$.** *D. Niarchos*[1,2], M. Gjoka[1], V. Psycharis[1] and E. Devlin[1] *1. Department of Materials Science, INN, NCSR "Demokritos", Athens, Greece; 2. AMEN-Technologies, Athens, Greece*

AR-03. **Effect of B on the Magnetic Properties for Sm-Fe-Co Thin Films.** *Y. Tamazawa*[1], M. Kambayashi[2], G. Saito[1], M. Doi[1] and T. Shima[1] *1. Graduate School of Engineering, Tohoku Gakuin University, Tagajo, Japan; 2. Department of Electronic Engineering, Tohoku Gakuin University, Tagajo, Japan*

AR-04. **Magnetic properties of $Sm(Fe,Zr)_3$ melt-spun ribbons.** T. Saito[1], T. Horita[1] and *Y. Ogawa*[1] *1. Chiba Institute of Technology, Narashino, Japan*

AR-05. **Production of anisotropic $SmFe_3$ magnets by hot deformation.** *Y. Ogawa*[1], T. Saito[1] and D. Nishio-Hamane[2] *1. Chiba Institute of Technology, Narashino, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

AR-06. **Synthesis of $SmFe_5$ intermetallic compound.** *T. Saito*[1] and D. Nishio-Hamane[2] *1. Chiba Institute of Technology, Narashino, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

AR-07. **Effect of Secondary Aging On Magnetic Properties of 2:17 SmCo Commercial Magnet.** *Z. Xie*[1], D. Zhang[1], H. Zhang[1], W. Liu[1], Q. Wu[1], Q. Lu[1], Y. Li[1], Z. Ma[1] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

AR-08. **Atomistic study on the pressure dependence of the melting point of $NdFe_{12}$.** *C. Skelland*[1], T. Ostler[2], S.C. Westmoreland[3], R.F. Evans[3,6], R.W. Chantrell[3], M. Yano[4], T. Shoji[4], A. Kato[4], M. Ito[4], M. Winklhofer[5], G. Zimanyi[6], J. Fischbacher[7], T. Schrefl[7] and G. Hrkac[1] *1. University of Exeter, Exeter, United Kingdom; 2. Sheffield Hallam University, Sheffield, United Kingdom; 3. University of York, York, United Kingdom; 4. Toyota Motor Corporation, Toyota City, Japan; 5. The Carl von Ossietzky University of Oldenburg, Oldenburg, Germany; 6. UC Davis, Davis, CA, United States; 7. Danube University Krems, Krems an der Donau, Austria*

AR-09. **Fabrication of Permanent Magnet by 3D Printng Technique.** *M. Lee*[1], Y. Choi[1], N. Tran[1], J. Ahn[1] and B. Lee[1] *1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongin, The Republic of Korea*

AR-10. **Unquenched Orbital Magnetic Moment in M-type Hexaferrites by Non-isovalent Substitution.** *J. Kim*[1] and Y. Koh[2] *1. CALDES, Institute for Basic Science, Pohang, The Republic of Korea; 2. Max-Plank Korean Initiative, Pohang, The Republic of Korea*

AR-11. **Effect of Lanthanum Substitution on Magnetic Properties of $Ba_{4-x}La_xNi_2Fe_{36}O_{60}$ Hexaferrite.** *X. Jiang*[1], X. Liu[1], T. Shen[1], Z. Yu[1], K. Sun[1], C. Wu[1] and R. Guo[1] *1. School of Materials and Energy, University of Electronic Science and Technology of China, Chengdu, China*

AR-12. **Magnetic Properties of Mn substituted Strontium Ferrite Powders synthesized by the Molten Salt Method.** *M. Kim*[1], H. Lee[1] and J. Kim[1] *1. Materials Science and Chemical Engineering, Hanyang University, Ansan-si, The Republic of Korea*

AR-13. **Effect of molten salt assisted calcination process in $SrFe_{12-x}Al_xO_{19}$ hexaferrite.** *T.P. Poudel*[1], J. Mohapatra[2], D. Guragain[1], S. Yoon[3], D. Neupane[1], J. Liu[2] and S.R. Mishra[1] *1. University of Memphis, Memphis, TN, United States; 2. University of Texas at Arlington, Arlington, TX, United States; 3. Gunsan National Univeristy, Gunsan, The Republic of Korea*

AR-14. **Effects of In^{3+} site occupancy on the magnetic properties of M-type strontium hexaferrite.** C. Kim[2], B. Kim[1] and *S. Yoon*[1] *1. Department of Physics, Gunsan National University, Gunsan, The Republic of Korea; 2. Department of Physics, Kookmin University, Seoul, The Republic of Korea*

AR-15. **Effect of perpendicular magnetic field assisted compaction on the magnetic and magnetostrictive properties of Cobalt Ferrite.** *S. Indla*[1], G. Thotakura[2], A. Chelvane[3], T.V. Jayaraman[2] and D. Das[1] *1. School of Engineering Sciences and Technology, University of Hyderabad India, Hyderabad, India; 2. Mechanical Engineering, University of Michigan, Dearborn, MI, United States; 3. Advanced Magnetic Group, Defense Metallurgical Research Laboratory, Hyderabad, India*

AR-16. **Magnetic Relaxation Process in Perpendicular Anisotropy Heterostructures.** *Z. Alyousef*[1], M. Hassan[1], S. Pokharel[1], W. Morgan[1], M. Wuttig[2] and A. Lisfi[1] *1. Physics, Morgan State University, Baltimore, MD, United States; 2. Materials Science and Engineering, University of Maryland, College Park, MD, United States*

AR-17. **Strong dependence of exchange coupling on soft phase magnetization in hard/soft nanocomposites.** *C. Pahwa*[1] and P. Sharma[1] *1. School of Physics & Materials Science, Thapar Institute of Engineering & Technology, Patiala, India*

Session AS
EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM (Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

AS-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

AS-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

AS-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

AS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

Session AT
NANO-ARRAYS, NOVEL STRUCTURES, AND SELF-ASSEMBLY I (Poster Session)

Karine Chesnel, Chair
Brigham Young University, Provo, UT, United States

AT-01. **Comparative Study of Magnetic Properties of Fe_3O_4 Nanoparticles Produced by Pulsed Laser Deposition and Chemical Route.** W.S. Torres[1], N.R. Huaman[2], R. Bini[3], M.D. Santos[4], L.F. Cótica[3] and *D.L. Rocco*[1,4] *1. Física, Universidade Federal Fluminense, Niterói, Brazil; 2. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil; 3. Física, Universidade Estadual de Maringá, Maringá, Brazil; 4. Formação Geral, Centro Federal de Educação Tecnológica de Minas Gerais, Timóteo, Brazil*

AT-02. **Inverse magnetocaloric effect of densely packed ferromagnetic nanoparticles clusters.** C.M. Souza[1], L.L. Oliveira[2], *A.L. Dantas*[2] and A.S. Carriço[1] *1. Department of Physics, Federal University of Rio Grande do Norte, Natal, Brazil; 2. Department of Science and Technology, State University of Rio Grande do Norte, Natal, Brazil*

AT-03. ***In-situ* Alignment of Filament-based 3D Printed Magnetic Materials.** *A. Sarkar*[1], S.M. A.[1], M. Paranthaman[2], M. Kramer[1], T. Lograsso[1], C. Haase[1] and I.C. Nlebedim[1] *1. AMES Laboratory, Ames, IA, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States*

AT-04. **Modulation of static and dynamic properties of Co_2MnAl Nanowires through deposition parameters.** *M. Sharma*[1], A. Das[1] and B.K. Kuanr[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India*

AT-05. **Magnetic and catalytic properties of Co_xNi_{1-x} nanowires.** J. Elkins[1], *J. Mohapatra*[1], M. Xing[1], J. Beatty[1] and J. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

AT-06. **Effects of surface spin disorder on the magnetic properties of $CoFe_2O_4$ nanoparticles.** *J. Mohapatra*[1], J. Beatty[1], J. Elkins[1], M. Xing[1] and J. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

AT-07. **Designing Cobalt Nanowire Arrays.** *J.G. Giuliani*[1], A. Galindo[1], J. Reyes[1] and K. Nash[1] *1. Physics, University of Texas at San Antonio, San Antonio, TX, United States*

AT-08. **The Practical Energy Product of Cylindrical Core/shell Consist of Soft- and Hard-magnetic Materials.** *N. Kim*[1], H. Han[1], S. Lee[1] and K. Lee[1] *1. School of Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea*

AT-09. **Magnetic coupling of cementite nanoparticles within double-wall carbon nanotubes.** W. Nieto[1], J. Chimborazo[2], A. Briones-Leon[2], O. Domanov[2], H. Shiozawa[2], T. Pichler[2], P. Ayala[2] and *D. Niebieskikwiat*[1] *1. Departamento de Física, Universidad San Francisco de Quito, Quito, Ecuador; 2. Faculty of Physics, University of Vienna, Vienna, Austria*

AT-10. **Electrophoretic Deposition of Iron-Oxide Nanoparticles to Achieve Thick Nickel/Iron-Oxide Magnetic Nanocomposite Films.** *S.C. Mills*[1], C.S. Smith[2], D.P. Arnold[2] and J. Andrew[1] *1. Materials Science and Engineering, University of Florida, Gainesville, FL, United States; 2. Electrical and Computer Engineering, University of Florida, Gainesville, FL, United States*

AT-11. **Angular Dependent Magnetic Properties of Three Dimensional Antidots Aligned with Nanowires Created by Nanosphere Lithography.** *B. Myint*[1] and V. Ng[1] *1. Information Storage Materials Laboratory, Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

AT-12. **Withdrawn**

TUESDAY MORNING 9:30 | RIO PAVILION 8-11

Session AU
NANOPARTICLES AND NANOWIRES (Poster Session)

Ranko Heindl, Chair
San Jose State University, San Jose, CA, United States

AU-01. **Anomalous magnetic behavior in $Ni_{80}Cr_{20}$ nanoparticles prepared by electric explosion method of wire.** *S. Vishvakarma*[2], S. Veeturi[2], P. Ranjan[1] and R. Sarathi[1] *1. Electrical Engineering, Indian Institute of Technology Madras, Chennai, India; 2. Physics, Indian Institute of Technology Madras, Chennai, India*

AU-02. **Magnetic spinel ferrite materials as high efficient and easily retrievable visible photocatalysts.** Y. Jia[1] and *C. Liu*[1] *1. Physics, Hankuk University of Foreign Studies, Yongin, The Republic of Korea*

AU-03. **Tailoring the energy product of cylindrical core-shell FePt@$CoFe_2$ and FePt@Fe nanoparticles.** Y.S. Santos[1], *L.L. Oliveira*[1], R.M. Souza[2], M.S. Nunes[3], A.L. Dantas[1] and A.S. Carriço[2] *1. Department of Science and Technology, State University of Rio Grande do Norte, Natal, Brazil; 2. Department of Physics, Federal University of Rio Grande do Norte, Natal, Brazil; 3. Department of Physics, State University of Rio Grande do Norte, Natal, Brazil*

AU-04. **Compositional dependence of structural and magnetic properties of $Ga_{2-x}Fe_xO_3$ nanoparticles.** *T. Han*[1] and T. Chen[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

AU-05. **Controlling domain wall chirality by combining hard and soft magnetic materials in planar nanostructures with wire-ring morphology.** *R. Corona*[1,3], S. Castillo[2,3], J. Escrig[1,3] and D. Altbir[1,3] *1. Física, Universidad de Santiago de Chile, Santiago, Chile; 2. Departamento de Ingenieria, Universidad Autonoma de Chile, Santiago, Chile; 3. CEDENNA, Santiago, Chile*

AU-06. **Domain wall motion and coupled electron hopping relaxation in nanostructured magnetite.** *R. Das*[1,2], V. Kalappattil[2], M. Phan[2] and H. Srikanth[2] *1. Faculty of Materials Science and Engineering, Phenikaa University, Hanoi, Vietnam; 2. Department of Physics, University of South Florida, Tampa, FL, United States*

AU-07. **Effect of particle size variation on structural, magnetic and transport properties of Sol-gel derived nanocrystalline $La_{0.15}Pr_{0.45}Ca_{0.40}MnO_3$ perovskite manganites.** *D. Raghav*[1], H.K. Singh[2] and G.D. Varma[3] *1. Physics, I.I.T. Roorkee, Roorkee, India; 2. CSIR NPL, New Delhi, India; 3. Physics, I.I.T. Roorkee, Roorkee, India*

AU-08. **Evaluation of magnetic properties in ferromagnetic martensite particle using type 304 stainless steel wire.** *K. Kinoshita*[1] *1. Department of energy conversion science, Kyoto university, Kyoto, Japan*

AU-09. **Size-induced Enhancement of Room Temperature Magnetic Memory Effect in Fe-doped NiO Nanoparticles.** *A.C. Gandhi*[1] and S.Y. Wu[1] *1. Department of Physics, National Dong Hwa University, Hualien, Taiwan*

AU-10. **Néel Relaxation Time and Blocking Temperature for Nanoparticle Magnetization as a Function of Static Applied Field.** *C.R. Chalifour*[1], N.R. Anderson[1], T.M. Crawford[2] and K. Livesey[1] *1. UCCS Biofrontiers Center and Department of Physics, University of Colorado Colorado Springs, Colorado Springs, CO, United States; 2. Department of Physics and Astronomy, SmartState Center for Experimental Nanoscale Physics, University of South Carolina, Columbia, SC, United States*

AU-11. **Withdrawn**

AU-12. **Tailoring magnetic properties of PMA thin films due to the interaction with $CoFe_2O_4$ nanoparticles.** *S. Michea*[3,2], R. Freire[1,2], J. Palma[4,2], J. Denardin[1,2] and D. Altbir[1,2] *1. Physics, Universidad de Santiago de Chile, Santiago, Chile; 2. Center for the development of Nanoscience and Nanotechnology, Santiago, Chile; 3. Institute of Applied Chemical Sciences, Universidad Autónoma de Chile, Santiago, Chile; 4. Ciencias Básicas, Universidad Central de Chile, Santiago, Chile*

AU-13. **Room temperature ferromagnetic behaviour in Dy^{3+} doped dilute magnetic semiconductor nanoparticles.** *S. Jindal*[1] and P. Sharma[2] *1. School of Physics and Material Science, Thapar Institute of Engineering and Technology, Patiala, India; 2. School of Physics and Material Science, Thapar Institute of Engineering and Technology, Patiala, India*

AU-14. **RE-doped Fe_3O_4 (RE = Eu, Gd, Er) nanoparticles for nanothermometry.** *E. Correa*[1,2], B. Bosch-Santos[3,2], T. Sales[2], G. Cabrera-Pasca[4], B.S. Corrêa[2], O.F. Neto[2], A.W. Carbonari[2], V. Oleshko[1] and C. Dennis[1] *1. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Nuclear and Energy Research Institute, Sao Paulo, Brazil; 3. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Federal University of Para, Abaetetuba, Brazil*

AU-15. **Can natural oils improve the properties of magnetic nanoparticles? A systematic study of iron oxide nanoparticles coated with oils from Amazon fruits.** B.S. Corrêa[1], M.S. Costa[2], G. Cabrera-Pasca[2], C. Sena[2], R.H. Pinto[2], R.N. Carvalho Jr[2], R.S. Freitas[3], M. Saiki[1], *E. Correa*[1] and A.W. Carbonari[1] *1. CERPQ, Instituto de Pesquisas Energéticas e Nucleares - IPEN, São Paulo, Brazil; 2. Faculdade de Ciências Exatas e Tecnologia, Universidade Federal do Pará - UFPA, Abaetetuba, Brazil; 3. Instituto de Física, Universidade de São Paulo, São Paulo, Brazil*

TUESDAY MORNING 9:30 — RIO PAVILION 8-11

Session AV
ORIGINS OF MAGNETIC ORDER I (Poster Session)

Matthew Pufall, Chair
NIST, Boulder, CO, United States

AV-01. **Ultrasound-Velocity Measurements in Spin-Frustrated Cobaltite $CoTi_2O_5$.** *K. Takayanagi*[1], T. Watanabe[1], F. Kirschner[2], D. Prabhakaran[2], S. Blundell[2] and Y. Hara[3] *1. Nihon University, Tokyo, Japan; 2. Oxford University, Oxford, United Kingdom; 3. National Institute of Technology, Ibaraki College, Hitachinaka, Japan*

AV-02. **Magnetic properties and the planer Hall effect of CoFeMnSi films.** *K. Yamada*[1,2], T. Kimura[1], K. Elphick[2] and A. Hirohata[2] *1. Department of Physics, Kyushu University, Fukuoka, Japan; 2. Department of Electronic Engineering, University of York, York, United Kingdom*

AV-03. **Enhanced Room Temperature Ferromagnetism in MoS_2 by N Plasma Treatment.** *B. Wang*[1], D. Zhang[1], H. Wang[1], H. Zhao[1], R. Liu[2], Q. Li[1], S. Zhou[3], L. Sun[2], J. Du[2] and Q. Xu[1] *1. School of Physics, Southeast University, Nanjing, China; 2. School of Physics, Nanjing University, Nanjing, China; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

AV-04. **Substitution Effects on Magnetism of Laves-Phase Iron Compound $ZrFe_2$.** *T. Suzuki*[1], Y. Fukushima[1], Y. Takei[1] and T. Watanabe[1] *1. Department of Physics. College of Science and Technology, Nihon University, Tokyo, Japan*

AV-05. **Spin Wave Excitation in the Kitaev Honycomb Magnet α-$RuCl_3$.** *S. Ji*[1], S. Do[2], D. Voneshen[3] and K. Choi[4] *1. Neutron Science Center, Korea Atomic Energy Research Institute, Daejeon, The Republic of Korea; 2. Max Planck POSTECH, Pohang, The Republic of Korea; 3. ISIS Facility, Rutherford Appleton Laboratory, Didcot, United Kingdom; 4. Physics, Chung-Ang University, Seoul, The Republic of Korea*

AV-06. **Fabrication of noncentrosymmetric Nb/V/Ta superlattice and its superconductivity.** *F. Ando*[1], D. Kan[1], S. Nakamura[2], M. Naritsuka[2], Y. Kasahara[2], Y. Shiota[1], T. Moriyama[1], Y. Shimakawa[1], Y. Matsuda[2] and T. Ono[1] *1. Institute for Chemical Research, Kyoto University, Uji, Japan; 2. Department of Physics, Kyoto university, Kyoto, Japan*

AV-07. **Substitution Effects on Magnetism of Spin-Frustrated Chromite and Ferrite Spinels.** *K. Miura*[1], Y. Koga[1], Y. Sugaya[1] and T. Watanabe[1] *1. Department of Physics, Nihon University, Tokyo, Japan*

AV-08. **Superconductivity and magnetism of $Eu_{1-x}La_xFeAsF_{1-y}$.** *S. Totsuka*[1], S. Demura[1] and Y. Takano[1] *1. Department of Physics, Nihon University, Tokyo, Japan*

AV-09. **Effects of Zn-Site Magnetic Substitution in Frustrated Chromite Spinel $ZnCr_2O_4$.** *F. Tsujimura*[1] and T. Watanabe[1] *1. Department of Physics, College of Sience and Tecnology, Nihon University, Tokyo, Japan*

AV-10. **Complex high field phase of the Kondo-lattice $CeRhIn_5$ unveiled by NMR.** G. Lesseux[1], H. Sakai[2], Y. Tokunaga[2], S. Kambe[2], P. Kuhns[3], A. Reyes[3], J. Thompson[4], P. Pagliuso[1] and *R.R. Urbano*[1] *1. DEQ, State University of Campinas, Campinas, Brazil; 2. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan; 3. National High Magnetic Field Laboratory, Tallahassee, FL, United States; 4. Los Alamos National Laboratory, Los Alamos, NM, United States*

AV-11. **Realization of Various Weyl Semimetal Phases in Topoelectrical Circuit Models.** *S. Rafi-Ul-Islam*[1], Z. Siu[1] and M.B. Jalil[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

AV-12. **Impurity effect of quantum spin trimer system $Na_2(Cu_{1-x}Ni_x)_3Ge_4O_{12}$.** *R. Toma*[1] and Y. Yasui[1] *1. Physics, Meiji University, Kawasaki, Japan*

AV-13. **Magnetic Properties of Frustrated Quantum Spin Chain System $Rb_2(Cu_{1-x}M_x)_2Mo_3O_{12}$ (M=Zn, Ni).** *Y. Yasui*[1], Y. Okubo[1], S. Kittaka[2] and T. Sakakibara[2] *1. Physics, Meiji University, Kawasaki, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

AV-14. **Magnetic properties of $Ba_3Co_{1-x}Ca_xRu_2O_9$.** *A. Nagaya*[1], A. Horie[1], Y. Yasui[2], T.D. Yamamoto[3] and I. Terasaki[3] *1. Meiji University, Kawasaki, Japan; 2. Meiji University, Kawasaki, Japan; 3. Nagoya University, Nagoya, Japan*

AV-15. **Electron Quantum Interference in Epitaxial Antiferromagnetic NiO Thin Films.** *J. Xu*[1], C. Zhou[1], M. Jia[1], G. Chen[4], Q. Li[2], A.K. Schmid[3] and Y. Wu[1] *1. Fudan University, Shanghai, China; 2. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. University of California, Davis, Davis, CA, United States*

AV-16. **Strong Coupling of a Ferromagnetic Sphere to a High-Tc Superconducting CPW Resonator.** *I.W. Haygood*[1,2], E. Edwards[3,1], M. Pufall[1] and W.H. Rippard[1] *1. 687, NIST, Boulder, CO, United States; 2. Physics, University of Colorado - Boulder, Boulder, CO, United States; 3. IBM, Albany, NY, United States*

AV-17. **Electron Correlation Effects and Magneto-Optical Property of Yttrium Iron Garnet.** *H. Nakashima*[1], A.M. Pradipto[1], T. Akiyama[1], T. Ito[1] and K. Nakamura[1] *1. Physics engineering, Mie university, Tsu city, Japan*

AV-18. **Delithiated $Fe_{1-x}Mg_xPO_4$ cathode materials: structural, magnetic, and Mössbauer studies.** *H. Choi*[1], J. Kim[1] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, The Republic of Korea*

TUESDAY MORNING 9:30 — RIO PAVILION 8-11

Session AW
SKYRMIONS
(Poster Session)

Dustin Gilbert, Co-Chair
NIST Center for Neutron Research, Gaithersburg, MD, United States
Michalis Charilaou, Co-Chair
University of Louisiana at Lafayette, Lafayette, LA, United States

AW-01. **Magnetoresistive Imaging of Magnetic Bubbles, Skyrmions, and Skyrmion Fabric.** *I. Kao*[1], B. Parks[1] and S. Majetich[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

AW-02. **Realization of Ferro- and Ferri-magnetic skyrmions in Pt/Co/X based systems.** *T. Lin*[1], S. Poellath[2], H. Liu[3], T. Xing[1], Z. Wang[1], Y. Sun[1], B. Ji[1], Y. Wu[3], J. Shen[3], C. Back[4] and N. Lei[1] *1. Beihang University, Beijing, China; 2. Universität Regensburg, Regensburg, Germany; 3. Fudan University, Shanghai, China; 4. Technische Universität München, Garching, Germany*

AW-03. **Ultrafast nucleation and manipulation of antiferromagnetic skyrmion chains in nanotrack.** *K. Khan*[1], N. Sisodia[1] and P.K. Muduli[1] *1. Physics, IIT Delhi, New Delhi, India*

AW-04. **Dipolar Stabilized Nano-Sized Spin Textures in Fe(Co)/Gd Multilayers.** *M. Heigl*[1], M. Vanatka[2], P. Che[3], E. Catapano[3], Z.I. Maranloo[4], P. Böni[4], D. Grundler[3], M. Urbánek[2] and M. Albrecht[1] *1. Institute of Physics, University of Augsburg, Augsburg, Germany; 2. CEITEC BUT, Brno University of Technology, Brno, Czechia; 3. Institute of Materials (IMX) - Laboratory of Nanoscale Magnetic Materials and Magnonics, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 4. Physic Department E21, Technical University of Munich, Garching, Germany*

AW-05. **Energetics, equilibrium shape and topology of skyrmions stabilized by the anisotropic Dzyaloshinskii-Moriya interaction in thin films with C_{2v} symmetry.** *M.D. Kitcher*[1], T. Mewes[2], C.K. Mewes[3], M. De Graef[1] and V. Sokalski[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, University of Alabama, Tuscaloosa, AL, United States; 3. Physics and Astronomy/MINT, University of Alabama, Tuscaloosa, AL, United States*

AW-06. **Magnetic skyrmion field-effect transistor.** *I. Hong*[1] and K. Lee[1,2] *1. KU-KIST graduate school of converging science and technology, Korea University, Seoul, The Republic of Korea; 2. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

AW-07. **Skyrmions-Based Ultra-Low Power Electric-Field-Controlled Reconfigurable (SUPER) Logic Gate.** Z. Zhang[1,2], Y. Zhu[1,2], *Y. Zhang*[1], K. Zhang[1], J. Nan[1], Z. Zheng[1], J. Wang[1], G. Wang[1], Y. Zhang[1,2] and W. Zhao[1] *1. Fert Beijing Research Institute, BDBC, School of Microelectronics, Beihang University, Beijing, China; 2. School of Electronics and Information Engineering, Beihang University, Beijing, China*

AW-08. **Manipulating Spin Chirality of Magnetic Skyrmion Bubbles by In-Plane Reversed Magnetic Fields in MnNiGa Magnet.** *B. Ding*[1,2], J. Cui[1,2], H. Li[1,2], E. Liu[1,3], G. Wu[1], Y. Yao[1] and W. Wang[1,3] *1. Institute of Physics, Beijing, China; 2. University of Chinese Academy of Sciences, Beijing, China; 3. Songshan Lake Materials Laboratory, Dongguan, China*

AW-09. **Topological spin structures at the spin reorientation transition in ferrimagnetic thin film alloys.** *B. Seng*[2,1], N. Kerber[2,3], J. Bello[1], D. Schönke[2], F. Kammerbauer[2], M. Hehn[1], S. Mangin[1] and M. Kläui[2,3] *1. Institut Jean Lamour, Nancy, France; 2. Institute of Physics, Johannes Gutenberg Universität, Mainz, Germany; 3. Graduate School of Excellence MAINZ, Mainz, Germany*

AW-10. **Use of magnetic skyrmions for the calculation of shortest path.** *R. Tomasello*[1], G. Siracusano[2], F. Garesci[3], M. Raju[4], A. Giordano[5], Z. Zeng[6], C. Panagopoulos[4], M. Carpentieri[7] and G. Finocchio[5] *1. Institute of Applied and Computational Mathematics, Foundation for Research and Technology - Hellas, Heraklion, Italy; 2. Department of Electric, Electronic and Computer Engineering, University of Catania, Catania, Italy; 3. Department of Engineering, University of Messina, Messina, Italy; 4. Division of Physics and Applied Physics, School of Physics and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 5. Department of Mathematical and Computer Sciences Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 6. Key Laboratory of Nanodevices and Applications, Suzhou Institute of Nano-tech and Nano-bionics, Suzhou, China; 7. Department of Electric, Electronic and Computer Engineering, Polytechnic University of Bar, Bari, Italy*

AW-11. **Magnetic Phases of Skyrmion-Hosting $GaV_4S_{8-y}Se_y$ (y = 0, 2, 4, 8) Probed with Muon Spectroscopy.** *K.J. Franke*[1,2], B. Huddart[1], T.J. Hicken[1], F. Xiao[3,4], S. Blundell[5], F.L. Pratt[6], M. Crisanti[7,8], J.A. Barker[9], S.J. Clark[1], A. Štefančič[7], M. Ciomaga Hatnean[7], G. Balakrishnan[7] and T. Lancaster[1] *1. Centre for Materials Physics, Durham University, Durham, United Kingdom; 2. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. Laboratory for Neutron Scattering, Paul Scherrer Institut, Viligen, Switzerland; 4. Department of Chemistry and Biochemistry, University of Bern, Bern, Switzerland; 5. Department of Physics, Oxford University, Oxford, United Kingdom; 6. ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, Didcot, United Kingdom; 7. Department of Physics, University of Warwick, Coventry, United Kingdom; 8. Institut Laue-Langevin, Grenoble, France; 9. Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institut, Viligen, Switzerland*

AW-12. **Ferromagnetic Skyrmion nano-oscillators with voltage controlled magnetic anisotropy.** *J. Guo*[1], X. Zhang[2], P. Pong[1], Y. Wu[3], H. Chen[4], W. Zhao[5] and Y. Zhou[2] *1. The University of Hong Kong, Hong Kong, Hong Kong; 2. The Chinese University of Hong Kong, Shenzhen, Shenzhen, China; 3. Fudan University, Shanghai, China; 4. Foshan University, Foshan, China; 5. Beihang University, Beijing, China*

AW-13. **Micromagnetic study of skyrmions in magnetic multilayers.** *R. Tomasello*[1], A. Giordano[2], M. Carpentieri[3], G. Yu[4] and G. Finocchio[2] *1. Institute of Applied and Computational Mathematics, Foundation for Research and Technology - Hellas, Heraklion, Greece; 2. Department of Mathematical and Computer Sciences Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 3. Department of Electrical and Information Engineering, Polytechnic University of Bar, Bari, Italy; 4. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

AW-14. **Suppressing the Skyrmion Hall Effect by Modulated Spin-Orbit Torques.** *B. Göbel*[1], A. Mook[2], J. Henk[2] and I. Mertig[2,1] *1. Max Planck Institute of Microstructure Physics, Halle (Saale), Germany; 2. Martin Luther University Halle Wittenberg, Halle (Saale), Germany*

AW-15. Controlling the nucleation and annihilation of skyrmions with magnetostatic interactions. *N. Vidal-Silva*[1,2], A. Riveros[3], F. Tejo[3,2], J. Escrig[3,2] and D. Altbir[3,2] *1. University of Chile, Santiago, Chile; 2. Center for the Development of Nanoscience and Nanotechnology (CEDENNA), 917-0124 Santiago, Chile, Santiago, Chile; 3. Universidad de Santiago de Chile, Santiago, Chile*

AW-16. Skyrmions in Reduced Geometry. *K.L. Krycka*[1], J.J. Rhyne[1], J. Borchers[1], B. Balasubramanian[2,3] and D.J. Sellmyer[2,3] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Physics and Astronomy, University of Nebraska, Lincoln, NE, United States; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States*

AW-17. Structural and magnetic studies of the skyrmionic materials $GaV_4S_{8-y}Se_y$. A. Štefančič[1], *S.J. Holt*[1], C. Ritter[2], M.J. Gutmann[3], M.R. Lees[1] and G. Balakrishnan[1] *1. Department of Physics, University of Warwick, Coventry, United Kingdom; 2. Institut Laue Langevin, Grenoble, France; 3. ISIS Facility, Oxfordshire, United Kingdom*

AW-18. Unidirectional Manipulation of Magnetic Skyrmion Transmission via Asymmetric Modulation of Potential Energy Barrier. *D. Jung*[1], H. Han[1], N. Kim[1] and K. Lee[1] *1. School of Mechanical and Advanced Materials Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea*

AW-19. Manipulation of magnetic skyrmions in a locally modified synthetic antiferromagnetic racetrack. R. Loreto[1], X. Zhang[2], Y. Zhou[2], M. Esawa[3] and *C.I. Levartoski de Araujo*[1] *1. Physics, Universidade Federal de Viçosa, Viçosa, Brazil; 2. The Chinese University of Hong Kong, Shenzhen, China; 3. University of Tokyo, Tokyo, Japan*

AW-20. Writing Skyrmions with a Magnetic Dipole. D. Garanin[1], *D. Capic*[1], S. Zhang[2], X. Zhang[2] and E. Chudnovsky[1] *1. CUNY Graduate Center at Lehman College, Bronx, NY, United States; 2. PSE, KAUST, Thuwal, Saudi Arabia*

Session BA

MAGNETO-IONICS: NEW PHENOMENA, MATERIALS, AND APPLICATIONS

Mingzhong Wu, Chair
Colorado State University, Fort Collins, CO, United States

1:30

BA-01. Electrolyte-Based Electrostatic and Electrochemical Control of Ferromagnetism in Perovskite Oxides. ***(Invited)*** *C. Leighton*[1], J. Walter[1], H. Wang[1], B. Yu[1], G. Yu[1], A.J. Grutter[2], B.J. Kirby[2], J. Borchers[2], Z. Zhang[3], H. Zhou[3], T.R. Charlton[4], H. Ambaye[4], M. Fitzsimmons[4], P. Orth[1,5], B. Luo[1], T. Birol[1], B. Shklovskii[1], R. Fernandes[1], M. Greven[1] and D. Frisbie[1] *1. University of Minnesota, Minneapolis, MN, United States; 2. NIST Center for Neutron Research, Gaithersburg, MD, United States; 3. Advanced Photon Source, Argonne National Lab, Argonne, IL, United States; 4. Oak Ridge National Lab, Oak Ridge, TN, United States; 5. Iowa State University, Ames, IA, United States*

2:06

BA-02. Voltage-controlled on-off ferromagnetism in dense and nanoporous transition-metal oxides. ***(Invited)*** C. Navarro[1], A. Quintana Puebla[1], S. Robbennolt[1], A. Nicolenco[1], D. Baró[1], V. Sireus[1], E. Pellicer[1], J. Nogués[2,3], E. Menéndez[1] and *J. Sort*[1,3] *1. Physics, Universitat Autònoma de Barcelona, Cerdanyola del Vallès, Spain; 2. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and The Barcelona Institute of Science and Technology, Cerdanyola del Vallès, Spain; 3. ICREA, Barcelona, Spain*

2:42

BA-03. Magneto-Ionic Control of Magnetism in Thin Ferromagnetic Films. ***(Invited)*** *G. Beach*[1] *1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

3:18

BA-04. Magneto-Ionic Control of Oxide Heterostructures beyond the Interfaces. ***(Invited)*** P. Murray[2], D.A. Gilbert[3,4], A.J. Grutter[3], C.J. Jensen[1], A. Quintana[1], B.J. Kirby[3], D. Hernandez-Maldonado[5], M. Varela[5], Z.E. Brubaker[2,6], W. Liyanage[4], R.V. Chopdekar[2,7], V. Taufour[2], R.J. Zieve[2], J.R. Jeffries[6], E. Arenholz[7,8], Y. Takamura[2], J. Zhang[9], X. Zhang[9], J. Borchers[3] and *K. Liu*[1,2] *1. Georgetown University, Washington, DC, United States; 2. University of California, Davis, CA, United States; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. University of Tennessee, Knoxville, TN, United States; 5. Universidad Complutense de Madrid, Madrid, Spain; 6. Lawrence Livermore National Laboratory, Livermore, CA, United States; 7. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 8. Cornell High Energy Synchrotron Source, Ithaca, NY, United States; 9. King Abdullah University of Science & Technology, Thuwal, Saudi Arabia*

3:54

BA-05. **Ionically-controlled phase separation in cobaltite heterostructures. *(Invited)*** G. Rippy[1], L. Trinh[1], A.M. Kane[1], A. Ionin[1], M. Lee[1], R.V. Chopdekar[1], J. Christiansen-Salameh[1], D.A. Gilbert[2], A.J. Grutter[3], P. Murray[1], M. Holt[4], Z. Cai[4], K. Liu[5], Y. Takamura[1] and *R. Kukreja*[1] *1. University of California Davis, Davis, CA, United States; 2. University of Tennessee, Knoxville, TN, United States; 3. NIST, Gaithersburg, MD, United States; 4. Argonne National Laboratory, Lemont, IL, United States; 5. Georgetown University, Washington, DC, United States*

TUESDAY AFTERNOON 1:30 — RIO PAVILION 6

Session BB
ANTIFERROMAGNETIC SWITCHING
Roman Khymyn, Chair
University of Gothenburg, Gothenburg, Sweden

1:30

BB-01. **Current-induced switching of the Néel vector in antiferromagnetic insulators/heavy metal bilayers.** *L. Baldrati*[1], O. Gomonay[1], A. Ross[1,2], M. Filianina[1,2], R. Lebrun[1], R. Ramos[6], C. Leveille[1], T.R. Forrest[3], F. Maccherozzi[3], F. Kronast[4], S. Valencia[4], J. Sinova[1,2], E. Saitoh[5,6] and M. Kläui[1,7] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Diamond Light Source, Didcot, United Kingdom; 4. Helmholtz-Zentrum Berlin fur Materialien und Energie, Berlin, Germany; 5. Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 6. Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 7. Center for Quantum Spintronics, NTNU, Trondheim, Norway*

1:42

BB-02. **Néel order variation in IrMn/CoFeB bilayer indicated by combined electrical and spectroscopic approach.** *Y. Huang*[1], C. Yang[2], H. Wu[3], X. Che[3], K. Wang[3], C. Lai[2] and Y. Tseng[1] *1. National Chiao Tung University, Hsin-Chu, Taiwan; 2. National Tsing Hua University, Hsin-Chu, Taiwan; 3. University of California, Los Angles, Los Angles, CA, United States*

1:54

BB-03. **Reliable Electrical Switching of Tri-State Antiferromagnetic Néel Order in α-Fe_2O_3 Epitaxial Films.** *Y. Cheng*[1], S. Yu[1], M. Zhu[2], J. Hwang[2] and F. Yang[1] *1. Department of Physics, The Ohio State University, Columbus, OH, United States; 2. Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, United States*

2:06

BB-04. **Anisotropic Magnetoresistance and Nontrivial Spin Magnetoresistance in Pt/α-Fe_2O_3 Bilayers: Evidence for Magnetic Proximity Effect.** *S. Yu*[1], Y. Cheng[1], A.S. Ahmed[1], M. Zhu[1], J. Hwang[1] and F. Yang[1] *1. The Ohio State University, Columbus, OH, United States*

2:18

BB-05. **Spin-Torque Induced Electrical Switching of Antiferromagnetic MnN.** *M. Dunz*[1], T. Matalla-Wagner[1] and M. Meinert[1] *1. Center for Spinelectronic Materials and Devices, Department of Physics, Bielefeld University, Bielefeld, Germany*

2:30

BB-06. **Terahertz detector based on an antiferromagnetic spin-Hall oscillator.** *V. Puliafito*[1], I. Medlej[2], I. Lisenkov[3], M. Carpentieri[4], B. Azzerboni[1], A.N. Slavin[5] and G. Finocchio[1] *1. University of Messina, Messina, Italy; 2. Lebanese University, Hadeth Beirut, Lebanon; 3. Winchester Technologies LLC, Boston, MA, United States; 4. Politecnico di Bari, Bari, Italy; 5. Oakland University, Rochester, MI, United States*

2:42

BB-07. **Magnetoresitance Studies of the Tetragonal CuMnAs Single Crystal.** J. Volny[1], K. Vyborny[2], D. Wagenknecht[1], E. Duverger-Nédellec[1], R. Colman[1] and *K. Uhlirova*[1] *1. Department of Condensed Matter Physics, Charles University, Prague, Czechia; 2. Department of Spintronics and Nanoelectronics, Institute of Physics AS CR, Prague, Czechia*

2:54

BB-08. **Theory of Spin-Current-Induced Auto-Oscillations in a Biaxial Antiferromagnet.** *A. Parthasarathy*[1], E. Cogulu[2], A.D. Kent[2] and S. Rakheja[1] *1. Department of Electrical and Computer Engineering, New York University, Brooklyn, NY, United States; 2. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States*

3:06

BB-09. **Electrical detection of Néel vector of a uniaxial antiferromagnetic insulator.** *J. Li*[1], W. Yuan[1], M. Lohmann[1] and J. Shi[1] *1. Department of Physics and Astronomy, University of California, Riverside, Riverside, CA, United States*

3:18

BB-10. **Imaging Antiferromagnetic Domains in Nickel-oxide Thin Films by Magneto-optical Voigt Effect.** *J. Xu*[1], C. Zhou[1], M. Jia[1], D. Shi[1], C. Liu[1], H. Chen[1], G. Chen[2], G. Zhang[3], Y. Liang[3], J. Li[4], W. Zhang[5] and Y. Wu[1] *1. Fudan University, Shanghai, China; 2. University of California, Davis, Davis, CA, United States; 3. Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China; 4. Shanghai Synchrotron Radiation Facility, Shanghai, China; 5. Oakland University, Rochester, MI, United States*

3:30

BB-11. **Current-driven phase transition in a gradient-doped FeRh nanopillar: spin injection-triggered phase transformation and memristivity.** R.C. Temple[1], J. Massey[1], T. Almeida[2], M. Rosamond[3], E. Linfield[3], K. Fallon[2], D. McGrouther[2], T. Moore[1], S. McVitie[2] and *C.H. Marrows*[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

3:42

BB-12. **Current-induced switching of antiferromagnet/non-magnet metallic structures.** *S. DuttaGupta*[1,2], A. Kurenkov[1,2], O. Tretiakov[3], G. Krishnaswamy[4], G. Sala[4], V. Krizakova[4], F. Maccherozzi[5], S.S. Dhesi[5], P. Gambardella[4], S. Fukami[2,1] and H. Ohno[2,1] *1. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. School of Physics, University of New South Wales, Kensington, NSW, Australia; 4. Department of Materials, ETH Zurich, Zurich, Switzerland; 5. Diamond Light Source, Didcot, United Kingdom*

3:54

BB-13. **Tailorable Néel order via spin-orbit torque and the effect on field-free switching.** *C. Yang*[1] and C. Lai[2] *1. Material Science and Engineering, National Tsing Hua University, Hsing Chu, Taiwan; 2. Material Science and Engineering, National Tsing Hua University, Hsing Chu, Taiwan*

4:06

BB-14. **Antiferromagnetic PtMn memory devices controlled by electric current.** J. Shi[1], *V. Lopez*[2], F. Garesci[3], C. Wang[1], H. Almasi[1], M. Grayson[1], G. Finocchio[4] and P. Khalili Amiri[1] *1. Electrical Engineering and Computer Engineering, Northwestern University, Evanston, IL, United States; 2. Electrical Engineering and Computer Engineering, Northwestern University, Evanston, IL, United States; 3. Department of Engineering, University of Messina, Messina, Italy; 4. 3Department of Mathematical and Computer Sciences, Physical Science and Earth Sciences, University of Messina, Messina, Italy*

4:18

BB-15. **Non-Spin Torque Origin of Current-Induced Switching in an Antiferromagnet Insulator/Pt Bilayer Film.** *P. Zhang*[1] and L. Liu[1] *1. Massachusetts Institute of Technology, Cambridge, MA, United States*

Session BC
SPIN-ORBIT TORQUE MRAM

Yu Zhang, Chair
University of Arizona, Tucson, AZ, United States

1:30

BC-01. **Spin-Orbit Torque Switching Scheme Based on Micromagnetic States.** *C. Garg*[1], J. Zhang[2], T. Phung[1], C. Rettner[1], B. Hughes[1], S. Yang[1], Y. Jiang[2] and S.S.P. Parkin[1] *1. IBM Almaden Research Center, San Jose, CA, United States; 2. University of Science & Technology, Beijing, China*

1:42

BC-02. **Iridium Enabled Field-free Spin-orbit Torque Switching of Perpendicular Magnetic Tunnel Junction Device.** *Y. Liu*[1,3], B. Zhou[1,3], Z. Dai[2,3], E. Zhang[2,3] and J. Zhu[2,3] *1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Electrical & Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States*

1:54

BC-03. **Ultrafast and energy-efficient spin–orbit torque switching in compensated ferrimagnets.** *K. Cai*[1], Z. Zhu[1], J.M. Lee[1], R. Mishra[1], L. Ren[1], P. He[1], G. Liang[1], K.L. Teo[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

2:06

BC-04. **Gate-Tunable Inverse Spin Hall Effect in Ultrathin Pt. *(Invited)*** *S. Dushenko*[1,2] *1. The Institute for Research in Electronics and Applied Physics, University of Maryland, College Park/ National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan*

2:42

BC-05. **Process control of tungsten β-phase window for spin-orbit torques MRAM applications.** *K. Vudya Sethu*[1,2], S. Couet[1], J. Swerts[1], B. Soree[1,2], J. De Boeck[1,2], G.S. Kar[1] and K. Garello[1] *1. Imec, Leuven, Belgium; 2. ESAT, KU Leuven, Leuven, Belgium*

2:54

BC-06. **Design of an Erasable Spintronics Memory Based on Current-path-dependent Field-free Spin Orbit Torque.** H. Zhou[1], Z. Wang[1], Z. Li[1], *C. Wang*[1], B. Wu[1] and W. Zhao[1] *1. Beihang University, Beijing, China*

3:06

BC-07. **Ion Beam Etching Dependent of Spin-orbit Torque Memory Devices with Low Switching Current Density Enhanced by Hf Interlayers.** H. Ren[1,2], *S. Wu*[3], E. Fullerton[1,2] and J. Sun[3] *1. Materials Science and Engineering, University of California San Diego, La Jolla, CA, United States; 2. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States; 3. IBM TJ Watson Research Center, Yorktown Heights, NY, United States*

3:18

BC-08. **Highly Efficient Spin-Orbit Torque Magnetization Switching in a Perpendicularly Magnetized Ferromagnetic-Semiconductor Single Layer: Damping Like Torque and Field Like Torque.** *M. Jiang*[1], H. Asahara[1], S. Sato[1], S. Ohya[1,2] and M. Tanaka[1,2] *1. Dept. of Electrical Engineering, The Univ. of Tokyo, Tokyo, Japan; 2. Center for Spintronics Research Network (CSRN), Graduate School of Engineering, The Univ. of Tokyo, Tokyo, Japan*

3:30

BC-09. **Toggle Mode Spin-Orbit Torque Driven Perpendicular Magnetic Anisotropy MRAM.** *N. Hassan*[1], S.P. Lainez-Garcia[1], F. Garcia-Sanchez[2,3] and J.S. Friedman[1] *1. Electrical & Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States; 2. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 3. Departamento de Física Aplicada, Universidad de Salamanca, Salamanca, Spain*

3:42

BC-10. **Materials Requirements of High-Speed and Low-Power Spin-Orbit-Torque Magnetic Random-Access Memory.** *X. Li*[1,2], C. Yao[2], M. DC[1], W. Tsai[3], S. Lin[3] and S. Wang[1,2] *1. Materials Science and Engineering, Stanford University, Stanford, CA, United States; 2. Electrical Engineering, Stanford University, Stanford, CA, United States; 3. TSMC, Hsinchu, Taiwan*

3:54

BC-11. **Spin-Based Comparator Using Spin Hall Effect Driven Nanomagnets.** *S. Wasef*[1], M. Alawein[1], S. Amara[1] and H. Fariborzi[1] *1. CEMSE, KAUST, Jeddah, Saudi Arabia*

4:06

BC-12. **Spin orbit torque switching and thermal stability factor of W/CoFeB/MgO-based three terminal magnetic tunnel junctions.** *S. Isogami*[1], Y. Shiokawa[2], A. Tsumita[2], T. Taniguchi[3], S. Mitani[1], T. Sasaki[2] and M. Hayashi[1,4] *1. Research Center for Magnetic and Sintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Technology & Intellectual Property HQ, TDK Corporation, Chiba, Japan; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 4. The University of Tokyo, Tokyo, Japan*

4:18

BC-13. **Reduced thermal variation of perpendicular magnetic anisotropy in magnetically stiffened dual-W composite storage layer for STT-MRAM.** *J. Chatterjee*[1], A. Chavant[1], F. Fettar[2], S. Aufftet[1], C. Ducruet[3], I. Joumard[1], L. Vila[1], R. Sousa[1], I. Prejbeanu[1] and B. Dieny[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 2. Univ. Grenoble Alpes, Inst. NEEL, Grenoble, France; 3. Crocus Technology, Grenoble, France*

TUESDAY AFTERNOON 1:30 | BRASILIA 1

Session BD

MAGNETIZATION DYNAMICS: ULTRAFAST AND QUASIPARTICLE COUPLING I

Giovanni Finocchio, Chair
University of Messina, Messina, Italy

1:30

BD-01. **Direct experimental evidence of inertial dynamics in ferromagnetic thin films.** *K. Neeraj*[1], N. Awari[2], S. Kovalev[2], D. Polley[1], N. Zhou Hagström[1], A. Semisalova[9], B. Green[2], S. Arekapudi[3], V. Scalera[4], O. Hellwig[3,5], J. Wegrowe[6], M. Gensch[2,7] and S. Bonetti[1,8] *1. Department of Physics, Stockholm University, Stockholm, Sweden; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 4. DIETI, University of Naples Federico II, Naples, Italy; 5. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 6. LSI, Ecole Polytechnique, CEA, CNRS, Palaiseau, France; 7. Institute of Optics and Atomic Physics, TU Berlin, Berlin, Germany; 8. Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venezia-Mestre, Italy; 9. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany*

1:42

BD-02. **Temperature Influence of Magnetization Dynamics in CoFeB Thin Films with TR-MOKE.** *D.M. Lattery*[1], D. Zhang[2], D. Huang[1], P.A. Crowell[3], J. Wang[2] and X. Wang[1,2] *1. Mechanical Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 3. Physics and Astronomy, University of Minnesota Twin Cities, Minneapolis, MN, United States*

1:54

BD-03. **Light and THz induced magnetization dynamics in ultrathin PMA garnets.** *L. Soumah*[1], S. Bonetti[1], A. Anane[2], V. Unikandanunni[1] and D. Polley[1] *1. Stockholm University, Stockholm, Sweden; 2. Universite Paris Sud CNRS Thales, Palaiseau, France*

2:06

BD-04. **Magnetization dynamics of magnetotactic bacteria characterized by ferromagnetic resonance, micromagnetic simulations and scanning transmission x-ray microscopy ferromagnetic resonance.** *T. Feggeler*[1], B.W. Zingsem[1,2], R. Meckenstock[1], M. Winklhofer[3], D. Spoddig[1], H. Ohldag[4], A. Ney[5], M. Farle[1], H. Wende[1] and K. Ollefs[1] *1. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany; 2. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich GmbH, Jülich, Germany; 3. School of Mathematics and Science, University of Oldenburg, Oldenburg, Germany; 4. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Institute of Semiconductor and Solid State Physics, Johannes Kepler University, Linz, Austria*

2:18

BD-05. **Anisotropic spin relaxation in epitaxial cobalt films following ultrafast demagnetization.** *V. Unikandanunni*[1], R. Medapalli[3], E. Fullerton[3] and S. Bonetti[1,2] *1. Department of Physics, Stockholm University, Stockholm, Sweden; 2. Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venice, Italy; 3. Center for Memory and Recording Research, University of California San Diego, San Diego, CA, United States*

2:30

BD-06. **Analysis of the linear relationship between asymmetry and magnetic moment at the M-edge of 3d transition metals.** S. Jana[1,7], R. Malik[1], Y. Kvashnin[1], I.L. Locht[1], R. Knut[1], R. Stefanuik[1], I. Di Marco[1,6], A. Yaresko[4], M. Ahlberg[2], R. Chimata[1,8], M. Battiato[5], J. Soderstrom[1], O. Eriksson[1,3] and *O. Karis*[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. School of Science and Technology, Orebro University, Orebro, Sweden; 4. Max-Planck-Institut fur Festkorrperforschung, Stuttgart, Germany; 5. Nanyang Technological University, Singapore, Singapore; 6. Department of Physics, POSTECH, Pohang, Pohang, The Republic of Korea; 7. Helmholtz-Zentrum Berlin, Berlin, Germany; 8. Argonne National Laboratory, Lemont, IL, United States*

2:42

BD-07. **Ab-initio spin-lattice dynamics of low-dimensional clusters from tight-binding.** *D. Thonig*[1], P. Bessarab[3,4], M. Pereiro[1] and O. Eriksson[1,2] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. School of Science and Technology, Örebro University, Örebro, Sweden; 3. Science Institute of the University of Iceland, Reykjavik, Iceland; 4. Institute of Theoretical Physics and Astrophysics, University of Kiel, Kiel, Germany*

2:54

BD-08. **Terahertz induced Demagnetization in Magnetic Multilayers.** *D. Polley*[1], K. Neeraj[1], V. Unikandanunni[1], S. Urazhdin[3] and S. Bonetti[1,2] *1. Department of Physics, Stockholm University, Stockholm, Sweden; 2. Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venice, Italy; 3. Department of Physics, Emory University, Atlanta, GA, United States*

3:06

BD-09. **Spin Wave Relaxation by Eddy Currents in YIG/Pt Bilayers.** *S.A. Bunyaev*[1], A. Kreil[2], D.A. Bozhko[2], R.O. Serha[2], V.I. Vasyuchka[2], R.V. Verba[3], M.P. Kostylev[4], G.N. Kakazei[1], B. Hillebrands[2] and A.A. Serga[2] *1. Departamento de Fisica e Astronomia, IFIMUP-IN, Porto, Portugal; 2. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universitat Kaiserslautern, Kaiserslautern, Germany; 3. Institute of Magnetism, Kyiv, Ukraine; 4. Faculty of Engineering and Mathematical Sciences, Physics, The University of Western Australia, Crawley, WA, Australia*

3:18

BD-10. **Microscopic Mechanisms of Level Attraction for a Coupled Magnon System in a Microwave Cavity.** *I. Proskurin*[1,2], R. Macedo[3] and R.L. Stamps[1] *1. Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation; 3. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom*

3:30

BD-11. **Abnormal anti-crossing dispersion in photon-magnon coupling.** *B. Bhoi*[1], B. Kim[1] and S. Kim[1] *1. Department of Materials Science and Engineering, Seoul National University, Seoul, The Republic of Korea*

3:42

BD-12. **Lattice dynamics in magnetostrictive heterostructures excited by ps acoustic pulses.** S. Zeuschner[2,3], *K. Dumesnil*[1], T. Parpiiev[4], T. Pezeril[4], A. Hillion[1], A. Anane[5], J. Pudell[2], L. Willig[2], M. Rossle[2], M. Herzog[2], A. von Reppert[2] and M. Bargheer[3,2] *1. Institut Jean Lamour, Nancy, France; 2. University of Potsdam, Potsdam, Germany; 3. Helmholtz Zentrum, Berlin, Germany; 4. Institut des Molécules et Matériaux, Le Mans, France; 5. UMphi, Saclay, France*

3:54

BD-13. **Gigahertz Frequency Antiferromagnetic Resonance and Strong Magnon-Magnon Coupling in the Layered Crystal $CrCl_3$.** D. MacNeill[1], *J.T. Hou*[2], D. Klein[1], P. Zhang[2], J. Pablo[1] and L. Liu[2] *1. Physics, Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States*

4:06

BD-14. **Greatly Enhanced Magnetoelastic Excitation of a Single Nanomagnet by Focusing Surface Acoustic Waves.** *W. Yang*[1], M. Jaris[1] and H. Schmidt[1] *1. University of California Santa Cruz, Santa Cruz, CA, United States*

4:18

BD-15. Controlling the magnon-photon interface via a cavity Fano resonance. J. Gollwitzer[1], L. Bocklage[1,2], R. Röhlsberger[1,2] and *G. Meier*[3,2] *1. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 3. Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

TUESDAY AFTERNOON 1:30 | BRASILIA 3

Session BE
SPIN CALORITRONICS
Felix Casanova, Chair
CIC nanoGUNE, Donostia-San Sebastian, Spain

1:30

BE-01. Thermal Gradients and Anomalous Nernst Effects in Membrane-supported Non-Local Spin Valves. R.K. Bennet[1], A. Hojem[1,2] and *B.L. Zink*[1] *1. Physics & Astronomy, University of Denver, Denver, CO, United States; 2. Physics, UC San Diego, La Jolla, CA, United States*

1:42

BE-02. Sign reversal of anomalous and planar Nernst effects at low temperature for a $C1_b$-type NiMnSb half-Heusler alloy thin film. *H. Sharma*[1,2], Z. Wen[3], K. Takanashi[1,4] and M. Mizuguchi[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. CREST, Japan Science and Technology Agency, Kawaguchi, Japan; 3. National Institute for Materials Science, Tsukuba, Japan; 4. Center for Spintronics Research Network (CSRN), Tohoku University, Sendai, Japan*

1:54

BE-03. Large anomalous Nernst and Hall effects without magnetization scaling in $Fe_{1-x}Sn_x$ ordered alloy thin films. *M. Mizuguchi*[1], H. Sharma[1], Y. Goto[2], A. Maeno[2], T. Nagahama[2], K. Watanabe[3], M. Tsujikawa[3] and M. Shirai[3] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Hokkaido University, Sapporo, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

2:06

BE-04. Light-induced thermal spin current. *Y. Chen*[1] and S. Huang[1] *1. Physics, National Taiwan University, Taipei, Taiwan*

2:18

BE-05. Magnonic Spin Fluctuation in CuMn. *P. Wu*[1], Y. Tu[1], D. Qu[2], S. Lee[2] and S. Huang[1] *1. National Taiwan University, Taipei, Taiwan; 2. Institute of Physics, Academia Sinica, Taipei, Taiwan*

2:30

BE-06. **Surface acoustic wave induced DC spin current in spin-orbit heterostructures.** *T. Kawada*[1*], M. Kawaguchi[1], T. Funato[2], H. Kohno[2] and M. Hayashi[1,3] *1. Physics, The University of Tokyo, Tokyo, Japan; 2. Physics, Nagoya University, Nagoya, Japan; 3. National Institute for Materials Science, Tsukuba, Japan*

2:42

BE-07. **Spin Transport at Heavy Metal/Ferromagnet Interfaces: Effective Spin-mixing Conductance and Spin Memory Loss. *(Invited)*** *L. Zhu*[1], D. Ralph[1] and R. Buhrman[1] *1. Cornell University, Ithaca, NY, United States*

3:18

BE-08. **Disentangling the anomalous Nernst, spin Seebeck effect, and interfacial effects in epitaxial metal/Graphene/Cobalt heterostructures.** *A. Anadón*[1], R. Guerrero[1], P. Jiménez-Cavero[2,3], A. Gudín[1], J. Díez-Toledano[1], P. Olleros[1], I. Lucas[2,3], L. Morellón[2,3], P. Antonio[3,4], M. Ibarra[2,3], R. Miranda[1,5], J. Camarero[1,5] and P. Perna[1] *1. IMDEA Nanociencia, Madrid, Spain; 2. Universidad de Zaragoza, Instituto de Nanociencia de Aragón, Zaragoza, Spain; 3. Física de la materia condensada, Universidad de Zaragoza, Zaragoza, Spain; 4. CSIC, 7Instituto de Ciencia de Materiales de Aragón, Zaragoza, Spain; 5. Física de la materia condensada, Instituto "Nicolás Cabrera" & IFIMAC, UAM, Madrid, Spain*

3:30

BE-09. **Thermal effects in lateral spin valves.** G. Stefanou[1], F. Menges[2], *K. Moran*[1], M. Ali[1], M. Rosamond[4], B. Gotsmann[3], R. Allenspach[3], G. Burnell[1] and B. Hickey[1] *1. Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. University of Colorado, Boulder, CO, United States; 3. IBM, Zurich, Switzerland; 4. Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

3:42

BE-10. **Magnetic Precession Induced by Surface Acoustic Waves in Magnetostrictive Nanostripes.** *D. Castilla*[1], J.L. Prieto[1], M. Muñoz[1,2], G. Fuentes[1] and M. Sinusía[1] *1. Universidad Politécnica de Madrid, Madrid, Spain; 2. IMN-Instituto Micro y Nanotecnología, CSIC, Madrid, Spain*

3:54

BE-11. **Enhancement of the spin pumping effect by magnon confluence process in YIG/Pt bilayers.** T.B. Noack[1], V.I. Vasyuchka[1], D.A. Bozhko[1,2], B. Heinz[1], P. Frey[1], D.V. Slobodianiuk[3], O. Prokopenko[3], G.A. Melkov[3], P. Kopietz[4], B. Hillebrands[1] and *A.A. Serga*[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom; 3. Faculty of Radiophysics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 4. Institut für Theoretische Physik, Universität Frankfurt, Frankfurt, Germany*

4:06

BE-12. **Enhanced magnon spin transport, magnon polarons and vector spin Seebeck effect detection in $NiFe_2O_4$ thin films on lattice-matched substrates.** *T. Kuschel*[1] *1. Bielefeld University, Bielefeld, Germany*

4:18

BE-13. **Enhanced spin Seebeck effect in exchange-biased $MgO/Fe_3O_4/Cu$ multilayers.** *V. Kalappattil*[1], H. Nazari[1], S.G. Bhat[2], R. Das[1], A.P. Kumar[2], M. Phan[1] and H. Srikanth[1] *1. physics, University of South Florida, Tampa, FL, United States; 2. physics, Indian Institute of Science, Bangalore, India*

TUESDAY AFTERNOON 1:30 — RIO PAVILION 1

Session BF

NANO-ARRAYS, NOVEL STRUCTURES, AND SELF-ASSEMBLY II

Ahmed El-Gendy, Chair

University of Texas at El Paso, El Paso, TX, United States

1:30

BF-01. **Realisation of a 3D Frustrated Magnetic Nanowire Lattice. *(Invited)*** *S. Ladak*[1], A. May[1], A. Van Den Berg[1], M. Hunt[1] and A. Hejazi[1] *1. School of Physics and Astronomy, Cardiff University, Cardiff, United Kingdom*

2:06

BF-02. **First Order Reversal Curves (FORCs) of Nano-engineered 3D Fe-Co Structures.** *M. Al Mamoori*[1,2], C. Schröder[3], J. Pieper[1], L. Keller[1], M. Huth[1] and J. Müller[1] *1. Institute of Physics, Goethe-University Frankfurt, Frankfurt am Main, Germany; 2. Institute of Materials Science, Technical University of Darmstadt, Darmstadt, Germany; 3. Institute for Applied Materials Research, Bielefeld University of Applied Science, Bielefeld, Germany*

2:18

BF-03. **Determination of Demagnetizing Factors of Nanowire Arrays by Combining Experimental Data From First-Order Reversal Curves and Ferromagnetic Resonance.** *K. Muster*[1] and R. Heindl[1] *1. Physics & Astronomy, San Jose State University, San Jose, CA, United States*

2:30

BF-04. **A New Approach of Constructing 3D Metallic Nanostructures on Arbitrarily-Shaped Substrate.** *F. Chen*[1], R. Peng[1] and M. Wang[1] *1. Nanjing University, Nanjing, China*

2:42

BF-05. **Inter-particle magnetic correlations and fluctuations dynamics in assemblies of Fe3O4 nanoparticles.** ***(Invited)*** *K. Chesnel*[1], J. Rackham[1], B. Newbold[1], D. Griner[1], D. Smith[1], R. Harrison[2] and M. Transtrum[1] *1. Physics, BYU, Provo, UT, United States; 2. Chemistry, BYU, Provo, UT, United States*

3:18

BF-06. **Modeling Magnetic Correlations in Magnetite Nanoparticle Assemblies Using X-ray Magnetic Scattering Data.** *J. Rackham*[1], K. Chesnel[1], M. Transtrum[1], A. Reid[2], R. Harrison[3], B. Newbold[1], S. Kotter[1], D. Smith[1] and D. Griner[1] *1. Physics, Brigham Young University, Provo, UT, United States; 2. SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 3. Chemistry, Brigham Young University, Provo, UT, United States*

3:30

BF-07. **Magnetic small-angle neutron scattering from self-assembled iron oxide nanoparticles influenced by field.** N. Nandakumaran[1], T. Köhler[2], *L. Barnsley*[2], M. Feygenson[3], A. Feoktystov[2], O. Petracic[1] and T. Brückel[1] *1. Jülich Centre for Neutron Science (JCNS-2), Forschungszentrum Jülich GmbH, Jülich, Germany; 2. Jülich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), Forschungszentrum Jülich GmbH, Garching, Germany; 3. Jülich Centre for Neutron Science (JCNS-1), Forschungszentrum Jülich GmbH, Jülich, Germany*

3:42

BF-08. **Magnetic Field Study on Piezotronic and Piezo-Phototronic in ZnO and ZnO/Co_3O_4 Core/shell Nanowire Arrays.** *W. Zhou*[1], S. Yan[1], Z. Zheng[1], S. Rai[1], M. Bhatt[1], L. Malkinski[1] and M. Retana[1] *1. Advanced Materials Research Institute, University of New Orleans, New Orleans, LA, United States*

3:54

BF-09. **The Limits of Frustration in Severely Deformed Fe-Cu Magnetic Alloys.** M. Stückler[1], L. Weissitsch[1], S. Wurster[1], H. Krenn[2], P. Felfer[3], R. Pippan[1] and *A. Bachmaier*[1] *1. Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; 2. Institute of Physics, University of Graz, Graz, Austria; 3. Department of Materials Science and Engineering, Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany*

4:06

BF-10. **In-situ Growth Trajectory of Ni Nano Dendrites by Liquid Cell Electron Transmission Microscopy.** *L. Zheng*[1,2], S. Zhao[2], J. Jiao[2], D. Zhou[1], M. Zhu[1], W. Li[1] and H. Zheng[3] *1. Central Iron & Steel Research Institute, Beijing, China; 2. Hebei University of Engineering, Handan, China; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

4:18

BF-11. **Thermally activated dynamics in artificial Ising spin chains.** N. Strandqvist[1], R. Rowan-Robinson[1], V. Kapaklis[1], B. Hjörvarsson[1], P. Steadman[4], R. Fan[4], O. Bikondoa[2,3] and *T.P. Hase*[2] *1. Materials Physics, Uppsala University, Uppsala, Sweden; 2. Physics, University of Warwick, Coventry, United Kingdom; 3. XMaS Beamline, European Synchrotron Radiation Facility, Grenoble, France; 4. Beamline I10, Diamond Light Source, Didcot, United Kingdom*

TUESDAY AFTERNOON 1:30 — RIO PAVILION 3

Session BG

MAGNETIC CHARACTERIZATION II: SCANNING PROBE, AND RESONANCE TECHNIQUES

Erick Burgos Parra, Chair
CNRS, Paris, France

1:30

BG-01. **MRI of Magnetic Thin Film Structures and Devices.** *S.E. Russek*[1] *1. NIST, Boulder, CO, United States*

1:42

BG-02. **Electrodynamic theory of ferromagnetic resonance and its applications in precise measurements of ferromagnetic linewidth, permeability tensor and saturation magnetization.** *J. Krupka*[1], A. Pacewicz[2], B. Salski[2] and P. Kopyt[2] *1. Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Warsaw, Poland; 2. Institute of Radioelectronics and Multimedia Technology, Warsaw University of Technology, Warsaw, Poland*

1:54

BG-03. **Withdrawn**

2:06

BG-04. **Control and Local Measurement of the Spin Chemical Potential in a Magnetic Insulator.** ***(Invited)*** *C. Du*[1], T. Van der Sar[2], T. Zhou[3], P. Upadhyaya[4], F. Casola[3], H. Zhang[3], M. Onbasli[5], C. Ross[5], R. Walsworth[3], Y. Tserkovnyak[6] and A. Yacoby[3] *1. Physics, University of California, San Diego, La Jolla, CA, United States; 2. Delft University of Technology, Delft, Netherlands; 3. Harvard University, Cambridge, MA, United States; 4. Purdue University, West Lafayette, IN, United States; 5. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 6. Physics, University of California, Los Angeles, Los Angeles, CA, United States*

2:42

BG-05. **Emerging widefield magnetic imaging applications using NV-diamond magnetic microscopy.** *P. Kehayias*[1], E. Bussmann[1], T. Lu[1] and A. Mounce[1] *1. Sandia National Labs, Albuquerque, NM, United States*

2:54

BG-06. **Interferometric Scanning Transmission Electron Microscopy of a Landau Domain.** *A. Greenberg*[1], F. Yasin[1] and B.J. McMorran[1] *1. Physics, University of Oregon, Eugene, OR, United States*

3:06

BG-07. **Scanning Superconducting Quantum Interference Device (SQUID) setup for studies of magnetic materials under uniaxial stress or strain at millikelvin temperatures.** *J. Franklin*[1], D. Davino[1] and I. Sochnikov[1] *1. Physics Department, University of Connecticut, Storrs, CT, United States*

3:18

BG-08. **Validated Nano Scanning Hall Microscopy.** *M. Gerken*[1], D. Momeni Pakdehi[1], T. Weimann[1], A. Solignac[2], K. Pierz[1], S. Sievers[1] and H. Schumacher[1] *1. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; 2. SPEC, CEA, CNRS, Université Paris-Saclay, Paris, France*

3:30

BG-09. **Local Spin Exchange Microscopy by Chiral Molecules Adsorbed on an AFM Tip.** *A. Ziv*[1], A. Saha[2], H. Alpern[1], N. Sukenik[1], L. Tomasz Baczewski[3], S. Yochelis[1], M. Reches[2] and Y. Paltiel[1] *1. Applied Physics, The Hebrew University, Jerusalem, Israel; 2. Institute of Chemistry, The Hebrew University, Jerusalem, Israel; 3. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland*

3:42

BG-10. **Chirality probed in ferromagnetic and synthetic antiferromagnetic multilayers by quantitative MFM analysis at room temperature.** *F. Ajejas*[1], W. Legrand[1], A. Haykal[2], Y. Sassi[1], A. Finco[2], S. Chouaieb[2], D. Maccariello[1], S. Collin[1], K. Bouzehouane[1], A. Vechiola[1], N. Reyren[1], V. Cros[1], V. Jacques[2] and A. Fert[1] *1. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Laboratoire Charles Coulomb, Université de Montpellier and CNRS, Montpellier, France*

3:54

BG-11. **Imaging Nanoscale Magnetization Using Scanning-Probe Magneto-Thermal Microscopy.** *C. Zhang*[1], J. Bartell[1], J. Karsch[1], I. Gray[1] and G. Fuchs[1] *1. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States*

4:06

BG-12. ***In situ* Compensation Method for High-Precision and High-Sensitivity Integral Magnetometry.** *K. Gas*[1] and M. Sawicki[1] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

TUESDAY AFTERNOON 1:30 — MIRANDA 7

Session BH
PATTERNED STRUCTURES AND ARTIFICIAL SPIN ICE
Yuan-Chieh Tseng, Chair
National Chiao-Tung University, Hsin-Chu, Taiwan

1:30

BH-01. **Creating 3D-Magnetic Textures in Synthetic Antiferromagnets by Focused Ion Beam Irradiation.** *F. Samad*[1,2], L. Koch[2], G. Hlawacek[1], S. Arekapudi[2], M. Lenz[1] and O. Hellwig[1,2] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany; 2. Chemnitz University of Technology, Chemnitz, Germany*

1:42

BH-02. **Low temperature superspin glass behavior in a Co/Ag multilayer.** E. Navarro[1], M. Alonso[1], A. Ruiz[1], C. Magen[2], U. Urdiroz[1], F. Cebollada[3], L. Balcells[4], B. Martínez[4], *J.M. González*[1] and F. Palomares[1] *1. Nanostructures and Surfaces, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Departamento de Materiales Magnéticos, Instituto de Ciencia de Materiales de Aragón, Zaragoza, Spain; 3. POEMMA-CEMDATIC, Universidad Politécnica de Madrid, Madrid, Spain; 4. Magnetic Materials and Functional Oxides, Institut de Ciència de Materials de Barcelona, Barcelona, Spain*

1:54

BH-03. **Thermally induced domain wall fluctuation in an antiferromagnetically ordered square artificial spin ice.** *S. Roy*[1], X.M. Chen[1], B.W. Farmer[2], J.S. Woods[2], S. Dhuey[3], W. Hu[4], C. Mazzoli[4], S.B. Wilkins[4], I.K. Robinson[5], L.E. DeLong[2] and J.T. Hastings[6] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Department of Physics, University of Kentucky, Lexington, KY, United States; 3. Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. NSLSII, Brookhaven National Laboratory, Upton, NY, United States; 5. Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY, United States; 6. Department of Electrical and Computer Engineering, University of Kentucky, Lexington, KY, United States*

2:06

BH-04. **Magnetic order and energy-scale hierarchy in artificial spin ice.** *H. Stopfel*[1,2], E. Östman[2], I. Chioar[2], D. Greving[3], U.B. Arnalds[4], T.P. Hase[3], A. Stein[5], B. Hjörvarsson[2] and V. Kapaklis[2]
1. Engineering Sciences, Uppsala University, Uppsala, Sweden; 2. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Physics, University of Warwick, Coventry, United Kingdom; 4. Science Institute, University of Iceland, Reykjavik, Iceland; 5. Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY, United States

2:18

BH-05. **Towards artificial Ising spin glasses.** *M.D. Saccone*[1], A. Scholl[2], S. Velten[3,4], S. Dhuey[5], K. Hofhuis[6,7], C. Wuth[4], Y. Huang[8], Z. Chen[9], R.V. Chopdekar[2] and A. Farhan[2,7]
1. Physics, University of California Santa Cruz, Santa Cruz, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Material Sciences Department, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Institut für Nanostruktur- und Festkörperphysik, Universität Hamburg, Hamburg, Germany; 5. Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 6. Department of Materials, Laboratory for Mesoscopic systems, Zurich, Switzerland; 7. Laboratory for Multiscale Materials Experiments, Paul Scherrer Institut, Villigen, Switzerland; 8. Department of Materials Science and Engineering, University of California Berkeley, Berkeley, CA, United States; 9. School of Materials Science and Engineering, Harbin Institute of Technology, Guangdong, China

2:30

BH-06. **Thermal fluctuations in tetris vertex-frustrated artificial spin systems.** *N.S. Bingham*[1], Y. Lao[2], X. Zhang[1], J.T. Batley[3], J. Sklenar[2], C. Leighton[3], C. Nisoli[4] and P. Schiffer[1,2]
1. Department of Applied Physics, Yale University, New Haven, CT, United States; 2. Department of Physics and Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, United States; 3. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 4. Theoretical Division and Center for Nonlinear Studies, MS B258, Los Alamos National Laboratory, Los Alamos, NM, United States

2:42

BH-07. **Degenerate Ground States in Vertex-Frustrated Santa Fe Artificial Spin Ice.** *X. Zhang*[1], Y. Lao[2], N.S. Bingham[1], J. Sklenar[2,3], J.T. Batley[4], R.V. Chopdekar[5], C. Leighton[4], C. Nisoli[6] and P. Schiffer[1,2] *1. Applied Physics, Yale University, New Haven, CT, United States; 2. Physics, University of Illinois Urbana and Champaign, Urbana, CT, United States; 3. Frederick Seitz Materials Research Laboratory, University of Illinois Urbana and Champaign, Urbana, IL, United States; 4. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 5. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 6. Theoretical Division and Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM, United States*

2:54

BH-08. **Controlled generation of emergent magnetic monopole like states in square artificial spin ice systems.** *N. Keswani*[1], Y. Nakajima[2], N. Chauhan[2], R. Singh[3], T. Som[3], S. Kumar[2] and P. Das[1] *1. Department of Physics, Indian Institute of Technology, Delhi, New Delhi, India; 2. Bio Nano Electronics Research Centre, Toyo University, Kawagoe, Saitama, Japan; 3. Institute of Physics, Bhubaneswar, India*

3:06

BH-09. **Magnetic Configurations in Artificial Spin Ice subject to an External Bias Field during Demagnetization.** *V. Parakkat*[1] and K. Krishnan[1] *1. Material Science and Engineering, University of Washington, Seattle, WA, United States*

3:18

BH-10. **Interaction modifiers in artificial spin ices.** E. Östman[1], *H. Stopfel*[2,1], I. Chioar[1], U.B. Arnalds[3], A. Stein[4], V. Kapaklis[1] and B. Hjörvarsson[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Engineering Sciences, Uppsala University, Uppsala, Sweden; 3. Science Institute, University of Iceland, Reykjavik, Iceland; 4. Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY, United States*

3:30

BH-11. **Magnetization reversal mechanisms in Fe/NiO bilayers grown onto nanoporous alumina membranes and Si wafers.** E. Navarro[1], M. Alonso[1], A. Ruiz[1], U. Urdiroz[1], M. Sánchez-Agudo[2], F. Cebollada[2], G. Domíguez-Cañizares[3], L. Soriano[3], A. Gutierrez[3], F. Palomares[1] and *J.M. González*[1] *1. Nanostructures and Surfaces, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. POEMMA-CEMDATIC, Universidad Politécnica de Madrid, Madrid, Spain; 3. Departamento de Física Aplicada, Universidad Autónoma de Madrid, Madrid, Spain*

3:42

BH-12. **Field and size dependence of the thermal stability in CoFeB/MgO systems.** *A. Meo*[1], R.W. Chantrell[2] and R.F. Evans[2] *1. Department of physics, Mahasarakham university, Mahasarakham, Thailand; 2. Department of physics, University of York, York, United Kingdom*

3:54

BH-13. **Tuning exchange bias and training effect in Co/CoO core/shell nanoparticle system by controlling surface defects.** *M. Xing*[1], J. Mohapatra[1], J. Elkins[1], J. Beatty[1] and J. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

4:06

BH-14. **Withdrawn**

4:18

BH-15. **Temperature and Thickness Dependent Coupling in PyCu Spin Valves Whose Interlayer Undergoes a Magnetic Phase Transition.** *K. Repa*[1], B.J. Kirby[2] and C.W. Miller[1] *1. School of Chemistry and Materials Science, Rochester Institute of Technology, Rochester, NY, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States*

TUESDAY AFTERNOON 1:30 MIRANDA 5

Session BI
NON-TRADITIONAL MAGNETIC MATERIALS

Bijoy Kuanr, Chair
University of Colorado at Colorado Springs, Colorado Springs, CO, United States

1:30

BI-01. **Study of Magnetization Reversal in Orthorhombic Perovskites with Cation Lu^{3+}.** *F.E. Lurgo*[1], O. Billoni[2], C. Martin[3] and R.E. Carbonio[1] *1. Departamento de Fisicoquimica,Facultad de Ciencias Quimicas, INFIQC-CONICET-Universidad Nacional de Córdoba, Córdoba, Argentina; 2. Facultad de Matemática, Astronomía, Física y Computación,Universidad Nacional de Córdoba, IFEG-UNC-CONICET, Córdoba, Argentina; 3. Laboratoire CRISMAT, Centre national de la recherche scientifique (CNRS)/ ENSICAEN/UCBN, Caen, France*

1:42

BI-02. **The effect of phase separation on the structural and magnetic properties in $FeCoNi_{1+X}Cr_{1-X}Al$ high-entropy alloys.** *S. Na*[1], P.K. Lambert[1], J. Park[2] and N.J. Jones[1] *1. Physical Metallurgy and Fire Performance Branch, Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, United States; 2. Aerospace Engineering, University of Maryland, College Park, MD, United States*

1:54

BI-03. **Inducing strong magnetism in non-magnetic $Cr_{20}Fe_{20}Mn_{20}Fe_{20}Co_{20}Ni_{20}$ by lattice-expansion.** *M. Acet*[1] and A. Cakir[2] *1. Physics, Duisburg-Essen University, Duisburg, Germany; 2. Metallurgical and Materials Engineering, Mugla Sitki Kocman University, Mugla, Turkey*

2:06

BI-04. **Mo4Ce4Al7C3 nanolaminates featuring ferromagnetism and mixed-valence states.** *F. Wilhelm*[1], Q. Tao[2], D. Pinek[3], O. Chaix-Pluchery[3], A. Rogalev[1], C. Opagiste[4], L. Jouffret[5], A. Champagne[6], J. Charlier[6], J. Lu[2], L. Hultman[2], M.W. Barsoum[7], J. Rosen[2] and T. Ouisse[3] *1. ESRF, Grenoble, France; 2. Department of Physics, Chemistry, and Biology (IFM), Linköping University, Linköping, Sweden; 3. UGA, CNRS, Grenoble INP, LMGP, Grenoble, France; 4. UGA, CNRS, Institut Néel, Grenoble INP, Grenoble, France; 5. Institut de Chimie de Clermont Ferrand, Aubières, France; 6. Institute of Condensed Matter and Nanosciences, UCLouvain, Louvain-la-Neuve, Belgium; 7. Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, United States*

2:18

BI-05. **Preliminary resistivity results on U_2Ni_2Sn single crystals.** *I. Halevy*[1,2], A. Kolomiets[3], S. Mašková[1], A. Andreev[4], J. Prchal[1] and L. Havela[1] *1. Condensed Matter Physics, Charles University, Prague, Czechia; 2. Physics, IAEC-NRCN, Beer-Sheva, Israel; 3. Physics, Polytechnic National University, Lviv, Ukraine; 4. Physics, Academy of Sciences, Prague, Czechia*

2:30

BI-06. **Structure and physical properties of R_3TiSb_5 compounds (R = Ce, Pr, Nd).** *A. Provino*[1,2], A.K. Pathak[3], C. Ritter[4], S.K. Dhar[5] and P. Manfrinetti[1] *1. Department of Chemistry, University of Genova, Genova, Italy; 2. Institute SPIN, Italian National Research Council, Genova, Italy; 3. Ames Laboratory, Ames, IA, United States; 4. Institut Laue-Langevin, Grenoble, France; 5. Condensed Matter Physics & Materials Science, Tata Institute of Fundamental Research, Mumbai, India*

2:42

BI-07. **Magnetic ordering of protons in NH_4I, NH_4Br and NH_4Cl.** *F. Yen*[1], L. Meng[1], T. Gao[2] and S. Hu[3] *1. School of Science, Harbin Institute of Technology, Shenzhen, Shenzhen, China; 2. Shanghai University of Electric Power, Shanghai, China; 3. Southern University of Science and Technology, Shenzhen, China*

2:54

BI-08. **Ferromagnetism in 2D organic iron hemoglobin crystals based on nitrogenated conjugated micropore materials.** *Y. Dahnovsky*[1], A. Pimachev[2], R.D. Nielsen[1] and A. Karonovich[3] *1. Physics and Astronomy, University of Wyoming, Laramie, WY, United States; 2. Aerospace Mechanics Research Center, University of Colorado Boulder, Boulder, CO, United States; 3. Physics, Virginia Polytechnic Institute and State University, Blacksburg, VA, United States*

3:06

BI-09. **Ga- and Sc-substituted M-type ferrites for self-biasing circulators in LTCC microwave modules.** M. Heidenreich[1], W. Gitzel[2], A. Jacob[2] and *J. Töpfer*[1] *1. Ernst-Abbe-Hochschule Jena, Jena, Germany; 2. Technical University Hamburg, Hamburg, Germany*

3:18

BI-10. **Synthesis and Magnetic Characterization of Semi-Hard Magnetic Nanocrystalline Maraging Steel Powder.** G. Thotakura[1], R. Goswami[2] and *T.V. Jayaraman*[1] *1. Mechanical Engineering, University of Michigan-Dearborn, DEARBORN, MI, United States; 2. Materials Science and Technology Division, Naval Research Laboratory, Washington, DC, United States*

3:30

BI-11. **Theoretical and experimental study of influence of mixing the low-valent transition metal atoms (Y= V, and Cr) on the structural, magnetic, transport, and mechanical properties of the Heusler alloys $Fe_{3-x}Y_xGe$.** *R. Mahat*[1,2], S. KC[1,2], S. Regmi[1,2], U. Karki[1,2], D. Wines[3], F. Ersan[3,4], R. White[1,5], C. Ataca[3], P. Padhan[6], A. Gupta[1,7] and P. LeClair[1,2] *1. Center for Materials for Information Technology (MINT), University of Alabama, Tuscaloosa AL 35487, Tuscaloosa, AL, United States; 2. Physics and Astronomy, Department of Physics and Astronomy, University of Alabama, Tuscaloosa AL 35487, Tuscaloosa, AL, United States; 3. Physics, Department of Physics, University of Maryland Baltimore County, Baltimore MD 21250, Baltimore, MD, United States; 4. Physics, Department of Physics, Aydin Adnan Menderes University, Aydin 09100, Turkey, Aydin, Turkey; 5. Metallurgical Materials Engineering, Department of Metallurgical Materials Engineering, University of Alabama, Tuscaloosa, AL 35487, Tuscaloosa, AL, United States; 6. Physics, Department of Physics, Nanoscale Physics Laboratory, Indian Institute of Technology Madras, Chennai-600036, India, Chennai, India; 7. Chemistry and Biochemistry, Department of Chemistry and Biochemistry, The University of Alabama, Tuscaloosa AL 35487, Tuscaloosa, AL, United States*

3:42

BI-12. **Self-Consistent Local Mean-Field Theory for Phase Transitions in FeRh.** *B.R. McGrath*[1], K. Livesey[1] and R. Camley[1] *1. Physics, Center for Magnetism and Magnetic Nanostructures, University of Colorado, Colorado Springs, Colorado Springs, CO, United States*

3:54

BI-13. **Magnetic and transport behavior in the non-centrosymmetric Nd_7Ni_2Pd compound.** *A.K. Pathak*[2], Y. Mudryk[2], A. Provino[1], P. Manfrinetti[1] and V.K. Pecharsky[2,3] *1. Department of Chemistry, University of Genova, Genova, Italy; 2. Materials Science, Ames Laboratory, Ames, IA, United States; 3. Materials Science and Enginering, Iowa State University, Ames, IA, United States*

4:06

BI-14. **Next-Generation Magneto-Optic Surface Plasmon Resonance-Based Sensors.** *C. Rizal*[2,1] *1. Electrical Engineering and Computer Science, York University, Toronto, ON, Canada; 2. R&D, SeedNanoTech & Consulting, Brampton, ON, Canada*

BI-15. **Tailoring the structural and electrical properties of Ba-Zn-Co M-type hexaferrites by lanthanum substitution for high frequency applications.** N. Amin[1], *M. Ajaz-un-Nabi*[1], S. Nadeem[1], M.I. Arshad[1], K. Mahmood[1], A. Ali[1] and M. Sharif[1] *1. Physics, Government College University, Faisalabad, Faisalabad, Pakistan*

TUESDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session BP
2:14:1 PERMANENT MAGNET MATERIALS (Poster Session)

Parashu Kharel, Co-Chair
South Dakota State University, Brookings, SD, United States
Pelin Tozman, Co-Chair
National Institute for Materials Science, Tsukuba, Japan

BP-01. **Withdrawn**

BP-02. **Crystallographic alignment and magnetic anisotropy in melt-spun Nd-Ce-Fe-B ribbons.** *J. Zuo*[1], M. Zhu[1], W. He[2], M. Zhang[1], Y. Li[1] and X. Zhang[1] *1. School of Science, Inner Mongolia University of Science and Technology, Baotou, China; 2. Department of Materials Engineering, Baotou Vocational & Technical Collage, Baotou, China*

BP-03. **Effect of Misch-Metal (MM) with the nature ratio on phase composition and magnetic properties in nanocrystalline $R_{30}Fe_{68.45}Al_{0.5}B_{1.05}$ ribbons.** *F. Liu*[1,2], X. Wang[3,1], Y. Liu[1,2], X. Zhang[1,2] and Q. Ma[2,1] *1. School of Science, Inner Mongolia University of Science and Technology, Baotou, China; 2. Key Laboratory of Integrated Exploitation of Bayan Obo Multi-Metal Resources, Inner Mongolia University of Science and Technology, Baotou, China; 3. Division of Functional Materials, Central Iron & Steel Research Institute, Beijing, China*

BP-04. **Hydrogen Decrepitation Behaviors of Novel R-Fe-B Strip-Casting Alloys Based on Misch Metal.** *Y. Liu*[1,2], X. Wang[1,2], F. Liu[1,2], Q. Ma[2,1], Y. Li[1,2] and X. Zhang[1,2] *1. School of Science, Inner Mongolia University of Science & Technology, Baotou, China; 2. Key Laboratory of Integrated Exploitation of Bayan Obo Multi-Metal Resources, Inner Mongolia University of Science& Technology, Baotou, China*

BP-05. **Crystal structures and magnetic properties of synthesized Nd(Pr)FeCoB magnetic nanoparticles.** A. Samardak[1], F. Nasirpouri[2], G. Ahmadpour[2], A. Portnyagin[1,3], E. Papynov[3,1], A.S. Samardak[1] and *A. Ognev*[1] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Faculty of Materials Engineering, Sahand University of Technology, Tabriz, The Islamic Republic of Iran; 3. Institute of Chemistry Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russian Federation*

BP-06. **Chemical synthesis of $Nd_2Fe_{14}B$ particles with improved magnetic properties through wet ball milling process.** *R. Kuchi*[1,2], S. Haider[1,2] and D. Kim[1,2] *1. Korea Institute of Geoscience and Mineral Resources, Korea Institute of Materials Science, Daejeon, The Republic of Korea; 2. Korea Institute of Materials Science, Changwon, The Republic of Korea*

BP-07. **Synthesis and characterzation of 1 dimensional NdFeB nano fiber using reduction-diffusion process.** *N. Eom*[1], S. Noh[1] and B. Kim[1] *1. Korea Institute for Rare Metal, Korea Institute of Industrial Technology, Incheon, The Republic of Korea*

BP-08. **Temperature dependent magnetization reversal process of a Ga-doped Nd-Fe-B sintered magnet based on first-order reversal curve analysis.** *S. Okamoto*[1,2], K. Miyazawa[1], T. Yomogita[1], N. Kikuchi[1], O. Kitakami[1], K. Toyoki[3,2], D. Billington[3,2], Y. Kotani[3], T. Nakamura[3,2], T. Sasaki[2], T. Ohkubo[2], K. Hono[2], Y. Takada[4], T. Sato[4], Y. Kaneko[4] and A. Kato[5] *1. Tohoku University, Sendai, Japan; 2. ESICMM, NIMS, Tsukuba, Japan; 3. JASRI, Sayo, Japan; 4. Toyota Central R&D Labs., Nagakute, Japan; 5. Toyota Motor Corp, Susono, Japan*

BP-09. **Coercivity Mechanism of Ga-doped Nd-Fe-B Sintered Magnets.** *Y. Matsuura*[1], T. Nakamura[2], K. Ishigami[2], K. Sumitani[2], K. Kajiwara[2], R. Tamura[3], M. Nagae[1] and K. Osamura[1] *1. Research Institute for Applied Sciences, Kyoto, Japan; 2. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 3. Tokyo University of Science, Tokyo, Japan*

BP-10. **Liquid phase diffusion source of heavy rare-earth for enhancing coercivity of grain-boundary-diffusion-processed Nd-Fe-B-type magnet.** J. Choi[1], *H. Kwon*[1], B. Kim[1] and J. Lee[2] *1. Pukyong National University, Busan, The Republic of Korea; 2. Korea Institute of Materials Science, Changwon, The Republic of Korea*

BP-11. **Application of Hydrogen-Containing REM-Based Additions in Designing Nd-Fe-B Magnetic Materials.** *K. Skotnicova*[1], N.B. Kolchugina[2], G.S. Burkhanov[2], M. Kursa[1], T. Cegan[1], A. Lukin[3], O. Zivotsky[1], P. Prokofev[2], N. Dormidontov[2], J. Jurica[1] and B. Smetana[1] *1. Regional materials science and technology centre, VSB-Technical University of Ostrava, Ostrava, Czechia; 2. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russian Federation; 3. JSC SPETSMAGNIT, Moscow, Russian Federation*

BP-12. **Comparison on the coercivity enhancement of sintered NdFeB magnets by grain boundary diffusion with low-melting $(Tb, R)_{75}Cu_{25}$ alloys (R = Y, La, and Ce).** *Y. Wong*[1], H.W. Chang[1], Y. Lee[1], W. Chang[1], C. Chiu[2] and C. Mo[3] *1. Department of Physics, National Chung Cheng University, Chia-yi, Taiwan; 2. New Materials Research & Development Dept., China Steel Corp., Kaohsiung, Taiwan; 3. R&D Department, Himag Magnetic Corporation, Pingtung, Taiwan*

BP-13. **PLD-fabricated Pr-Fe-B thick film magnets applied to small motors.** *S. Takeichi*[1], K. Inoue[1], K. Takashima[1], A. Yamashita[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

BP-14. **Synthesis of Nd-Fe-B/Fe hybrid micro-magnets.** *N. Gunduz Akdogan*[1], O. Akdogan[2] and B. Misisrlioglu[3] *1. Piri Reis University, Istanbul, Turkey; 2. Bahcesehir University, Istanbul, Turkey; 3. Sabanci University, Istanbul, Turkey*

BP-15. **(Pr, Ho)-Fe-B Magnets for Low-Temperature Applications.** N. Kolchugina[1], A. Lukin[2], G.S. Burkhanov[1], K. Skotnicova[3], *O. Zivotsky*[4], M. Kursa[3], N. Dormidontov[1], P. Prokofev[2], Y. Koshkid'ko[1,5], T. Cegan[3], T.P. Kaminskaya[6] and B. Ginzburg[6] *1. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russian Federation; 2. JSC SPETSMAGNIT, Moscow, Russian Federation; 3. Regional Materials Science and Technology Centre, VSB-Technical University of Ostrava, Ostrava, Czechia; 4. Department of Physics, VSB-Technical University of Ostrava, Ostrava, Czechia; 5. Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, Poland; 6. Physical Department, Moscow State University, Moscow, Russian Federation*

TUESDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session BQ
VOLTAGE-CONTROLLED MAGNETIC ANISOTROPY AND SWITCHING I (Poster Session)

Tatsuya Yamamoto, Co-Chair
National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

Aliona Nicolenco, Co-Chair
Autonomous University of Barcelona, Bellaterra, Spain

BQ-01. **Influence of HfO_2 Interlayers on Magnetocrystalline Anisotropy in Fe|MgO|Fe Magnetic Tunnel Junction: First-Principles Investigation.** W. Chen[1], J. Zhang[2], B. Yang[1], T. Yu[3] and *X. Han*[1] *1. Institute of Physics, Beijing, China; 2. Huazhong University of Science and Technology, Wuhan, China; 3. Sichuan University, Sichuan, China*

BQ-02. **Strong bias effect on voltage-driven torque at epitaxial Fe-MgO interface.** *S. Miwa*[1,2], Y. Jibiki[1], J. Fujimoto[3], M. Goto[1] and Y. Suzuki[1] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Institute for Chemical Research, Kyoto University, Uji, Japan*

BQ-03. **Strain Mediated Current-induced Magnetization Switching in PMN-PT/Ta/Pt/Co/Pt Heterostructures.** M. Wang[1], *X. Xu*[1], J. Miao[1] and Y. Jiang[1] *1. school of materials science and engineering, University science and technology of Beijing, Beijing, China*

BQ-04. **Phase-transition-induced magnetic anisotropy change in VO_2/$(Co/Pt)_2$ heterostructure.** *W. Guodong*[1], X. Lin[1], Z. Si[1] and W. Zhao[1] *1. Beihang University, Beijing, China*

BQ-05. **Mechanism of Voltage-Induced Change in Magnetism of Pt/Co with HfO_2 Dielectric Layer.** *T. Hirai*[1,2], T. Koyama[2,3] and D. Chiba[2,3] *1. Department of Applied Physics, The University of Tokyo, Bunkyo-ku, Japan; 2. The Institute of Scientific and Industrial Research, Osaka University, Ibaraki-shi, Japan; 3. Center for Spintronics Research Network, Ibaraki-shi, Japan*

BQ-06. **Voltage-Control of the RKKY Exchange.** *A.O. Leon*[1], J. d'Albuquerque e Castro[2], J. Retamal[3], A. Cahaya[4] and D. Altbir[3] *1. Instituto de Fisica, Pontificia Universidad Catolica de Valparaiso, Valparaiso, Chile; 2. Instituto de Fisica, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; 3. Departamento de Fisica, CEDENNA, Universidad de Santiago de Chile, USACH, Santiago, Chile; 4. Department of Physics, Universitas Indonesia, Depok, Indonesia*

BQ-07. **Electric control of exchange bias in Co/FeO_x bilayer by resistive switching.** L. Wei[1], R. Liu[1], Y. Yuan[1], J. Wang[1], L. Sun[1], B. You[1], W. Zhang[1], Q. Xu[2] and *J. Du*[1] *1. Department of Physics, Nanjing University, Nanjing, China; 2. School of Physics, Southeast University, Nanjing, China*

BQ-08. **Voltage-Induced High-Speed Domain Wall Motion in a Synthetic Antiferromagnet.** L. Chen[1], M. Shen[1], Y. Peng[1], X. Liu[1], W. Luo[1], J. Ou-Yang[1], B. Zhu[1], S. Chen[1], L. You[1], X. Yang[1] and *Y. Zhang*[1] *1. Huazhong University of Science and Technology, Wuhan, China*

BQ-09. **Steplike anomalous Hall effect switching in mixed BFO-based heterostructure.** P. Liu[1], *Y. Jiang*[1], J. Miao[1], K. Meng[1], J. Chen[1] and Z. Li[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijin, China*

BQ-10. **Theoretical Study on Voltage-Controlled Exchange Coupling via Nonmagnetic Metal Layers.** *K. Ohgane*[1], Y. Yahagi[1], D. Miura[1] and A. Sakuma[1] *1. Applied Physics, Tohoku University, Sendai, Japan*

BQ-11. **Improving Perpendicular Magnetic Anisotropy in $SrTiO_3$/Co/Pt Films by Inserting $CaTiO_x$ Layer.** *Z. Zhang*[1], Z. Li[1], Y. Jiang[1], X. Xu[1], K. Meng[1], Y. Wu[1], J. Chen[1] and J. Miao[1] *1. university of science and technology beijing, Beijing, China*

BQ-12. **Magnetic bipolar transistor based on ZnO/NiO/Si Heterostructure using Pulsed Laser Deposition.** *H. Kaur*[1], M. Sharma[2], R.K. Ghosh[2], S. Mohapatra[1] and B.K. Kuanr[2] *1. Indrapratha University, New Delhi, India; 2. Special Centre for Nanoscience, Jawaharlal Nehru University, Delhi, India*

BQ-13. **Ferroelectric polarization control of the Hall resistance in $BiFeO_3$/$SrRuO_3$.** *Z. Ren*[1], J. Miao[1], P. Liu[1], K. Meng[1], J. Chen[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing, China*

BQ-14. **Electric Field Manipulation of Propagating Spin Wave Properties in Ultrathin CoFeB Films.** S. Choudhury[1], B. Rana[2], K. Miura[3], H. Takahashi[3], *A. De*[1], A. Barman[1] and Y. Otani[2,4] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Center for Emergent Matter Science, RIKEN, Wako, Japan; 3. Research and Development Group, Hitachi, Ltd., Kokubunji, Japan; 4. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan*

BQ-15. **High-speed write error rate evaluation of a voltage-torque magnetic random access memory cell.** *S. Tamaru*[1], T. Yamamoto[1], T. Nozaki[1] and S. Yuasa[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

BQ-16. **Voltage-induced switching with long tolerance of voltage-pulse duration in a perpendicular MRAM.** *R. Matsumoto*[1], T. Sato[1,2] and H. Imamura[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Department of Electrical and Electronic Engineering, Faculty of Engineering, Chiba Institute of Technology, Narashino, Japan*

BQ-17. **Voltage assisted magnetization switching in ferromagnetic (Ga,Mn)N.** *D. Sztenkiel*[1], K. Gas[1,2], M. Foltyn[1], N. Gonzalez Szwacki[3], D. Hommel[2,4], T. Dietl[5,6] and M. Sawicki[1] *1. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 2. Institute of Experimental Physics, University of Wroclaw, Wroclaw, Poland; 3. Institute of Theoretical Physics, University of Warsaw, Warszawa, Poland; 4. PORT Polish Centre for Technology Development, Wroclaw, Poland; 5. International Research Centre MagTop, Polish Academy of Sciences, Warszawa, Poland; 6. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

TUESDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session BR
FERRITES
(Poster Session)

Pilar Marin, Chair
Universidad Complutense de Madrid, Madrid, Spain

BR-01. **Fabrication and characterization of YIG nanotubes.** X. Zhang[1], S. Parajuli[1], J. Feng[1], G. Yu[1] and *X. Han*[1] *1. Chinese Academy of Science, Instite of Physics, Beijing, China*

BR-02. **The effect of gadolinium substitution in inverse spinel Nickel Ferrite: structural, magnetic, and mossbauer study.** *T.P. Poudel*[1], B.K. Rai[2], S. Yoon[3], D. Neupane[1], D. Guragain[1] and S.R. Mishra[1] *1. Department of Physics and Material Science, University of Memphis, Memphis, TN, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. Gunsan National University, Gunsan, The Republic of Korea*

BR-03. **Enhanced magnetic and magnetodielectric properties of Al-doped gallium ferrite nanoparticles.** *T. Han*[1], Z. Tu[1] and Y. Huang[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

BR-04. **Tailoring of Magnetic Spectra of Magneto-Dielectric Composites by Grain and Particle-Size Distributions of Ferrite Inclusions.** *Q. Li*[1], Y. Chen[2] and V. Harris[1] *1. Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Innovation Center, Rogers Corporation, Burlington, MA, United States*

BR-05. **Impedance Engineered Ultra-High Frequeny Low-Loss Co_2Z Ferrite Composites for Broadband RF Applications.** *P. Kulik*[1], G. Winter[1], K. Murphy[1], J. Adams[1], O. Obi[2] and V. Harris[1] *1. ECE, Northeastern University, Boston, MA, United States; 2. Kostas Research Institute at Northeastern University, Burlington, MA, United States*

BR-06. **Epitaxial magnesium aluminum ferrite films grown by magnetron sputtering.** *M. Mishner*[1], A. Jara[1] and I. Krivorotov[1] *1. Physics and Astronomy, University of California, Irvine, Irvine, CA, United States*

BR-07. **Di-valent doping effect on structural and magnetic properties of nanocrystalline $Pr_{0.7}Ba_{0.2}Sr_{0.1}MnO_3$.** *M. .*[1], A. Gaur[1] and R.N. Mahato[1] *1. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India*

BR-08. **Tunable high-frequency magnetic and dielectric properties of NiZnCo ferrite/resin magneto-dielectric composites.** *Z. Zheng*[1], Z. Xiong[1], X. Wu[1] and Q. Feng[1] *1. School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China*

BR-09. **Structural Characterization, Magnetic Properties, and Spin Transport in $NiFe_2O_4$ Thin Film Grown on Lattice Matched Substrates.** *S. Regmi*[1,2], Z. Li[1,2], A. Srivastava[1,2], R. Mahat[1,2], S. KC[1,2], A. Rastogi[3], Z. Galazka[4], T. Mewes[1,2] and A. Gupta[1] *1. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, United States; 2. The Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; 3. Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 4. Leibniz-Institut fur Kristallzuchtung, Max-Born-Str. 2, Germany*

BR-10. **Magnetic Properties of Polycrystalline Y-type Hexaferrite $Ba_{2-x}Sr_xNi_2(Fe_{1-y}Al_y)_{12}O_{22}$ using Mössbauer Spectroscopy.** *J. Kim*[1], H. Choi[1] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea*

BR-11. **Static and dynamics magneto-viscoelasticity in $Co_{1-x}Zn_xFe_2O_4$ ($0 \le x \le 1$) based magnetic nanofluid.** *A. Singh*[1], A. Rathi[1], P. Kumar[1], R. Pant[1], G. Basheed[1] and K.K. Maurya[1] *1. Indian reference Material (BND), AcSIR-National Physical laboratory, New Delhi, India*

BR-12. **Study of complex permeability spectra of Co-substituted Ni-Zn ferrite composites and processing of ferrite thin sheets for RF applications.** *P. Lathiya*[1] and J. Wang[1] *1. Electrical Engineering, University of South Florida, Tampa, FL, United States*

BR-13. **Precursor effects and field-induced short-range order above the Verwey transition in single Fe_3O_4 crystals.** C. Boekema[1] and *C. Morante*[1] *1. Physics & Astronomy, San Jose State University, San Jose, CA, United States*

BR-14. Wideband Square Spiral Metamatereial Absorbers Based on Flaky Carbony Iron/Epoxy Composites. *R. Yang*[1], J. Yang[1] and S. Lo[1] *1. Aerospace and Systems Engineering, Feng Chia University, Taichung, Taiwan*

BR-15. Study of structural, electrical, and magnetic properties of rare-earth Tb^{3+} doped $NiFe_2O_4$ ferrite. *D. Guragain*[1], T.P. Poudel[1], B.K. Rai[2], S. Yoon[3] and S.R. Mishra[1] *1. University of Memphis, Memphis, TN, United States; 2. Oak Ridge National Lab, Oak Ridge, TN, United States; 3. Gunsan National University, Gunsan, The Republic of Korea*

BR-16. Withdrawn

BR-17. Temperature Dependence of Antiferromagnetic Coupling at the YIG-GGG Interface. *M. Roos*[1], B.J. Kirby[2], P. Quarterman[2], J. Ding[3], M. Wu[3] and B.L. Zink[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Center for Neutron Research, NIST, Gaithersburg, MD, United States; 3. Department of Physics, Colorado State University, Fort Collins, CO, United States*

TUESDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session BS
EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM
(Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

BS-01. Exploring magnetic resonance with a compass. *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

BS-02. Magnetic Fields Web Series: Engaging Middle School Students in STEM. *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

BS-03. In-class experiments with smart phones for teaching upper-level electricity and magnetism. A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

BS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

TUESDAY AFTERNOON 2:30

RIO PAVILION 8-11

Session BT
MAGNETOELECTRIC BEHAVIOR (Poster Session)

Ramanathan Mahendiran, Chair
National University of Singapore, Singapore

BT-01. **Magnetotransport of $SrIrO_3$ Films on (110) $DyScO_3$.** A. Jaiswal[1,2], A. Zaitsev[1], R. Singh[2], R. Schneider[1] and *D. Fuchs*[1] *1. Institute for Solid-State Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany; 2. Department of Physics, Indian Institute of Technology Delhi, Delhi, India*

BT-02. **Spintronic Terahertz Emission by Ultrafast Spin-Charge Current Conversion in Organic-Inorganic Hybrid Perovskites.** *W. Zhang*[1,2], K. Cong[3], E. Vetter[4], Y. Liang[5], Y. Li[1,2], Q. Zhang[3], Y. Xiong[1,6], R. Schaller[3], A. Hoffmann[2], W. You[5], H. Qu[6], H. Wen[3] and D. Sun[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States; 4. Physics Department, North Carolina State University, Raleigh, NC, United States; 5. Chemistry Department, University of North Carolina, Chapel Hill, NC, United States; 6. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States*

BT-03. **Hysteretic temperature dependent spin-wave response associated with phase transitions in V_2O_3/Ni/NiFe thin films.** *Y. Chen*[2], N. Vargas[1], P. Salev[1], P.N. Lapa[1], I. Schuller[1] and A.D. Kent[2] *1. Department of Physics and Center for Advanced Nanoscience, University of California San Diego, La Jolla, CA, United States; 2. Center for Quantum Phenomena, Department of Physics, New York University, New York City, NY, United States*

BT-04. **Investigating the Magnetic Ground state of the Skyrmion Host Material Cu_2OSeO_3 using Long-Wavelength Neutron Diffraction.** *K.J. Franke*[1,2], P.R. Dean[1], M. Ciomaga Hatnean[3], M.T. Birch[1], D. Khalyavin[4], P. Manuel[4], G. Balakrishnan[3] and P.D. Hatton[1] *1. Centre for Materials Physics, Durham University, Durham, United Kingdom; 2. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. Department of Physics, University of Warwick, Coventry, United Kingdom; 4. ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, Didcot, United Kingdom*

BT-05. **Magnetic-Field Tuning of Hydrogen Bond Order-Disorder Transition in Metal-Organic Frameworks.** *Y. Sun*[1], Y. Ma[1], J. Cong[1] and Y. Wang[2] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Chemistry, Nankai University, Tianjing, China*

BT-06. **Solution-Processed Yttrium Iron Garnet Thin Films as Novel Magnetostrictive Materials.** *S.K. Patel*[1], C.T. Karaba[1] and S. Tolbert[1] *1. Chemistry and Biochemistry, University of California - Los Angeles, Los Angeles, CA, United States*

BT-07. **Exchange Bias in $La_{0.7}Sr_{0.3}CrO_3/La_{0.7}Sr_{0.3}MnO_3/La_{0.7}Sr_{0.3}CrO_3$ Heterostructures.** *R. Olmos*[1], H. Iturriaga[1], D.S. Blazer[1], K. Gandha[2], C.I. Nlebedim[2], D.P. Kumah[3] and S. Singamaneni[1] *1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Critical Materials Institute, Ames Laboratory, Ames, IA, United States; 3. Physics, North Carolina State University, Raleigh, NC, United States*

BT-08. **Strain-affected Modulation of Oxygen Ions Transfer in Topotactic Phase Transition.** *J. Li*[1,2], J. Wang[1,2], C. Zhang[1,2], K. Qiao[1,2], F. Hu[1,2], J. Sun[1,2] and B. Shen[1,2] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China*

BT-09. **Analysis of thermal effects in current driven magnetic wires.** *T. Sawa*[1], S. Sumi[1], P. Van Thach[1], K. Tanabe[1] and H. Awano[1] *1. Toyota Technological Institute, Nagoya, Japan*

BT-10. **Tuning Magnetic Anisotropy and Exchange Bias by Interfacial Engineering in Pervoskite Oxide Suplerlattice.** *H. Huang*[1], J. Zhang[1], B. Shen[1] and J. Sun[1] *1. Beijing National Laboratory for Condensed Matter & Institute of Physics, Chinese Academy of Sciences, Beijing, China*

BT-11. **Inteplay Between Doping and Size Effects of Multiferroic $Y_{1-x}Eu_xMn_2O_5$ Nanorods.** T. Hsu[1], *C. Yang*[1], Y. Tung[1], C. Kao[1], W. Wu[1] and K. Lin[2] *1. Chung Yuan Christian University, Taoyuan, Taiwan; 2. Yuan Ze University, Taoyuan, Taiwan*

BT-12. **Inverse Magnetocaloric Effect in the Cycloidally-modulated Skyrmion Material GaV_4S_8: New Insights into the Metamagnetic Phase Evolution of Noncollinear Spin Textures.** *E. Clements*[1], R. Das[7,8], G. Pokharel[2,3], D. Mandrus[4,5], M. Osofsky[6], H. Srikanth[1] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States; 2. Physics & Astronomy, University of Tennessee Knoxville, Knoxville, TN, United States; 3. Quantum Condensed Matter Division, Oak Ridge National Lab, Oak Ridge, TN, United States; 4. Materials Science and Engineering, University of Tennessee Knoxville, Knoxville, TN, United States; 5. Materials Science and Technology Division, Oak Ridge National Lab, Oak Ridge, TN, United States; 6. Naval Research Lab, Washington, DC, United States; 7. Faculty of Materials Science and Engineering, Phenikaa University, Hanoi, Vietnam; 8. Phenikaa Research and Technology Institute, A&A Green Phoenix Group, Hanoi, Vietnam*

BT-13. **Magnetization studies of Magnetoelectric Coupling in $0.8BaTiO_3$-$0.20Mn_{0.1}Zn_{0.9}Fe_2O_4$ Ceramic Composite.** *A. Farheen*[1] and R. Singh[1] *1. School of Physics, University of Hyderabad, Hyderabad, India*

BT-14. **Metastable Multi-Domain Effects in FeGa Magnetoelectric Heterostructures for Cell Sorting.** *M. Guevara*[1], R. Khojah[2], K. Fitzell[3], G. Carman[1] and C.S. Lynch[1] *1. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Bioengineering, University of California, Los Angeles, Los Angeles, CA, United States; 3. Chemical and Biomolecular Engineering, University of California, Los Angeles, Los Angeles, CA, United States*

BT-15. **Magnetodielectric and electric transport properties of ITO/$CoFe_2O_4$/$BaTiO_3$/$CoFe_2O_4$ multilayer composite.** *E. Lopez Moreno*[1], H. Montiel[1] and G. Alvarez Lucio[2] *1. Micro and Nanotecnology, National Autonomous University of Mexico, Mexico City, Mexico; 2. Science and Tecnology, Autonomous University of Mexico City, Mexico City, Mexico*

BT-16. **Resistive Switching behavior on semimetallic $SrIrO_3$ thin films.** V. Fuentes[1], B. Vasic[2], Z. Konstantinovic[2], L. Balcells[1], A. Pomar[1] and *B. Martinez*[1] *1. Magnetic Materials and Complex Oxides, ICMAB-CSIC, Bellaterra, Spain; 2. Institute of Physics Belgrade, University of Belgrade, Belgrade, Serbia*

BT-17. **Design of efficient p-type spin caloritronic devices using flexible macroscopic interconnected nanowire networks.** *T. da Câmara Santa Clara Gomes*[1], F. Abreu Araujo[1], N. Marchal[1] and L. Piraux[1] *1. Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Louvain-La-Neuve, Belgium*

BT-18. **Interplay between magneto-elasticity and magneto-electricity in FePt/$BaTiO_3$.** *Q. Ain*[1], D. Odkhuu[2], S.H. Rhim[1] and S.C. Hong[1] *1. University of Ulsan, Ulsan, The Republic of Korea; 2. Incheon National University, Incheon, The Republic of Korea*

BT-19. **Effect of the magnetic impurity on the charge diffusion in highly dilute Ce doped $LaMnO_3$.** G. Cabrera-Pasca[1], B. Bosch-Santos[2], A. Burimova[2], E. Correa[3] and *A.W. Carbonari*[2] *1. Faculdade de Ciências Exatas e Tecnologia, Universidade Federal do Pará - UFPA, Abaetetuba, Brazil; 2. CERPQ, Instituto de Pesquisas Energéticas e Nucleares - IPEN, São Paulo, Brazil; 3. Materials Science Laboratory, National Laboratory of Standards and Technology - NIST, Gaithersburg, MD, United States*

BT-20. **Magnetization dynamics of epitaxially grown manganite thin films on (001) oriented ferroelectric PMN-PT substrates.** *S. Pati*[1], T. Usami[1] and T. Taniyama[1] *1. Department of Physics, Nagoya University, Nagoya, Japan*

Session BU
MAGNETIC TUNNEL JUNCTIONS (Poster Session)

Takahide Kubota, Co-Chair
Tohoku University, Sendai, Japan
Sumito Tsunegi, Co-Chair
AIST, Tsukuba, Japan

BU-01. **The Formation Mechanism of the Insulating Amorphous BN Barrier in Magnetic Tunnel Junctions Prepared by Sputtering.** *T. Ichinose*[1], K. Elphick[2], A. Hirohata[2] and S. Mizukami[1,3] *1. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, University of York, York, United Kingdom; 3. Center for Science and Innovation in Spintronics (Core Research Cluster) and Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

BU-02. **Effect of Fe and FeCo insertion on MgO-interface of TbFeCo-based perpendicular magnetic tunnel junction.** R.C. Bhatt[1,2], L. Ye[1,2], M. Guo[1,2] and *T. Wu*[1,2] *1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Taiwan, Yunlin, Taiwan; 2. Taiwan SPIN Research Center, National Yunlin University of Science and Technology, Taiwan, Yunlin, Taiwan*

BU-03. **Role of Boron in Sustaining Magnetic Thermal Tolerance in MgO/CoFeB/Mo Magnetic Tunnel Junction.** *C. Yang*[1], C. Yang[1] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

BU-04. **Investigation on the structural property of the sputtered hcp-phase Boron Nitride tunnel barrier for spintronic applications.** *C. Peng*[1] and D. Zhang[1] *1. Electrical and Computer Engineering, University of Minnesota, twin cities, Minneapolis, MN, United States*

BU-05. **Tunnel magnetoresistance effect in CoFeB/MgO/metastable bcc Co_3Mn tunnel junctions.** K. Kunimatsu[1,2], *T. Tsuchiya*[3], K. Elphick[4], T. Ichinose[2], K. Suzuki[2,5], A. Hirohata[4] and S. Mizukami[2,3] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics (Core Research Center) and Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Department of Electronic Engineering, University of York, York, United Kingdom; 5. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

BU-06. **Interface Characterisation Using Non-Destructive Method in MTJ.** *K. Elphick*[1], T. Ichinose[2], S. Mizukami[2] and A. Hirohata[1] *1. University of York, York, United Kingdom; 2. Tohoku University, Sendai, Japan*

BU-07. **Effect of capping material on the reduction of write current in perpendicular magnetic-tunnel-junctions for STT-MRAM application.** *H. Tomita*[1,2], K. Nakamura[1], S. Bosu[1,2], K. Nagasaka[1,2], A. Gomi[1], A. Fukushima[2], H. Kubota[2], K. Yakushiji[2], S. Yuasa[2], H. Maehara[3,2] and N. Watanabe[1] *1. Tokyo Electron Technology Solutions, Nirasaki, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 3. Tokyo Electron Limited, Tokyo, Japan*

BU-08. **Development of thermally robust perpendicular MTJ for embedded MRAM application.** *S. Bosu*[1,2], H. Tomita[1,2], K. Nakamura[1], Y. Tanaka[1], K. Nagasaka[1,2], A. Gomi[1], A. Fukushima[2], H. Kubota[2], K. Yakushiji[2], S. Yuasa[2], H. Maehara[3,2] and N. Watanabe[1] *1. Tokyo Electron Technology Solutions Limited, Nirasakai, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 3. Tokyo Electron Limited, Tokyo, Japan*

BU-09. **Second order interfacial magnetic anisotropy for MgO/CoFeB/Ta films.** *T. Ogasawara*[1], M. Oogane[1,2], M. Tsunoda[3] and Y. Ando[1,2] *1. Applied physics, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan; 3. Electronic engineering, Tohoku University, Sendai, Japan*

BU-10. **Detecting interfacial quadrupoles at Fe/MgO interfaces by X-ray magnetic linear dichroism.** *J. Okabayashi*[1], Y. Iida[2], Q. Xiang[2], H. Sukegawa[2] and S. Mitani[2] *1. The University of Tokyo, Tokyo, Japan; 2. NIMS, Tsukuba, Japan*

BU-11. **Polycrystalline $Co_2Fe_{0.4}Mn_{0.6}Si$ Heusler alloy thin films with high *B*2 ordering and small magnetic anisotropy for magnetic tunnel junction based sensors.** *N. Kudo*[1], M. Oogane[1], M. Tsunoda[2] and Y. Ando[1] *1. Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, Tohoku University, Sendai, Japan*

BU-12. **Generating temperature gradients in three-dimensions, the Anomalous Nernst effect in magnetic tunnel junctions.** U. Martens[1], T. Huebner[2], H. Ulrichs[3], O. Raimer[2], T. Kuschel[2], R. Tamming[4], C. Chang[4], R. Tobey[4], A. Thomas[5], M. Münzenberg[1] and *J. Walowski*[1] *1. Greifswald University, Greifswald, Germany; 2. Bielefeld University, Bielefeld, Germany; 3. Göttingen University, Göttingen, Germany; 4. Zernike Institute for Advanced Materials, Groningen, Netherlands; 5. IFW, Dresden, Germany*

BU-13. **Applying Oblique-Incidence Deposition to Tailor Magnetic Properties of CoFeB in Single Thin Films and TMR Stacks.** *K. Schlage*[1], S. Willing[1,2], T. Gurieva[1], M. Ramin Moayed[1] and R. Röhlsberger[1,3] *1. DESY, Hamburg, Germany; 2. PIER Helmholtz Graduate School, Hamburg, Germany; 3. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany*

BU-14. **Large tunnel magnetoresistance effects in Fe_3O_4(001)/MgO(001)/Fe(001) epitaxial magnetic tunnel junctions.** S. Yasui[1], J. Okabayashi[2], T. Yanase[3], T. Shimada[3] and *T. Nagahama*[3] *1. CSE, Hokkaido University, Sapporo, Japan; 2. Research Center for Spectrochemistry, University of Tokyo, Tokyo, Japan; 3. Graduate School of Engineering, Hokkaido University, Sapporo, Japan*

BU-15. **Effects of Resistance States on the Magnetoresistance in $Ni/Al_2O_3/Ni$ by Resistive Switching.** *G. Wang*[1], L. Sun[2], S. Zhou[3], Q. Li[1], J. Du[2] and Q. Xu[1] *1. School of Physics, Southeast University, Nanjing, China; 2. School of Physics, Nanjing University, Nanjing, China; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

TUESDAY AFTERNOON 2:30

RIO PAVILION 8-11

Session BV

SPIN-ORBIT TORQUES II (Poster Session)

Aleksandr Kurenkov, Chair

Tohoku University, Sendai, Japan

BV-01. **Effect of dc sense current on switching behavior of TbFeCo for SOT applications.** *R.C. Bhatt*[1,2], L. Ye[1,2], Y. Zou[1,2], S. Ciou[3], J. Wu[3] and T. Wu[1,2] *1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Taiwan, Yunlin, Taiwan; 2. Taiwan SPIN Research Center, National Yunlin University of Science and Technology, Taiwan, Yunlin, Taiwan; 3. Department of Physics, National Changhua University of Education, Changhua, Taiwan*

BV-02. **Spin-Orbit Torques in In-plane Magnetized Systems Driven by Breaking of Inversion Symmetry.** *D. Gupta*[1], A. Kumar[1], P. Gupta[1], N. Chowdhury[1] and P.K. Muduli[1] *1. Physics, Indian Institute of Technology Delhi, New Delhi, India*

BV-03. **Spin-Orbit Torque Driven Perpendicular Magnetization Reversal in Pt/(Co/Ni) Patterned Multilayers.** *N. Figueiredo-Prestes*[1,2], S. Collin[1], J. Zarpellon[2], L. Vila[3], N. Reyren[1], D.H. Mosca[2] and J. George[1] *1. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Universidade Federal do Paraná, Curitiba, Brazil; 3. Université Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC, SPINTEC, Grenoble, France*

BV-04. **Spin-orbit torque acting on a perpendicularly-magnetized Py.** *T. Chen*[1], Y. Ou[2], R. Buhrman[2] and C. Pai[1] *1. National Taiwan University, Taipei, Taiwan; 2. Cornell University, Ithaca, NY, United States*

BV-05. **Material and Thickness investigation in Ferromagnet/Ta/CoFeB Trilayers for Enhancement of Spin-orbit torque and Field-free Switching.** Y. Oh[1], *J. Ryu*[1] and B. Park[1] *1. Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea*

BV-06. **Yttrium Iron Garnet Thin Films with Perpendicular Anisotropy and Low Damping — Sputtering Growth and Spin-Orbit Torque-Induced Switching.** *J. Ding*[1], C. Liu[1], Y. Zhang[1,2], U. Erugu[3], Z. Quan[4], R. Yu[5], S. Mo[1], S. Yang[1], O. Lockwood[1], H. Ding[5], X. Xu[4], J. Tang[3], X. Yang[2] and M. Wu[1] *1. Colorado State University, Fort Collins, CO, United States; 2. Huazhong University of Science and Technology, Wuhan, China; 3. University of Wyoming, Laramie, WY, United States; 4. Shanxi Normal University, Linfen, China; 5. Nanjing University, Nanjing, China*

BV-07. **Spin-Orbit Torque in Heavy Metal/ Ferromagnetic Bilayers.** *H. Kannan*[1], Y. Ou[2], R. Barri[3], H. Chen[3], K. Haughey[3], M. Doty[2] and J. Xiao[3] *1. BE Metals, Intel Corporation, Hillsboro, OR, United States; 2. Materials Science and Engineering, University of Delaware, Newark, DE, United States; 3. Physics and Astronomy, University of Delaware, Newark, DE, United States*

BV-08. **High Power Spin Torque Nano-Oscillators Integrated Directly on a MOSFET.** *D. Kang*[1], W. Jeong[1], J. Lee[1] and M. Shin[1] *1. KAIST, Daejeon, The Republic of Korea*

BV-09. **Angular Characterization of the Spin-Orbit Effective Fields.** *H. Yang*[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China*

BV-10. **Spin-orbit torques in low-resistive mixed phase Ta Thin Films.** *A. Kumar*[1], R. Sharma[1], S. Chaudhary[1] and P.K. Muduli[1] *1. Department of Physics, Indian Institute of Tachnology Delhi, New Delhi, India*

BV-11. **Switching Perpendicular Ferromagnetic Layer by Spin Orbital Torque from Cu_xNi_{1-x} Non-heavy Metal.** *Y. Yen*[1], P. Lin[1] and C. Lai[1] *1. Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

BV-12. **Spin torques on the surface of magnetic topological insulators with hexagonal warping.** *Y. Imai*[2], T. Yamaguchi[1], A. Yamakage[2] and H. Kohno[2] *1. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 2. Department of Physics, Nagoya University, Nagoya, Japan*

BV-13. **Enhanced Spin-Orbit Torques and Multi-Level Current-Induced Switching in W/CoTb/Pt Heterostructure.** *Z. Zheng*[1,2], Y. Zhang[1], X. Feng[1], K. Zhang[1], J. Nan[1], Z. Zhang[1,2], G. Wang[1], J. Wang[1], N. Lei[1], Y. Zhang[2] and W. Zhao[1] *1. School of Microelectronics, Beihang University, Beijing, China; 2. School of Electronics and Information Engineering, Beihang University, Beijing, China*

BV-14. **Detecting spin hall signals of permalloy and heavy metal using inverse spin Hall effect.** *K. Lai*[1], D. Shiu[1], C. Chang[1] and L. Horng[1] *1. National Changhua University of Education, Changhua, Taiwan*

BV-15. **Spin-orbit torque switching in a T-type magnetic configuration.** W. Kong[1], *C. Wan*[1], C. Fang[1] and X. Han[1] *1. Chinese Academy of Sciences, Institute of Physics, Beijing, China*

Session BW
BIOMAGNETISM, BIOMEDICAL, AND MAGNETIC FLUIDS I (Poster Session)

Paola Tiberto, Chair
INRIM, Torino, Italy

BW-01. **Thermal Performance Evaluation of a Ferrofluid Filled Power Transformer by 3-D Magnetic-Thermal-Fluidic Coupled Analysis.** *Y. Zhang*[1], S. Ho[1], W. Fu[1], X. Yang[2] and H. Wu[1] *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Hebei University of Technology, Tianjin, China*

BW-02. **Practical Application of ELF Stimulation to Early Diagnosis System for Detecting Mild Cognitive Impairment.** *H. Nakagawa*[1], M. Sugai[1] and S. Ueno[2] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan; 2. Department of Applied Quantum Physics, Kyushu University, Fukuoka, Japan*

BW-03. **Control of Magnetic Particle Size in Magnetic Fluid and Its Effect on Rheological Properties.** *S. Chen*[1] and D. Li[1] *1. Country State Key Laboratory of Tribology, Tsinghua University, Beijing, China*

BW-04. **Structure and Magneto-viscosity of Ba-Sr Ferrite Ferrofluid.** *N. Gautam*[1] and R. Singh[1] *1. School of Physics, University of Hyderabad, Hyderabad, India*

BW-05. **Reaction field-dependent spin-correlated radical pair model: A new insight into liposomal DDS.** *H. Nakagawa*[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan*

BW-06. **Magnetic Field Effects on Reaction Field-Dependent Radical Pair System.** *H. Nakagawa*[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan*

BW-07. **Methyl Orange Adsorption onto magnetic removable Fe_3O_4/Carbon (AC, GO, PGO) nanocomposites.** *G.C. Hermosa*[1], C. Liao[1], S. Wang[2] and A. Sun[1] *1. Chemical Engineering and Materials Science, Yuan Ze University, Zhongli District, Taiwan; 2. Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan*

BW-08. **ELF Magnetic Effects on Forced Metamorphosis of Mexican Axolotls (*Ambystoma mexicanum*).** *H. Nakagawa*[1] and T. Tadokoro[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan*

BW-09. **Magnetic field control of moiré fringes on guanine crystal plate surface utilizing its optical interference pattern.** *H. Asada*[1], E. Muneyama[1], R. Nagai[1], T. Kimura[1] and M. Iwasaka[2] *1. Yamaguchi University, Ube, Japan; 2. Hiroshima University, Higashi-Hiroshima, Japan*

BW-10. **High-efficient catalytic reduction of 4-nitrophenol with magnetically recoverable Cu-Fe_3O_4 nanocrystals.** *Y. Yang*[1], J. Guo[1], P. Si[1] and H. Ge[1] *1. Zhejiang Province Key Laboratory of Magnetism, China Jiliang University, Hangzhou, China*

BW-11. **Magnetic orientation of biogenic guanine crystal plate combined with magnetic nanoparticles.** *R. Nagai*[1], M. Kurahashi[1], K. Kishimoto[1], T. Koyanagi[1], M. Iwasaka[2] and H. Asada[1] *1. Yamaguchi University, Ube, Japan; 2. Hiroshima University, Higashi-Hiroshima, Japan*

BW-12. **Design and Development of a Highly Focused Coil for Transcranial Magnetic Stimulation on Small Animals.** *I.C. Carmona*[1], D. Kumbhare[2], M.S. Baron[3,4] and R.L. Hadimani[1,5] *1. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Dept. of Neurosurgery, Virginia Commonwealth University, Richmond, VA, United States; 3. McGuire Research Institute, Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States; 4. Southeast Parkinson's Disease Research, Education and Clinical Center (PADRECC), Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States; 5. Dept. of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States*

BW-13. **Study of magnetic micelles as a drug carrier for anti-inflammation treatment.** *C. Tsou*[1], F. Dong[1], W. Wang[2], Y. Huang[1], C. Su[3], T. Chen[1] and T. Ger[1] *1. Biomedical Engineering, Chung Yuan Christian University, Taoyuan City, Taiwan; 2. Nephrology, Tao-Yuan General Hospital, Ministry of Health and Welfare, Taoyuan City, Taiwan; 3. Institute of Biomedical Engineering and Nanomedicine, National Health Research Institutes, Miaoli County, Taiwan*

BW-14. **Noncontact Manipulation of Magnetic Particles Using Arrays of Permanent Magnets.** *N. Riahi*[1] and A. Komaee[1] *1. ECE, Southern Illinois University, Carbondale, IL, United States*

BW-15. **Safety issues of electric field induced in human body by a high field Magnetic Resonance Imaging system.** *M. Trapanese*[1], G. Ala[1], P. Romano[1], F. Viola[1], G. Rizzo[1], M. Midiri[2], S. Salerno[2] and M. Galia[2] *1. Dipartimento Ingegneria, Palermo University, Palermo, Italy; 2. Biomedicina, Neuroscienze e Diagnostica avanzata, Palermo University, Palermo, Italy*

BW-16. **Withdrawn**

Session CA

MACHINE LEARNING IN MAGNETISM

Thomas Schrefl, Chair
Danube University Krems, Wiener Neustadt, Austria

8:30

CA-01. **Machine learning and high-throughput methods for the accelerated discovery of new magnets.** ***(Invited)*** *S. Sanvito*[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

9:06

CA-02. **Machine learning enhanced characterization of magnetic materials.** ***(Invited)*** *K. Ono*[1] *1. High Energy Accelerator Research Organization (KEK), Tsukuba, Japan*

9:42

CA-03. **Classification and optimization of a magnet's microstructure.** ***(Invited)*** *A. Kovacs*[1], T. Schrefl[1], J. Fischbacher[1], L. Exl[2], N. Sakuma[3], M. Ito[3], A. Kinoshita[3], T. Shoji[3] and A. Kato[3] *1. Department for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 2. WPI c/o Faculty of Mathematics, University of Vienna, Vienna, Austria; 3. Advanced Material Engineering Div., Toyota Motor Corporation, Higashifuji, Japan*

10:18

CA-04. **Neural network based magnetic hysteresis modeling.** ***(Invited)*** *C. Serpico*[1] *1. University of Napoli "Federico II", Napoli, Italy*

10:54

CA-05. **Estimation of the Magnetic Field Distribution through Deep Learning.** ***(Invited)*** *D. Lowther*[1] and A. Khan[1] *1. Elec and Comp Eng, McGill University, Montreal, QC, Canada*

Session CB
SPIN TRANSPORT IN ANTIFERROMAGNETS
Samik DuttaGupta, Chair
Tohoku University, Sendai, Japan

8:30

CB-01. **Magnetization Switching Utilizing Topological Surface States. *(Invited)*** *M. Wu*[1], P. Li[1], J. Kally[2], S. Zhang[3], T. Pillsbury[2], J. Ding[1], G. Csaba[4], J. Ding[3], J. Jiang[3], Y. Liu[5], R. Sinclair[5], C. Bi[6], A. DeMann[1], G. Rimal[7], W. Zhang[8], S. Field[1], J. Tang[7], W. Wang[6], O. Heinonen[3], V. Novosad[3], A. Hoffmann[3] and N. Samarth[2] *1. Colorado State University, Fort Collins, CO, United States; 2. Pennsylvania State University, University Park, PA, United States; 3. Argonne National Laboratory, Lemont, IL, United States; 4. Pazmany Peter Catholic University, Budapest, Hungary; 5. Stanford University, Stanford, CA, United States; 6. University of Arizona, Tucson, AZ, United States; 7. University of Wyoming, Laramie, WY, United States; 8. Oakland University, Rochester, MI, United States*

9:06

CB-02. **Large Enhancement in Spin Transport Efficiency in $Y_3Fe_5O_{12}$/NiO/Pt Heterostructures.** *E. Cogulu*[1], D. Roy[2], J. Ding[3], H. Ohldag[4], M. Wu[3] and A.D. Kent[1] *1. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States; 2. Department of Physics, Indian Institute of Technology Ropar, Rupnagar, India; 3. Department of Physics, Colorado State University, Fort Collins, CO, United States; 4. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States*

9:18

CB-03. **Roles of Magnon Angular Momentum in Non-collinear Magnetic System.** *Y. Cheng*[1] and S. Zhang[1] *1. University of Arizona, Tucson, AZ, United States*

9:30

CB-04. **Tunable long-distance spin-transport in antiferromagnetic insulators.** R. Lebrun[4], A. Ross[4], O. Gomonay[4], D. Grave[1], A. Kay[1], A. Qaiumzadeh[2], S. Bender[3], C. Ulloa[3], *L. Baldrati*[4], S. Becker[4], D. Ellis[1], F. Kronast[5], R. Duine[3,2], A. Brataas[2], A. Rothschild[1] and M. Kläui[4,2] *1. Department of Materials Science and Engineering, Technion-Israel Institute of Technology, Haifa, Israel; 2. Center for Quantum Spintronics, Norwegian University of Science and Technology, Trondheim, Norway; 3. Utrecht University, Utrecht, Netherlands; 4. Johannes Gutenberg University, Mainz, Germany; 5. Helmholtz-Zentrum Berlin für Materialen und Energie, Berlin, Germany*

9:42

CB-05. **Realization of spin current across the interface of Pt and thin films of antiferromagnetic manganites.** *A. Das*[1], A. Watson[1], A. Burema[1], P. Zhang[1] and T. Banerjee[1] *1. Zernike Institute for Advanced Materials, University of Groningen, Groningen, Netherlands*

9:54

CB-06. **Spin currents in antiferromagnetic insulators: optical excitation, zitterbewegung, and magnon conductivity.** *I. Proskurin*[1,2] and R.L. Stamps[1] *1. Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation*

10:06

CB-07. **Effect of Dzyaloshinskii–Moriya and Dipolar Interactions in the Propagation Length of Thermally Excited Magnons in Low Anisotropy Antiferromagnets.** R. Yanes[1] and *L. Lopez-Diaz*[1] *1. Applied Physics, University of Salamanca, Salamanca, Spain*

10:18

CB-08. **Spin Seebeck effect from antiferromagnetic magnons in epitxial Cr_2O_3 films.** *W. Yuan*[1], J. Li[1], V.H. Ortiz[1] and J. Shi[1] *1. UC Riverside, Riverside, CA, United States*

10:30

CB-09. **Spin Current Suppression by Antiferromagnetic Ordering in Spin Pumping in $Y_3Fe_5O_{12}/Cr_2O_3$/Pt Heterostructure.** *V.H. Ortiz*[1], J. Li[1], B. Arkook[1], W. Yuan[1], I. Barsukov[1] and J. Shi[1] *1. Physics and Astronomy, University of California Riverside, Riverside, CA, United States*

10:42

CB-10. **Observation of AC spin current propagation through epitaxial NiO layers.** *M. Dabrowski*[1], T. Nakano[1,2], D. Newman[1], D. Burn[3], A. Frisk[3], Q. Li[4], M. Yang[4], C. Klewe[5], P. Shafer[5], E. Arenholz[5], Z.Q. Qiu[4], G. van der Laan[3] and R. Hicken[1] *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 3. Magnetic Spectroscopy Group, Diamond Light Source, Didcot, United Kingdom; 4. Department of Physics, University of California at Berkeley, Berkeley, CA, United States; 5. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

10:54

CB-11. **Excitation of Ultrashort Spin Waves in Anisotropic Antiferromagnets by a Domain Wall Driven by Spin Current.** *R. Khymyn*[1], R. Ovcharov[3], J. Åkerman[1,4] and B.A. Ivanov[2,3] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Faculty of Radiophysics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 4. Materials and Nanophysics, KTH Royal Institute of Technology, Kista, Sweden*

11:06

CB-12. **Magnon spin-Edelstein effect in an antiferromagnetic insulator.** *R. Cheng*[1,2] *1. Electrical and Computer Engineering, University of California, Riverside, CA, United States; 2. Physics, University of California, Riverside, CA, United States*

11:18

CB-13. **Investigation of the spin Seebeck effect in an antiferromagnetic insulator.** *C. Liu*[1], D. Hong[1], J. Pearson[1] and A. Bhattacharya[1] *1. Material Science Division, Argonne National Laborotory, Lemont, IL, United States*

WEDNESDAY MORNING 8:30 | BRASILIA 2

Session CC
MAGNETIC TEXTURES AND MAGNETIZATION DYNAMICS I
Yayoi Takamura, Chair
University of California, Davis, CA, United States

8:30

CC-01. **Chaotic Pattern and Bit Generation in a Nanocontact Vortex Oscillator.** *M. Yoo*[1], D. Rontani[2], J. Létang[1], S. Petit-Watelot[3], T. Devolder[1], M. Sciamanna[2], K. Bouzehouane[4], V. Cros[4] and J. Kim[1] *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Laboratoire Matériaux Optiques, Photonique et Systèmes, CentraleSupélec, Université de Lorraine, Metz, France; 3. Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France; 4. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

8:42

CC-02. **Bloch Type Rotation Chirality in Spin Helix in Monolayer Fe on Ir(110) by Spin Polarized STM.** *J.A. Fischer*[1], T. Knispel[1], M. Bagchi[1], J. Brede[1], V. Tseplyaev[2], M. Hoffmann[2], S. Bluegel[2] and T. Michely[1] *1. II. Physikalishes Institut, Universität zu Köln, Cologne, Germany; 2. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, Germany*

8:54

CC-03. **X-ray Imaging of the Bloch Points in an Asymmetric Nanodisk.** *H. Han*[1], M. Jung[2], Y. Yu[3], S. Lee[1], S. Yoon[2], W. Chao[4], P. Fischer[5,6], J. Hong[2], M. Im[4] and K. Lee[1] *1. School of Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea; 2. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, The Republic of Korea; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Center for X-ray Optics, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 6. Department of Physics, University of California, Santa Cruz, Santa Cruz, CA, United States*

9:06

CC-04. **How to Generate Whispering Gallery Magnons.** ***(Invited)***
K. Schultheiss[1], R.V. Verba[2], F. Wehrmann[1], K. Wagner[1], L. Korber[1], T. Hula[1], T. Hache[1], A. Kakay[1], A.A. Awad[3], V. Tiberkevich[4], A.N. Slavin[4], J. Fassbender[1] and H. Schultheiss[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Magnetism, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 3. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 4. Department of Physics, Oakland University, Rochester, MI, United States*

9:42

CC-05. **Three-Magnon Splitting in Vortex-State Magnetic Nanodots.**
R.V. Verba[1], L. Korber[2,3], V. Tiberkevich[4], K. Schultheiss[2], H. Schultheiss[2,3] and A.N. Slavin[4] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Helmholtz-Zentrum Dresden–Rossendorf, Dresden, Germany; 3. TU Dresden, Dresden, Germany; 4. Oakland University, Rochester, MI, United States*

9:54

CC-06. **Nonequilibrium quantum dynamics of skyrmions in magnetic insulators.**
C. Psaroudaki[1] *1. Department of Physics, University of Basel, Basel, Switzerland*

10:06

CC-07. **In-situ GHz Dynamics of Hybrid Skyrmions Probed with SANS.**
N. Tang[1], S. Montoya[3,2], L. W.L.N.C.[1], S.K. Patel[2,4], L. J. Quigley[1], A.J. Grutter[5], M. Fitzsimmons[6], E. Fullerton[2], J. Borchers[5], L. DeBeer-Schmitt[6] and D.A. Gilbert[1] *1. Materials Science Department, University of Tennessee, Knoxville, Knoxville, TN, United States; 2. CMRR, University of California, San Diego, San Diego, CA, United States; 3. Naval Information Warfare Systems Command, San Diego, CA, United States; 4. Physics Department, University of California, San Diego, San Diego, CA, United States; 5. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 6. High Flux Isotope Reactor, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

10:18

CC-08. **Direct demonstration of topological stability of magnetic skyrmions.**
S. Je[1], H. Han[2], S. Kim[3], S. Montoya[4], W. Chao[1], I. Hong[5], E. Fullerton[6], K. Lee[2], K. Lee[5], M. Im[1] and J. Hong[7] *1. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Ulsan National Institute of Science and Technology, Ulsan, The Republic of Korea; 3. University of Missouri, Columbia, MO, United States; 4. Space and Naval Warfare Systems Center Pacific, San Diego, CA, United States; 5. Korea University, Seoul, The Republic of Korea; 6. University of California–San Diego, La Jolla, CA, United States; 7. Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*

10:30

CC-09. **Large terahertz magnetization response in ferromagnetic nanoparticles embedded in a semiconductor.** *S. Ohya*[1], T. Ishii[1], H. Yamakawa[2], T. Kanaki[1], T. Miyamoto[2], N. Kida[2], H. Okamoto[2] and M. Tanaka[1,3] *1. Department of Electrical Engineering and Information Systems, The University of Tokyo, Tokyo, Japan; 2. Department of Advanced Materials Science, Graduate School of Frontier Science, The University of Tokyo, Kashiwa, Japan; 3. Center for Spintronics Research Network (CSRN), Graduate School of Engineering, The University of Tokyo, Tokyo, Japan*

10:42

CC-10. **Active Control of Ultrafast Magnetization Dynamics and Configurational Anisotropy in Triangular Shaped Ferromagnetic Antidot Lattice with Varying Symmetry.** *A. De*[1], S. Mondal[1], S. Sahoo[1], K. Dutta[1], A. Adhikari[1], Y. Otani[2] and A. Barman[1] *1. Bose National Centre for Basic Sciences, Kolkata, India; 2. University of Tokyo, Tokyo, Japan*

10:54

CC-11. **Stimulated, continuous, and wave vector selective magnon excitation using rapid demagnetization from high repetition rate femtosecond laser pulse trains.** *S. Muralidhar*[1*], A. Aleman[1], A.A. Awad[1], R. Khymyn[1], D. Hanstorp[1] and J. Åkerman[1,2] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. KTH Royal Institute of Technology, Stockholm, Sweden*

11:06

CC-12. **Investigating optically excited THz spanding spin waves in noncollinear magnetic heterostructures.** *T. Lichtenberg*[1], M.H. Janssen[1], R. Lavrijsen[1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

11:18

CC-13. **Terahertz Magnonics on Garnet Ferrite Thin Films and their Neuromorphic Application.** *H. Tabata*[1] *1. School of Engineering, University of Tokyo, Tokyo, Japan*

WEDNESDAY MORNING 8:30 — BRASILIA 1

Session CD
SPIN-ORBIT TORQUES III

Joseph Sklenar, Chair
Northwestern University, Evanston, IL, United States

8:30

CD-01. **Spin-orbit torque estimation in perpendicularly magnetized trilayers.** *R. Guerrero*[1], A. Anadón[1], A. Gudín[1], J. Díez-Toledano[1], P. Olleros[1], F. Ajejas[1], M. Muñoz[2], J. Camarero[1,3], R. Miranda[1,3] and P. Perna[1] *1. nanomagnetism, IMDEA nanoscience, Madrid, Spain; 2. Instituto de Micro y Nanoelectronica, Madrid, Spain; 3. DFMC, Universidad Autonoma de Madrid, Madrid, Spain*

8:42

CD-02. **Spin orbit torque arising from the interfacial scattering in an Fe/Ru Interface.** *Q. Liu*[1], K. Meng[1], Y. Wu[1], J. Chen[1], Z. Li[1], J. Miao[1], X. Xu[1] and Y. Jiang[1] *1. University of science and technology Beijing, Beijing, China*

8:54

CD-03. **Characterization of field- and current-induced magnetization switching in epitaxial Au/Fe/MgO(001).** P. Gospodaric[1], E. Mlynczak[1], A. Kakay[2], *L. Plucinski*[1], I. Soldatov[3], R. Schäfer[3], D. Buergler[1], J. Fassbender[2] and C.M. Schneider[1] *1. PGI-6, FZ Juelich, Juelich, Germany; 2. HZDR, Dresden, Germany; 3. IFW, Dresden, Germany*

9:06

CD-04. **Manipulating exchange bias by spin–orbit torque. *(Invited)*** P. Lin[1], H. Lin[2] and *C. Lai*[1] *1. Department of Materials Science and Engineering, National Tsing Hua University, HsinChu, Taiwan; 2. Department of Physics, National Tsing Hua University, HsinChu, Taiwan*

9:42

CD-05. **A magneto-optical study of spin-orbit torque acting on a nano-ellipse with in-plane magnetization.** P.S. Keatley[1], *P. Androvitsaneas*[1], K.O. Chatzimpaloglou[1], T. Manago[2,1], G. Mihajlovic[3], L. Wan[3], J. Katine[3] and R. Hicken[1] *1. University of Exeter, Exeter, United Kingdom; 2. Fukuoka University, Fukuoka, Japan; 3. HGST, San Jose, CA, United States*

9:54

CD-06. **Effect of Interface Engineering in Pt/CoFeB/MgO Heterostructures on Spin-Orbit Torque.** *S. Kim*[1,4], H. Lee[2], J. Park[2], Y. Oh[2], S. Park[3], W. Ham[4], Y. Kotani[5], T. Nakamura[5], M. Suzuki[5], T. Ono[4,6], K. Lee[7,8] and B. Park[2] *1. Department of Physics, University of Ulsan, Ulsan, The Republic of Korea; 2. Department of Materials Science and Engineering, Korea Advanced Institute of Science & Technology (KAIST), Daejeon, The Republic of Korea; 3. Division of Scientific Instrument, Korea Basic Science Institute (KBSI), Daejeon, The Republic of Korea; 4. Institute for Chemical research, Kyoto University, Kyoto, Japan; 5. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 6. Center for Spintronics Research Network (CSRN), Osaka University, Osaka, Japan; 7. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 8. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea*

10:06

CD-07. **High Thermal Stability of Perpendicular Magnetic Anisotropy and Current Induced Spin-orbit Torque in Zr/CoFeB/MgO Stacks.** *T. Zhu*[2] and X. Zhan[1] *1. Dongguan Neutron Science Center, Dongguan, China; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

10:18

CD-08. **Current-Driven Magnetization Switching and Large Spin Orbit Torque in Ferrimagnet $GdMn_{2.5}Ge_{1.5}$ Thin Film.** *L. Ren*[1], L. Liu[1], K. Cai[1], Y. Liu[1], J. Chen[1], H. Yang[1] and K. Teo[1] *1. National University of Singapore, Singapore, Singapore*

10:30

CD-09. **Large Spin Orbit Torque Generated by Mn_3Sn Weyl Semimetal Thin Films.** *S. Hu*[1] and X. Qiu[1] *1. School of physics science and engineering, Tongji University, Shanghai, China*

WEDNESDAY MORNING 8:30

BRASILIA 3

Session CE

SPIN WAVES: EXCITATION & MANIPULATION

Hendrik Ohldag, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

8:30

CE-01. **Non-Reciprocal Short-Wavelength Spin Waves in Thin YIG Films.** *A. Khan*[1], T. Liu[2], M. Wu[2] and I. Krivorotov[1] *1. Physics, University of California, Irvine, Irvine, CA, United States; 2. Physics, Colorado State University, Fort Collins, CO, United States*

8:42

CE-02. **Nuclear Quantum Phase Control by Transient Magnons.** *L. Bocklage*[1,2], J. Gollwitzer[1], C. Strohm[1], C.F. Adolff[1,2], K. Schlage[1], I. Sergeev[1], O. Leupold[1], H. Wille[1], G. Meier[3,2] and R. Röhlsberger[1,2] *1. DESY, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 3. Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

8:54

CE-03. **Introducing Coherent Time Control to Cavity-Magnon-Polariton Modes.** *T. Wolz*[1], A. Stehli[1], A. Schneider[1], I. Boventer[1,2], R. Macedo[3], A.V. Ustinov[1,4], M. Kläui[2] and M. Weides[1,3] *1. Institute of Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany; 2. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 3. James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom; 4. Russian Quantum Center, National University of Sicence and Technology MISIS, Moscow, Russian Federation*

9:06

CE-04. **Excitation Vector Field and Polarization Effect on Cavity-Magnon-Polaritons.** *R. Macedo*[1], D.A. Bozhko[1], R. Holland[1], J. Barbosa[1] and M. Weides[1] *1. James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom*

9:18

CE-05. **Parametric Pumping of Forward Volume Spin Waves by Surface Acoustic Waves.** *N. Nujhat*[1], A. Jander[1] and P. Dhagat[1] *1. Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR, United States*

9:30

CE-06. **Code Correlation of Binary-Phase-Shift-Keying Microwave Signals Using Parametric Pumping of Spin Waves.** M. Hansen[1], I. Lisenkov[2], H. Liu[1], P. Dhagat[1] and *A. Jander*[1] *1. Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR, United States; 2. Winchester Technologies LLC, Burlington, MA, United States*

9:42

CE-07. **Magnon-Fluxon Interaction in Ferromagnet/ Superconductor Heterostructures.** ***(Invited)*** *O.V. Dobrovolskiy*[1,2], R. Sachser[2], T. Brächer[3], T. Böttcher[3], V.V. Kruglyak[4], R. Vovk[5], V. Shklovskij[5], M. Huth[2], B. Hillebrands[3] and A. Chumak[1,3] *1. Nanomagnetism and Magnonics, University of Vienna, Vienna, Austria; 2. Physikalisches Institut, Goethe University, Frankfurt am Main, Germany; 3. Technical University of Kaiserslautern, Kaiserslautern, Germany; 4. University of Exeter, Exeter, United Kingdom; 5. V. Karazin Kharkiv National University, Kharkiv, Ukraine*

10:18

CE-08. **Realization of a Nanoscale Magnonic Directional Coupler for All-Magnon Circuits.** Q. Wang[1], M. Kewenig[1], M. Schneider[1], R.V. Verba[2], B. Heinz[1], M. Geilen[1], M. Mohseni[1], B. Lägel[1], F. Ciubotaru[3], C. Adelmann[3], S. Cotofana[6], C. Dubs[4], T. Brächer[1], P. Pirro[1] and *A. Chumak*[5,1] *1. University of Kaiserslautern, Kaiserslautern, Germany; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Imec, Leuven, Belgium; 4. INNOVENT e.V. Technologieentwicklung, Jena, Germany; 5. Nanomagnetism and Magnonics, University of Vienna, Vienna, Austria; 6. Delft University of Technology, Delft, Netherlands*

10:30

CE-09. **Creating Rogue Waves in Magnetic Thin Films.** *M. Copus*[1] and R. Camley[1] *1. Physics, Center for Magnetism and Magnetic Nanostructures, University of Colorado at Colorado Springs, Colorado Springs, CO, United States*

10:42

CE-10. **Chiral Spin Waves in Obliquely Magnetized Magnetic Films.** *C.A. Trevillian*[1] and V. Tiberkevich[1] *1. Physics, Oakland University, Rochester Hills, MI, United States*

10:54

CE-11. **Extracting the Dzyaloshinskii–Moriya interaction from propagating spin waves.** *J. Lucassen*[1], C. Schippers[1], M. Verheijen[1], R. Duine[1,2], H. Swagten[1], B. Koopmans[1] and R. Lavrijsen[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Institute for Theoretical Physics, Utrecht University, Utrecht, Netherlands*

11:06

CE-12. **Electrical Study of Spin-Wave Propagation in Nanoscale CoFeB Waveguides.** *F. Ciubotaru*[1], D. Narducci[1,2], G. Talmelli[1,2], I. Radu[1] and C. Adelmann[1] *1. Imec, Leuven, Belgium; 2. Department of Materials Engineering, KU Leuven, Leuven, Belgium*

11:18

CE-13. **Reflection-less width-modulated magnonic crystal.** P. Frey[1], A.A. Nikitin[2], D.A. Bozhko[3,1], S.A. Bunyaev[4], G.N. Kakazei[4], A.V. Ustinov[2], B.A. Kalinikos[2], F. Ciubotaru[5], A. Chumak[6,1], Q. Wang[1], V. Tiberkevich[7], B. Hillebrands[1] and *A.A. Serga*[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Department of Physical Electronics and Technology, St. Petersburg Electrotechnical University, St. Petersburg, Russian Federation; 3. James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom; 4. IFIMUP and IN-Institute of Nanoscience and Nanotechnology, Departamento de Fisica, Universidade do Porto, Porto, Portugal; 5. imec, Leuven, Belgium; 6. Nanomagnetism and Magnonics, University of Vienna, Vienna, Austria; 7. Department of Physics, Oakland University, Rochester, MI, United States*

WEDNESDAY
MORNING
8:30

RIO PAVILION 1

Session CF

TUNNEL MAGNETORESISTANCE AND GIANT MAGNETORESISTANCE

Aurelie Spiesser, Chair
National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

8:30

CF-01. **Epitaxial magnetic tunnel junction with Co_2MnGa Heusler alloy electrode on a large-sized Si wafer.** *T. Nakano*[1], S. Miwa[2], T. Higo[2], A. Fukushima[1], S. Yuasa[1], S. Nakatsuji[2,3] and K. Yakushiji[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 2. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Department of Physics, The University of Tokyo, Tokyo, Japan*

8:42

CF-02. **CMOS-compatible $L1_0$ FePd perpendicular magnetic anisotropy thin film via a fcc Ru seed-layer for spintronic applications.** *D. Zhang*[1], D.M. Lattery[2], R. Wu[3], J. Liu[1], D.B. Gopman[4], A. Mkhoyan[3], X. Wang[2] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States; 3. Dept. of Chemical Engineering & Materials Science, University of Minnesota, Minneapolis, MN, United States; 4. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*

8:54

CF-03. **Low-Frequency Electronic Noise and Charge Transport Dynamics in Electrically Tunable AlO_x-based Magnetic Tunnel Junctions.** *J. Hong*[1], C. Hung[2], I. Martinez[3], C. Gonzalez-Ruano[3], F.G. Aliev[3], D. Ling[1] and M. Lin[2,4] *1. Department of Physics, Tamkang University, New Taipei City, Taiwan; 2. Department of Physics, National Taiwan University, Taipei City, Taiwan; 3. Depto Fisica de la Materia Condensada, Universidad Autonoma de Madrid, Madrid, Spain; 4. Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei City, Taiwan*

9:06

CF-04. **Fully epitaxial magnetic tunnel junction with a spinel-type Mg-Al-O barrier on an 8″ silicon wafer.** *K. Yakushiji*[1], T. Nakano[1], A. Fukushima[1], A. Sugihara[1] and S. Yuasa[1] *1. AIST, Tsukuba, Japan*

9:18

CF-05. **Spin-Polarized Coherent Tunneling in Fully Epitaxial Magnetic Tunnel Junctions with SrO Tunnel Barrier.** *A.M. Spiesser*[1], S. Kon[1,2], Y. Yasukawa[2], S. Yuasa[1] and H. Saito[1] *1. Spintronics Research Center, AIST, Tsukuba, Japan; 2. Department of Electrical and Electronic Engineering, Chiba Institute of Technology, Narashino, Japan*

9:30

CF-06. **Towards highly customized GMR and TMR sensors via oblique-incidence deposition.** *M. Ramin Moayed*[1], S. Willing[1,2], T. Gurieva[1], L. Bocklage[1,3], K. Schlage[1] and R. Röhlsberger[1,3] *1. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 2. PIER Helmholtz Graduate School, Hamburg, Germany; 3. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany*

9:42

CF-07. **Analysis of the spin-dependent transport in CPP-GMR devices with self-organized Ag-In:Mn-Zn-O nanocomposite spacer.** *T. Nakatani*[1], T. Sasaki[1], Y. Sakuraba[1] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

9:54

CF-08. **Thermally Assisted Magnetisation Reversal in Giant Magneto-Resistive Junctions.** *A. Hirohata*[1], W.J. Frost[1], T. Kubota[2], R. Ramos[2], E. Saitoh[2,3] and K. Takanashi[2] *1. Department of Electronic Engineering, University of York, York, United Kingdom; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. The University of Tokyo, Tokyo, Japan*

10:06

CF-09. **Tunable Long-Term and Short-Term Memories in a Single Magnetic Tunnel Junction Based Synapse.** *N. Prasad*[1*], S. Banerjee[1] and L. Register[1] *1. Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, United States*

10:18

CF-10. **Electrical Control of Magnetoresistance in 2D van der Waals Spin Valve.** *W. Yang*[1], X. Wang[1], X. Lin[1] and W. Zhao[1] *1. Microelectronics School, Beihang University, Beijing, China*

10:30

CF-11. **TMR Detection of Skyrmions: Simulations of Current Spreading and Spin Polarization.** *H. Chen*[1] and S. Majetich[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

10:42

CF-12. **Phenalenyl-based Organic Barriers for Tunnel Junctions.** N. Jha[1], *C. Denker*[1], A. Pariyar[2], P.K. Vardhanapu[2], H.S. Mohamad[1], A. Azinfar[1], A. Ahrens[3], T. Meyer[3], J. Walowski[1], C.A. Helm[1], M. Seibt[3], S. Mandal[2] and M. Münzenberg[1] *1. Institut für Physik, Universitaet Greifswald, Greifswald, Germany; 2. Department of Chemical Sciences, IISER, Kolkata, India; 3. IV. Physikalisches Institut, Georg-August Universtitaet Goettingen, Goettingen, Germany*

10:54

CF-13. **Very Fast Current-Induced Domain Wall Motion with Speed of over 2.5 km s^{-1} Driven by Spin Orbit Torques in Ferrimagnetic GdFeCo Wires.** *P. Van Thach*[1,2], S. Sumi[1] and H. Awano[1] *1. Toyota Technological Institute, Nagoya, Japan; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam*

WEDNESDAY
MORNING
8:30

RIO PAVILION 3

Session CG
INTERFACES: PERPENDICULAR ANISOTROPY AND DMI

Patrick Quarterman, Chair
NIST Center for Neutron Research, Gaithersburg, MD, United States

8:30

CG-01. **Dzyaloshinskii-Moriya interaction in Pt/Co/Ta multilayers with engineered interfacial roughness.** *A. Mora Hernandez*[1], A. Hindmarch[1], M. Belmeguenai[2], Y. Roussigné[2] and A. Stashkevich[2] *1. Physics Department, Durham University, Durham, United Kingdom; 2. Physics Department, Université 13 Paris, Villetaneuse, France*

8:42

CG-02. **Reversible control of Dzyaloshinskii-Moriya interaction at graphene/Co interface via hydrogen absorption.** *B. Yang*[1], Q. Cui[1], J. Liang[1], A. Hallal[2], M. Chshiev[2] and H. Yang[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 2. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-SPINTEC, Grenoble, France*

8:54

CG-03. **The Interfacial Dzyaloshinskii-Moriya Interaction and Perpendicular Magnetic Anisotropy on the (111) Crystalline Pt/CoFe/MgO/Ta.** *J. Cho*[1], D. Kim[1], S. Yang[1], B. Chun[1], C. Kim[1], K. Moon[1] and C. Hwang[1] *1. Quantum Technology Institute, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea*

9:06

CG-04. **Chirally Coupled Nanomagnets.** ***(Invited)*** *Z. Luo*[1,2], T. Dao[1], A. Hrabec[1,2], J. Vijayakumar[2], A. Kleibert[2], M. Baumgartner[1], E. Kirk[1,2], J. Cui[1,2], T. Savchenko[2], G. Krishnaswamy[1], L. Heyderman[1,2] and P. Gambardella[1] *1. ETH Zurich, Zurich, Switzerland; 2. PSI, Villigen, Switzerland*

9:42

CG-05. **Interfacial magnetic properties in 3*d*-transition metal alloy thin films with Pt underlayer.** *N. Kim*[1], J. Kim[1], E. Baek[1], J. Kim[1] and C. You[1] *1. Daegu Gyeongbuk Institute Science & Technology, Daegu, The Republic of Korea*

9:54

CG-06. **Perpendicular magnetic anisotropy of Cu_2Sb-type (Mn-Cr) AlGe films onto thermally oxidized silicon substrates.** *T. Kubota*[1,2], Y. Kota[3], K. Ito[1,2], R.Y. Umetsu[1,2], M. Sun[1], M. Mizuguchi[1,2] and K. Takanashi[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. National Institute of Technology, Fukushima College, Iwaki, Japan*

10:06

CG-07. **The Surface Spin Flop in Fully Tunable Synthetic Antiferromagnets with Perpendicular Magnetic Anisotropy.** *B. Böhm*[1], N.S. Kiselev[2], D. Pohl[3,5], L. Fallarino[4], L. Koch[1], B. Rellinghaus[3,5], K. Nielsch[5] and O. Hellwig[1,4] *1. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 2. Forschungszentrum Jülich and JARA, Jülich, Germany; 3. Dresden Center for Nanoanalysis, TU Dresden, Dresden, Germany; 4. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. IFW Dresden, Dresden, Germany*

10:18

CG-08. **Interface alloying of ultra-thin films as a source of perpendicular magnetic anisotropy.** A. Basha[2,3], H. Fu[5], G. Levi[2,4], *G. Leitus*[1], A. Kovacs[6], C. You[5] and A. Kohn[2,3] *1. Chemical Research Support, Weizmann Institute of Science, Rehovot, Israel; 2. Department of Materials Science and Engineering, Tel Aviv University, Tel Aviv, Israel; 3. Tel Aviv University Center for Nanoscience and Nanotechnology, Tel Aviv University, Tel Aviv, Israel; 4. Wolfson Applied Materials Research Center, Tel Aviv University, Tel Aviv, Israel; 5. School of Materials Science and Technology, Xi'an University of Technology, Xi'an, China; 6. Ernst-Ruska Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Jülich, Germany*

10:30

CG-09. **Evolutions of magnetic phases driven by compositional changes for ultrathin Ni/Si(111).** C. Chang[1], Y. Chow[1], C. Hsieh[1], P. Jiang[1] and *J. Tsay*[1] *1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan*

10:42

CG-10. **Alternate monoatomic layer deposition of Fe and Ni on Al_2O_3 (0001) using PLD.** *T. Miyashita*[1], H. Ito[1], T. Kumagai[1], T. Koganezawa[2], T. Miyamachi[3], F. Komori[3] and M. Kotsugi[1] *1. Tokyo University of Science, Tokyo, Japan; 2. JASRI, Hyogo, Japan; 3. ISSP of The University of Tokyo, Chiba, Japan*

10:54

CG-11. **Significant perpendicular magnetic anisotropy induced by chemisorbed small organic molecules on ferromagnetic films.** *A. Fernandes Cauduro*[1], G. Chen[2], M. Robertson[2], R. Lo Conte[3], M. Madsen[4], A.K. Schmid[1] and K. Liu[2,5] *1. Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Physics, UC Davis, Davis, CA, United States; 3. Materials Science and Engineering, UC Berkeley, Berkeley, CA, United States; 4. NanoSYD, University of Southern Denmark, Soenderborg, Denmark; 5. Physics, Georgetown University, Washington, DC, United States*

11:06

CG-12. **Evolution of Bulk Perpendicular Magnetic Anisotropy and AHE in CoFeBGd Alloy Films: Composition and Temperature Dependence.** O.A. Inyang[1], B. Nicholson[1] and *D. Atkinson*[1] *1. Physics, Durham University, Durham, United Kingdom*

11:18

CG-13. **Mapping of Magnetic Metastable States in Synthetic Antiferro- and Ferrimagnets with Perpendicular Magnetic Anisotropy.** *R. Salikhov*[1], F. Samad[1,2], L. Koch[2], B. Böhm[2] and O. Hellwig[1,2] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Physical faculty, Chemnitz University of Technology, Chemnitz, Germany*

Session CH
INTEGRATED INDUCTORS, TRANSFORMERS AND POWER ELECTRONICS

Pilar Marin, Chair
Universidad Complutense de Madrid, Madrid, Spain

8:30

CH-01. **Electro-infiltrated Nickel/Iron-oxide and Permalloy/Iron-oxide Nanocomposite Films for On-chip Power Converters. *(Invited)*** *C.S. Smith*[1], S. Savliwala[2], S.C. Mills[3], J. Andrew[3], C. Rinaldi[2,4] and D.P. Arnold[1] *1. Electrical and Computer Engineering, University of Florida, Gainesville, FL, United States; 2. Chemical Engineering, University of Florida, Gainesville, FL, United States; 3. Materials Science and Engineering, University of Florida, Gainesville, FL, United States; 4. J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL, United States*

9:06

CH-02. **Spray-coated magnetic planar inductor for compact IoT sensor node.** T. Hara[1] and *M. Yamaguchi*[2,3] *1. Design center, RICOH Electronic Devices Co., Ltd., Ikeda, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 3. New Industry Creation Hatchery Center, Tohoku University, Sendai, Japan*

9:18

CH-03. **Microtransformer on Silicon with CoFeB Magnetic Core for High-Frequency Signal Applications.** *D. Dinulovic*[1], M. Shousha[1,2] and M. Haug[1] *1. R&D, Würth Elektronik eiSos GmbH & Co. KG, Garching, Germany; 2. Electrical Power & Machines, Cairo University, Giza, Egypt*

9:30

CH-04. **Magnetic Hysteresis Phenomena under PWM Inverter Excitation by using Coupled Analysis between Electricity and Magnetism in Circuit Simulator.** *A. Yao*[1] and T. Hatakeyama[1] *1. Department of Electrical and Computer Engineering, Toyama Prefectural University, Imizu, Japan*

9:42

CH-05. **Core loss calculation for power electronics converter excitation from a sinusoidal excited core loss data.** *H. Matsumori*[2], T. Shimizu[1], T. Kosaka[2] and N. Matsui[2] *1. Tokyo Metropolitan University, Tokyo, Japan; 2. Nagoya Institute of Technology, Aichi, Japan*

9:54

CH-06. **Transient Potential Distribution on Transformer Winding Considering the Effect of Core Lamination Stack.** *S. He*[1], D. Huang[1], X. Feng[1], Y. Wang[1], J. Deng[2] and J. Li[1] *1. Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. Maintenance and Test Center of EHV Power Transmission Company, China Southern Power Grid, Guangzhou, China*

10:06

CH-07. **Reduced Basis Finite Element Modelling of Transformers with Stranded Conductors.** *I. Gürbüz*[1], A. Lehikoinen[2], U. Aydin[1], P. Rasilo[3], E. Takala[4] and A. Belahcen[1] *1. Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland; 2. Smeklab Oy, Espoo, Finland; 3. Faculty of Information Technology and Communication Sciences, Tampere University, Tampere, Finland; 4. Trafotek Oy, Turku, Finland*

10:18

CH-08. **Modelling and Measurement of Magnetic Properties of Anode Saturable Reactor Under Impulse Excitation.** *C. Zhang*[1,2], J. Wang[2], Y. Li[2] and Q. Yang[2] *1. Ohio State University, Columbus, OH, United States; 2. Hebei University of Technology, Tianjin, China*

10:30

CH-09. **Influence of magnetization fixture winding on magnet flux profile and performance of isotropic bonded NdFeB motor.** R.C. Angara[1], N.E. Onal[1], K.W. Hsu[1], P. Villar[1] and *N.K. Sheth*[1] *1. Research and Development, Neo Performance Materials (S) Pte Ltd, Singapore, Singapore*

10:42

CH-10. **Design of Directing Permanent Magnet of U-Shape Interior Ferrite Permanent Magnet Synchronous Motor for Electric Vehicles.** *H. Won*[1], Y. Hong[1], M. Choi[1] and W. Lee[1,2] *1. Department of Electrical and Computer Engineering and Center for Advanced Vehicle Technologies, The University of Alabama, Tuscaloosa, AL, United States; 2. RF Product Development Group, Samsung Electro-Mechanics, Suwon-si, The Republic of Korea*

10:54

CH-11. **An ironless linear permanent magnet generator for the conversion of sea waves energy.** *M. Trapanese*[1] and V. Frazitta[1] *1. Dipartimento di Ingegneria, Palermo University, Palermo, Italy*

11:06

CH-12. **Optimal Design of a 314kW-class IPMSM for Railway Vehicles Using Hydrogen Fuel Cells.** *J. Lim*[1], H. Lee[1], T. Kim[2], J. Lee[1], K. Seo[1], G. Jeong[3] and C. Park[1] *1. Korea National University of Transportation, Uiwang-si, The Republic of Korea; 2. Electrical and Computer Engineering Department, University of Michigan-Dearbon, Dearborn, MI, United States; 3. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea*

Session CI

2:14:1 PERMANENT MAGNETS: PROCESSING AND PROPERTIES/HIGH FREQUENCY DEVICES

Arjun Pathak, Co-Chair
Ames National Laboratory, Ames, IA, United States
Karen Livesey, Co-Chair
University of Colorado at Colorado Springs, Colorado Springs, CO, United States

8:30

CI-01. **Enhancing the coercivity and thermal stability of Nd-Fe-B sintered magnets by grain boundary diffusion process.**
S. Kim[1], H. Lee[1], D. Kim[2], J. Kim[1], J. Roh[3] and W. Lee[1]
1. Yonsei University, Seoul, The Republic of Korea; 2. Star Group, Daegu, The Republic of Korea; 3. Kyungpook National University, Sangju, The Republic of Korea

8:42

CI-02. **Detection of elemental magnetization reversal events in a micropatterned hot-deformed Nd-Fe-B magnet.**
T. Yomogita[1], N. Kikuchi[1], S. Okamoto[1,2], O. Kitakami[1], S. Hossein[2], T. Ohkubo[2], K. Hono[2], K. Hioki[3] and A. Hattori[4]
1. IMRAM, Tohoku University, Sendai, Japan; 2. ESICMM, NIMS, Tsukuba, Japan; 3. Daido Steel Co. Ltd., Nagoya, Japan; 4. Daido Electronics Co. Ltd., Nakatsugawa, Japan

8:54

CI-03. **Influence of magnetostriction on the lattice constants of the secondary phases in Nd-Fe-B sintered magnets studied by synchrotron X-ray diffraction.** *S. Kobayashi*[2,1], A. Martín-Cid[2,1], K. Toyoki[2,1], H. Okazaki[2,1], S. Hirosawa[1] and T. Nakamura[2,1]
1. Elements Strategy Initiative Center for Magnetic Materials (ESICMM), National Institute for Materials Science, Tsukuba, Japan; 2. Japan Synchrotron Radiation Research Institute (JASRI), Sayo-cho, Japan

9:06

CI-04. **Determination of Local Magnetic Moments in the Fractured Surface of a Nd-Fe-B Sintered Magnet by a Soft X-ray Microscope.** *A. Martín-Cid*[1,2], D. Billington[1,2], K. Toyoki[1,2], Y. Kotani[1,2], S. Kobayashi[1,2], H. Okazaki[1], S. Hirosawa[2] and T. Nakamura[1,2] *1. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 2. Elements Strategy Initiative Center for Magnetic Materials (ESICMM), Tsukuba, Japan*

9:18

CI-05. **Magnetic States of Rare-Earth Atoms in $(Nd,Ce,La)_2Fe_{14}B$ Investigated by Powder Neutron Diffraction.** *T. Hawai*[1], M. Yano[2], T. Shoji[2], J.R. Hester[3] and K. Ono[1] *1. High Energy Accelerator Research Organization (KEK), Tsukuba, Japan; 2. Toyota Motor Corporation, Toyota, Japan; 3. Australia's Nuclear Science and Technology Organisation (ANSTO), Lucas Heights, NSW, Australia*

9:30

CI-06. **A mixed-valence model for $Ce_2Fe_{14}B$ compounds.** *H. Tabata*[1], T. Yoshioka[1,2] and H. Tsuchiura[1,2] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. National Institute for Materials Science (NIMS), ESICMM, Tsukuba, Japan*

9:42

CI-07. **Magnetic properties of anisotropic bonded NdFeB/SmCo permanent magnets.** *S. An*[1,3], Z. Ma[2], W. Li[1], H. Zhang[1] and T. Yin[1] *1. School of Materials Science and Engineering, Henan University of Science and Technology, Luoyang, China; 2. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 3. Collabororative Innovation Center of Nonferrous Metals, Henan University of Science and Technology, Luoyang, China*

9:54

BREAK

10:06

CI-09. **Measuring THz Magnons in Metamaterials made of Ultrathin Magnetic Layers.** P.M. Yarbrough[1], K. Livesey[1], R. Camley[1] and *R. Macedo*[2] *1. Department of Physics, University of Colorado at Colorado Springs, Colorado Springs, CO, United States; 2. James Watt School of Engineering, University of Glasgow, Glasgow, United Kingdom*

10:18

CI-10. **Strongly Absorbing Optic Mode in Ferromagnetic Multilayers: Application to Signal Processing Devices.** R. Macedo[1,2], P. Couture[2], R. Camley[2], K. Livesey[2] and *Z. Celinski*[2] *1. SUPA School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Physics, Center for Magnetism and Magnetic Nanostructures, University of Colorado at Colorado Springs, Colorado Springs, CO, United States*

10:30

CI-11. **Injection Locking of Spin-Torque Oscillator with Perpendicularly Magnetized Free Layer.** *T. Yamaguchi*[3], N. Akashi[1], K. Nakajima[1,2], S. Tsunegi[3], H. Kubota[3] and T. Taniguchi[3] *1. Graduate School of Information Science and Technology, The University of Tokyo, Tokyo, Japan; 2. JST, PRESTO, Saitama, Japan; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

10:42

CI-12. **Maser operation of two magnetic tunnel junctions with positive gain.** *Y. Yamada*[1], M. Goto[1,4], T. Yamane[2], N. Degawa[2], T. Suzuki[2], A. Shimura[2], S. Aoki[2], J. Urabe[2], S. Hara[2], S. Miwa[3,4] and Y. Suzuki[1,4] *1. Graduate School of Engineering Sciences, Osaka University, Osaka, Japan; 2. TDK Corporation, Tokyo, Japan; 3. Institute for Solid State Physics, University of Tokyo, Tokyo, Japan; 4. Center for Spintronics Research Network, Osaka University, Osaka, Japan*

10:54

CI-13. **Enhanced broadband RF detection in nanoscale magnetic tunnel junction by interface engineering.** *L. Zhang*[1,2], B. Fang[1], J. Cai[1], G. Finocchio[3] and Z. Zeng[1,2] *1. Nano Fabrication Facility, Suzhou Institute of Nano-Tech and Nano-Bionics, CAS, Suzhou, China; 2. School of Nano Technology and Nano Bionics, University of Science and Technology of China, Hefei, China; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

11:06

CI-14. **Strong Coupling of Magnons to Microwave Photons in Three-Dimensional Printed Resonators.** J. Bourhill[1,2], S. Ben Ammar[1], G. Cochet[3], A. Manchec[3] and *V.M. Castel*[1,2] *1. IMT Atlantique, Technopole Brest-Iroise, CS 83818, Brest, France; 2. Lab-STICC (UMR 6285), CNRS, Technopole Brest-Iroise, Brest, France; 3. Elliptika (GTID), Brest, France*

11:18

CI-15. **3D Double Post Re-entrant Microwave Cavities as a Powerful Tool for Strong Photon-Magnon Coupling.** *J. Bourhill*[1], V.M. Castel[1], M. Goryachev[2] and M. Tobar[2] *1. IMT-Atlantique, Brest, France; 2. University of Western Australia, Perth, WA, Australia*

WEDNESDAY MORNING 9:30 — RIO PAVILION 8-11

Session CP
ANTIFERROMAGNETIC SPINTRONICS II (Poster Session)
Yoichi Shiota, Chair
Kyoto Uniersity, Uji, Japan

CP-01. **Chiral-driven switching of antiferromagnets in a confined thin film.** *T. Kim*[1], S. Han[2] and B. Cho[1] *1. School of Material Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea; 2. Division of Navigation Science, Mokpo National Maritime University, Mokpo, The Republic of Korea*

CP-02. **Competition between Electronic and Magnonic Spin Currents in Metallic Antiferromagnet.** *Y. Wen*[1], F. Zhuo[1], A. Manchon[1] and X. Zhang[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

CP-03. **Dirac nodal line metal for topological antiferromagnetic spintronics.** *D. Shao*[1], G. Gurung[1], S. Zhang[2] and E.Y. Tsymbal[1] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 2. College of Science, Beijing University of Chemical Technology, Beijing, China*

CP-04. **Structural and Magnetic Property of Co Doped Mn_3Ga Antiferromagnetic Heusler Alloys.** Y. Yoshihara[1,2], K. Elphick[2], M. Samiepour[2], H. Uchida[1], M. Inoue[1] and *A. Hirohata*[2] *1. Department of Electrical and Electronic Information Engineering, Toyohashi University of Technology, Toyohashi, Japan; 2. Department of Electronic Engineering, University of York, York, United Kingdom*

CP-05. **Degenerated Orthogonal Spin States in Antiferromagnetic NiO(111) on Fe(110).** *M. Slezak*[1], P. Drozdz[1], W. Janus[1], J. Korecki[1,2], A. Koziol-Rachwal[1], K. Matlak[1], M. Szpytma[1], M. Zajac[3] and T. Slezak[1] *1. AGH University of Science and Technology, Krakow, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, Krakow, Poland; 3. National Synchrotron Radiation Centre SOLARIS, Jagiellonian University, Krakow, Poland*

CP-06. **Spintronics of magnetoelectric antiferromagnetic thin films.** T. Kosub[1] and *D. Makarov*[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

CP-07. **Tunnel Magnetoresistance Properties in the Magnetic Tunnel Junctions with the Plasma Oxidized Cr_2O_3 Barrier.** *T. Ichinose*[1], K. Elphick[2], A. Hirohata[2] and S. Mizukami[1,3] *1. Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, University of York, York, United Kingdom; 3. Center for Science and Innovation in Spintronics (Core Research Cluster) and Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

CP-08. **Crystallographic Structure Dependent Current-induced Switching in NiO/Pt Bilayer.** *S. Hu*[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China*

CP-09. **Magneto-optical Kerr Spectroscopy of Mn_3AN Non-collinear Antiferromagnetic Thin Films.** *K. Krizanova*[3], L. Beran[3], J. Zázvorka[3], F. Johnson[2], D. Boldrin[2], A. Mihai[2], B. Zou[2], L. Cohen[2], M. Veis[3] and J. Zemen[1] *1. Czech Technical University, Prague, Czechia; 2. Imperial College London, London, United Kingdom; 3. Charles University, Prague, Czechia*

CP-10. **Modification of Antiferromagnetic State by Spin-Orbit Torque.** J. Wu[1], *C. Yang*[1] and C. Lai[1] *1. National Tsing Hua University, Hsing Chu, Taiwan*

CP-11. **Tunable Magnetic-Phase Order and Magnetic Anisotropy in FeRh Multilayers: First-Principles Prediction.** *D. Odkhuu*[1,2] *1. Department of Physics, Incheon National University, Incheon, The Republic of Korea; 2. Institute of Physics and Technology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia*

CP-12. **Anomalous Hall effect in antiferromagnetic antiperovskite $Mn_3Ni_{1-x}Cu_xN$ films.** *T. Hajiri*[1], K. Zhao[2], R. Miki[1], H. Chen[3], P. Gegenwart[2] and H. Asano[1] *1. Nagoya University, Nagoya, Japan; 2. Augsburg University, Augsburg, Germany; 3. Colorado State University, Fort Collins, CO, United States*

CP-13. **Spin Transport Properties in Antiferromagnetic $L1_2$-ordered Mn_3Ir Thin Films.** *H. Iwaki*[1], T. Moriyama[1], T. Ikebuchi[1], K. Oda[1], Y. Shiota[1] and T. Ono[1] *1. Institute for Chemical Research, Kyoto University, Uji, Japan*

CP-14. **Crystal orientation dependence of the spin current transmission in single crystalline NiO thin films.** *T. Ikebuchi*[1], T. Moriyama[1], K. Oda[1], H. Iwaki[1] and T. Ono[1] *1. ICR, Kyoto University, Uji, Japan*

CP-15. **Spin transport across antiferromagnent in an ferromagnent/antiferromagnet/heavy metal trilayer device.** *P. Lin*[1], B. Yang[1], P. Lee[1] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

CP-16. **Fabrication of Antiferromagnetic Mn_3Sn Epitaxial Thin Films and Anomalous Hall Effect in Them.** *T. Ikeda*[1], M. Tsunoda[2], M. Oogane[1], S. Oh[3], T. Morita[3] and Y. Ando[1] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 3. Institute for Super Materials, ULVAC Inc., Tsukuba, Japan*

CP-17. **Gradual phase transition from ferromagnetic tetragonal to antiferromagnetic cubic states in Mn_xGa ($1.8 \leq x \leq 3.0$) thin films.** Y. Jang[1], W. Yoo[1], H. Bang[1], C. Kim[1], Y. Lee[2], K. Lee[3] and *M. Jung*[1] *1. Department of Physics, Sogang University, Seoul, The Republic of Korea; 2. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Mainz University, Mainz, Germany*

CP-18. **Structural and magnetic characterization of highly epitaxial non-collinear Mn_3X (X = Ga, Sn) for Antiferromagnetic Spintronics.** *S. Kurdi*[3], P. Zilske[1], X. Xu[2], Y. Sakuraba[2], L. Greer[3], Z. Barber[3], G. Reiss[1] and J. Koo[1] *1. Physics Department, Bielefeld University, Bielefeld, Germany; 2. Research Center for Materials Science, National Institute for Materials Science (NIMS), Tsukuba, Japan; 3. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom*

WEDNESDAY MORNING 9:30 — RIO PAVILION 8-11

Session CQ
BIOMEDICAL APPLICATIONS I
(Poster Session)

Bethanie Stadler, Chair
University of Minnesota, Minneapolis, MN, United States

CQ-01. **Using repetitive paired-pulse transcranial magnetic stimulation for evaluation of motor cortex excitability.** T. Torii[1], A. Sato[1], *M. Iwahashi*[2] and K. Iramina[3] *1. Medical Care and Welfare Engineering, Tokai University, Kumamoto, Japan; 2. Clinical Engineering, Komatsu University, Komatsu, Japan; 3. Graduate School of Sytems Life Sciences, Kyushu University, Fukuoka, Japan*

CQ-02. **Immunoassay Using a CoFeB/MgO Perpendicular Magnetic Sensor.** *C. Cheng*[1], K. Chang[1], S. Kao[1] and Y. Tseng[1] *1. National Chiao Tung University, Hsinchu, Taiwan*

CQ-03. **Monophasic pulsed field generation with an optimized switching mechanism.** *N. Prabhu Gaunkar*[1], W. Theh[1] and M. Mina[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

CQ-04. **Point-of-care ultrahigh sensitivity magnetic lateral flow assay.** M. Khodadadi[1], J. Trabuco[1], L.V. Chang[1], K. Kourentzi[1], R. Willson[1] and *D. Litvinov*[1] *1. University of Houston, Houston, TX, United States*

CQ-05. **Magnetically Activated Cell Capture and Release using Spin Orbit Torque.** *V.M. Estrada*[1], R. Zheng[1], G. Carman[1] and A. Sepulveda[1] *1. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States*

CQ-06. **Magnetic Properties and Hyperthermia Behavior of Iron Oxide Nanoparticle Clusters.** *S. Pourmiri*[1], V. Tzitzios[2,3], G.C. Hadjipanayis[1], B. Meneses Brassea[4] and A.A. El-Gendy[4] *1. Physics, University of Delaware, Newark, DE, United States; 2. Department of Chemical Engineering, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates; 3. NCSR Demokritos, Athens, Greece; 4. Physics, University of Texas at El Paso, El Paso, TX, United States*

CQ-07. **Investigations of the effective parameters on the synthesis of monodispersed magnetic Fe_3O_4 by solvothermal method for biomedical applications.** G.C. Hermosa[1], W. Chen[1], H. Wu[1], C. Liao[1], S. Wang[2], Y. Chen[1,3], C. Koh[3] and *A. Sun*[1] *1. Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan; 2. Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan; 3. Department of Surgery, Far Eastern Memorial Hospital, New Taipei, Taiwan*

CQ-08. **A Simple and Rapid Detection System of Oral Bacteria in Liquid Phase for Point-of-Care Diagnostics using Magnetic Beads.** *L. Ton That*[1,2], S. Takahashi[1], H. Onodera[2], K. Okita[2], S. Yabukami[1,2], K. Yokota[1,2], M. Furuya[1], H. Kanetaka[1], Y. Miura[3] and H. Takahashi[3] *1. Tohoku University, Sendai, Japan; 2. Tohoku Gakuin University, Tagajo, Japan; 3. JNS Co., Ltd., Natori, Japan*

CQ-09. **Magnetic Characterization Change by Solvents of Magnetic Nanoparticles in Liquid-phase Magnetic Immunoassay.** *K. Jinno*[1], B. Hiramatsu[1], K. Tsunashima[1], K. Fujimoto[1], K. Sakai[1], T. Kiwa[1] and K. Tsukada[1] *1. Graduate School of Interdisciplinary Science and Engineering in Health Systems, Okayama University, Okayama, Japan*

CQ-10. **Superparamagnetic gold coated iron nanoparticles for hyperthermia treatment of cancer.** M. Sanad[1], B. Meneses Brassea[1], S. Pourmiri[2], G.C. Hadjipanayis[2] and *A.A. El-Gendy*[1] *1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Physics and Astronomy, University of Delaware, Newark, DE, United States*

CQ-11. **Self-regulating magnetic hyperthermia (SrMH) of Ni_xCu_{1-x} nanoparticles.** B. Meneses Brassea[1], S. Pourmiri[2], M. Sanad[1], M. Ortega[1], G.C. Hadjipanayis[2] and *A.A. El-Gendy*[1] *1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Physics and Astronomy, University of Delaware, Newark, DE, United States*

CQ-12. **Testing of the prototype of a novel TMS coil with improved focality: Quadruple Butterfly Coil.** *X. Zhong*[1], P. Rastogi[1], Y. Tang[1] and D.C. Jiles[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

CQ-13. **A Highly Tunable Skyrmion-based Neurostimulator (SkyNS) for Low-Power Cellular-Level Implantable Magnetic Stimulation.** *R. Saha*[1], K. Wu[1], D. Su[2] and J. Wang[1] *1. Electrical & Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN, United States*

CQ-14. **Magnetic Nanoparticle Relaxation Dynamics-Based Magnetic Particle Spectroscopy for Rapid and Wash-Free Molecular Sensing.** *K. Wu*[1], J. Liu[1], D. Su[2], R. Saha[1] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Department of Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN, United States*

WEDNESDAY
MORNING
9:30

RIO PAVILION 8-11

Session CR
DAMPING, INTERFACES, AND ANISOTROPY II (Poster Session)

Grant Riley, Chair
NIST, Boulder, CO, United States

CR-01. **Dynamic magnetic property in $Pt/Co/Cr_2O_3/Pt$ stack films with perpendicular magnetic anisotropy.** *T. Nguyen*[1,2], Y. Shiratsuchi[3], H. Sato[4,1], S. Ikeda[4,1], T. Endoh[4,1] and Y. Endo[5,1] *1. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Graduate School of Engineering, Osaka University, Suita, Japan; 4. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 5. Graduate School of Engineering, Tohoku University, Sendai, Japan*

CR-02. **Optically Detected Spectroscopy of Magnons Generated in Nonlinear Ferromagnetic Resonance using NV Centers in Diamond.** *B. McCullian*[1], A. Thabt[1], B.A. Gray[2], M.S. Wolf[2], A.S. Ahmed[1], V.P. Bhallamudi[3], D.V. Pelekhov[1], M.R. Page[2] and P.C. Hammel[1] *1. Physics, Ohio State University, Columbus, OH, United States; 2. Materials and Manufacturing Directorate, Air Force Research Laboratory, Dayton, OH, United States; 3. Department of Physics, Indian Institute of Technology Madras, Madras, India*

CR-03. **Fourth-order Magnetic Anisotropy and Interfacial Damping of Co/Ni Multilayers.** *A. Rai*[1,2], A. Sapkota[1,2], A. Pokhrel[1,2], M.P. Li[3], M. De Graef[3], C.K. Mewes[1,2], V. Sokalski[3] and T. Mewes[1,2] *1. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; 2. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, United States; 3. Department of Materials Sciences and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

CR-04. **Non-electronic Contributions to Thermal Conductivity in a Low-Damping Ferromagnetic Metal.** *M.R. Natale*[1], D.J. Wesenberg[1], E. Edwards[2], J.M. Shaw[2] and B.L. Zink[1] *1. Physics & Astronomy, University of Denver, Denver, CO, United States; 2. NIST, Boulder, CO, United States*

CR-05. **First Principle Calculations for Gilbert Damping Constants of Heusler Alloys in the Consideration of Spin Fluctuation.** *R. Hiramatsu*[1], S. Shirakihara[1], D. Miura[1] and A. Sakuma[1] *1. Applied Physics, Tohoku University, Sendai, Japan*

CR-06. **Strain-Induced Perpendicular Magnetic Anisotropy and Gilbert Damping of $Tm_3Fe_5O_{12}$ Thin Films.** *O. Ciubotariu*[1], A. Semisalova[2], K. Lenz[2] and M. Albrecht[1] *1. Institute of Physics, University of Augsburg, Augsburg, Germany; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

CR-07. **Ferrimagnetic Domain Wall Dynamics through the Compensation Points.** *E. Haltz*[1], J. Sampaio[1] and A. Mougin[1] *1. Laboratoire de Physique des Solides, Orsay, France*

CR-08. **Temperature Dependence of Magnetic Resonance in Ferrimagnetic GdFeCo Alloys.** *T. Okuno*[1], S. Kim[2,4], T. Moriyama[1], D. Kim[1], H. Mizuno[1,3], T. Ikebuchi[1], Y. Hirata[1], H. Yoshikawa[5], A. Tsukamoto[5], K. Kim[6], Y. Shiota[1], K. Lee[7,8] and T. Ono[1,9] *1. Institute for Chemical Research, Kyoto University, Uji-City, Japan; 2. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States; 3. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan; 4. Department of Physics and Astronomy, University of California Los Angeles, Los Angeles, CA, United States; 5. College of Science and Technology, Nihon University, Funabashi, Japan; 6. Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 7. Department of Materials Science & Engineering, Korea University, Seoul, The Republic of Korea; 8. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea; 9. Center for Spintronics Research Network (CSRN), Graduate School of Engineering Science, Osaka University, Osaka, Japan*

CR-09. **Thermal intermixing effect on Gilbert damping of sputter-grown Pt/$Ni_{80}Fe_{20}$/Pt sandwich trilayers.** *Y. Kim*[1], B. Kim[1], B. Bhoi[1], Y. Kim[1] and S. Kim[1] *1. Material science, Seoul National University, Seoul, The Republic of Korea*

CR-10. **Enhanced damping effect of FeNiN film due to two magnon scattering.** *Z. Zhu*[1], H. Feng[1], J. Wang[1] and Q. Liu[1] *1. Key Laboratory for Magnetic and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou, China*

CR-11. **Manipulation of Magnetic Anisotropy by Pt Under-Layer Thickness in Pt/Co/Pt Films.** *J. Yu*[1], D. Kim[1], J. Chang[1], J. Park[1], Y. Park[1,2], D. Kim[3], B. Min[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Spin Convergence Research Center, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Institute for Chemical Research, Kyoto University, Kyoto, Japan*

CR-12. **Gilbert Damping Variation via Disorder in B2 Ordered Co_2MnAl Full Heusler Alloy System.** *V. Barwal*[1], N. Behera[2], S. Husain[2], A. Kumar[2], P. Svedlindh[2] and S. Chaudhary[1] *1. Physics, Indian Institute of Technology Delhi, New Delhi, India; 2. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden*

CR-13. **Paramagnetic resonance in $La_{0.6}Ca_{0.4}MnO_3$ detected by magnetoimpedance method using a copper 'stripcoil'.** U. Chaudhuri[1], A. Chanda[1] and *R. Mahendiran*[1] *1. Physics, National University of Singapore, Singapore, Singapore*

CR-14. **Dynamic Magnetic Properties of Amorphous $Fe_{80}B_{20}$ Thin Films and its Relation to their Interfaces.** *U. Urdiroz*[1], B.M. Teixeira[2], F. Palomares[1], J.M. Gonzalez[1], N. Sobolev[2,3], A. Mayoral[4] and F. Cebollada[5] *1. Instituto de Ciencia de Materiales de Madrid (CSIC), Madrid, Spain; 2. Departamento de Física and I3N, Universidade de Aveiro, Aveiro, Portugal; 3. National University of Science and Technology "MISiS", Moscow, Russian Federation; 4. Advanced Microscopy Laboratory, Nanoscience Institute of Aragon (LMA-INA)., Zaragoza, Spain; 5. POEMMA-CEMDATIC - ETSI de Telecomunicación, Universidad Politécnica de Madrid, Madrid, Spain*

CR-15. **Time dynamics and magnetic viscosity measurements in inhomogeneous $La_{0.7}Sr_{0.3}MnO_3$ films.** *N. Mottaghi*[1], S. Kumari[2], M.S. Seehra[1] and M. Holcomb[1] *1. Physics and astronomy, West Virginia University, Morgantown, WV, United States; 2. Department of Physics, The Pennsylvania State University, University Park, PA, United States*

CR-16. **Damping Enhancement of Permalloy/Ho Bilayers Induced by Spin Pumping Effect at Room Temperature.** M. Tian[1], Q. Chen[1], L. Cao[1], Z. Kou[1], M. Jalali[1], *Y. Zhai*[1], J. Wang[2], B. You[2] and J. Du[2] *1. School of Physics, Southeast University, Nanjing, China; 2. School of Physics, Nanjing University, Nanjing, China*

Session CS
EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM
(Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

CS-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

CS-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

CS-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

CS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

Session CT
MAGNETIC ALLOYS AND COMPOUNDS
(Poster Session)

Nicholas Jones, Co-Chair
Naval Surface Warfare Center, Bethesda, MD, United States
Mehmet Acet, Co-Chair
Duisburg-Essen University, Duisburg, Germany

CT-01. **Microwave absorption properties of Y-Co_2Z/PANI composites.** *N. Tran*[1], H. Nguyen[1], Y. Choi[1], M. Lee[1], T. Phan[1] and B. Lee[1] *1. Department of Physics, Hankuk University of Foreign Studies, Yongin, The Republic of Korea*

CT-02. **Microwave absorption properties of core-shell structured FeCoNi/PMMA filled in composites.** *K. Kim*[1], W. Jang[1], S. Mallesh[1] and S. Lee[2] *1. Physics, Yeungnam University, Gyeongsan, The Republic of Korea; 2. Composites Research Division, Korea Institute of Materials and Science, Changwon, The Republic of Korea*

CT-03. **In-detailed Study of Magnetic, Dielectric and Microwave Properties on $MnFe_2O_4$ Nano-Hollow Spheres.** *D. Mandal*[1] and K. Mandal[1] *1. Condensed Matter Physics & Material Sciences, S.N.Bose National Centre for Basic Sciences, Kolkata, India*

CT-04. **Magnetic and microwave absorption properties of Co-doped $SrFe_{12}O_{19}$ M-type hexaferrites.** *H. Nguyen*[1], N. Tran[1], Y. Choi[1], J. Ahn[1], T. Phan[1] and B. Lee[1] *1. Department of Physics, Hankuk University of Foreign Studies, Yongin, The Republic of Korea*

CT-05. **Improved microwave properties of C-axis oriented La-Co substituted barium hexaferrite thick films for high frequency device applications.** *S. Mahadevan*[1] and P. Sharma[1] *1. School of Physics and Materials Science, Thapar Institute of Engineering & Technology, Patiala, India*

CT-06. **Magnetic properties and microstructures of Fe-doped $(Ti_{1-x}Fe_x)_3AlC_2$ MAX phase and their delaminated MXene.** N. Zhao[1], T. Chen[2], *J. Chen*[3], P. Jia[1], W. Cui[1] and Q. Wang[1] *1. Northeastern University, Shenyang, China; 2. Lanzhou University of Technology, Shenyang, China; 3. Institute Of Electronics, CAS, Beijing, China*

CT-07. **Fluence Dependent Magnetic Properties of Proton Irradiated van der Waals CrSiTe.** *H. Iturriaga*[1], R. Olmos[1], D.S. Blazer[1], L.M. Martinez[1], K. Gandha[2], C.I. Nlebedim[2], Y. Liu[3], C. Petrovic[3], L. Shao[4], Q. Wang[5] and S. Singamaneni[1] *1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Critical Materials Institute, Ames Laboratory, Ames, IA, United States; 3. Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY, United States; 4. Department of Nuclear Engineering, Texas A&M University, College Station, TX, United States; 5. Department of Physics and Astronomy, West Virginia University, Morgantown, WV, United States*

CT-08. Preparation and characterization of flexible FeRh thin films. *Y. Xie*[1], B. Wang[1], H. Yang[1] and R. Li[1] *1. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences., Ningbo, China*

CT-09. Spectral reflectivity crossover and direct-write of ferromagnetic patterns in FeRh thin films. *O. Van't Erve*[1], M. Currie[1], I. Mazin[1], C.D. Cress[1], J. Prestigiacomo[1] and S.P. Bennett[1] *1. Naval Research Lab, Washington, DC, United States*

CT-10. On the magnetic interactions and spin dynamics in 3d transition metal doped 3C-SiC. *G. Moharana*[1], S. Singh[2] and H. Narayanan[1] *1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. IMMT BBSR, BBSR, India*

CT-11. Spin Reorientation in $R_XSm_{1-X}FeO_3$ Perovskites (R= Pr or Nd). *F.E. Lurgo*[1], C. Martin[2] and R.E. Carbonio[1] *1. Departamento de Fisicoquimica,Facultad de Ciencias Quimicas, Universidad Nacional de Córdoba, INFIQC-UNC-CONICET, Córdoba, Argentina; 2. Laboratoire CRISMAT, Centre National de la Recherche Scientifique (CNRS)/ENSICAEN/UCBN, Caen, France*

CT-12. A comparison between Al and Si substitution effects on structural and magnetic properties of Mn_3Ge with tetragonal $D0_{22}$ structure. *H. Okada*[1,2] and Y. Syoji[2] *1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan; 2. Graduate School of Engineering, Tohoku Gakuin University, Tagajo, Japan*

CT-13. Investigation of the structural and magnetic phase transition of Ga-doped $Eu_3Ir_4Sn_{13}$. *R.M. Grossi*[1], A. Fahl[1], K.R. Pakuszewski[1], J.C. Souza[1], A. Ribeiro[1], C. Adriano[1] and P. Pagliuso[1] *1. Unicamp, Campinas, Brazil*

CT-14. Preparation of Highly Magnetic and Dispersible FeCoNi-Graphene Hybrid Materials using a Low Temperature Process for Electromagnetic Absorbing Film. K. Lee[1], *S. Lee*[1], K. Kim[2], B. Jung[1] and T. Kim[1] *1. Korea Institute of Materials Science, Changwon, The Republic of Korea; 2. Yeungnam University, Gyeongsan, The Republic of Korea*

CT-15. First-principles study of magnetic properties of NO_2 absorbed on $SnSe_2$ monolayer. W. Cheng[1], H. Fuh[2] and *C. Chang*[3] *1. Graduate Institute of Applied Physics, National Taiwan University, Taipei, Taiwan; 2. Department of Chemical Engineering & Materials Science, Yuan Ze University, Taoyuan, Taiwan; 3. Department of Physics, National Taiwan University, Taipei, Taiwan*

CT-16. A Study on the Improvement of Torque Density and THD Performance through the Injection of Ferrofluid into the Magnet Tolerance of IPMSM. *I. Yang*[1], D. Kim[1], S. Song[1], S. Lee[1], K. Kim[2] and W. Kim[1] *1. Gachon University, Gyeonggi-do, The Republic of Korea; 2. Halla University, Gangwon-do, The Republic of Korea*

Session CU
MAGNETIC CHARACTERIZATION III: INSTRUMENTATION (Poster Session)

Thomas Thomson, Co-Chair
University of Manchester, Manchester, United Kingdom
Neil Dilley, Co-Chair
Purdue University, W Lafayette, IN, United States

CU-01. **Influence of the random interaction among magnetic moments on the magnetization in cobalt ferrite nanoparticles.** *C.R. Stein*[2,4], M.J. Stoffes Júnior[1], J. André-Filho[4], T.R. Covas[2] and P.C. Morais[3,4] *1. Physics, Federal Institute of Rondônia – IFRO, Porto Velho, Brazil; 2. Federal Univerity of Goiás, Goiânia, Brazil; 3. Catholic University of Brasília, Brasilia, Brazil; 4. University of Brasília – UnB, Brasilia, Brazil*

CU-02. **gFORC: A GPU Accelerated First-Order Reversal-Curve Calculator.** F. Gross[1], J.C. Martínez García[2], S.E. Ilse[1], G. Schütz[1], E. Goering[1], M. Rivas[2] and *J. Gräfe*[1] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. University of Oviedo, Gijón, Spain*

CU-03. **Study of Mechanical Resonance Induced by Magnetostriction in Cyclic Structures Based on FeSi.** *J. Li*[1], B. Qu[2] and K. Yu[3] *1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. Global Information and Telecommunication Institute, Waseda University, Tokyo, Japan*

CU-04. **Ultra-broadband and ultra-high sensitivity permeability measurements by transformer coupled permeameter.** *S. Tamaru*[1], H. Kubota[1], N. Kikuchi[2] and S. Okamoto[2] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. IMRAM, Tohoku University, Sendai, Japan*

CU-05. **Inexpensive Setup for Accurate Characterization of the Ferromagnetic Linewidth of Garnet Spheres.** *A. Pacewicz*[2], J. Krupka[2], P. Aleshkevych[1], B. Salski[2] and P. Kopyt[2] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Warsaw University of Technology, Warsaw, Poland*

CU-06. **Measurement uncertainties of complex permeability effects in ferrite material under compressive stress.** *J. Le Gallou*[1] *1. DMAT, CEA, Monts, France*

CU-07. **Determination of Anisotropy Constants of a Magnetic Thin Film Sample Using Ferromagnetic Resonance (FMR) Spectra.** *K.I. Masood*[1], P. Dhagat[1] and A. Jander[1] *1. EECS, Oregon State University, Corvallis, OR, United States*

CU-08. Displaying FORC Distributions without Information Loss. *P.B. Visscher*[1] *1. MINT Center, University of Alabama, Tuscaloosa, AL, United States*

CU-09. Suspension Force Modeling and Electromagnetic Performance Analysis on the Integrated Five Degrees of Freedom DC Four-Pole Hybrid Magnetic Bearing. *X. Ye*[1], Q. Gu[1] and T. Zhang[1] *1. Huaiyin Institute of Technology, Huai'an, China*

CU-10. Effects of an external magnetic field on the hyperfine parameters in RE_2O_3 (RE = Gd, Er) nanoparticles measured by perturbed angular correlation spectroscopy. *E. Correa*[1,2], B. Bosch-Santos[3], R.N. Saxena[2], G. Cabrera-Pasca[4] and A.W. Carbonari[2] *1. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Nuclear and Energy Research Institute, Sao Paulo, Brazil; 3. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Federal University of Para, Abaetetuba, Brazil*

CU-11. Macroscopic magnetization tunneling in the Josephson φ_0 junction. *G. Kim*[1] *1. Physics and Astronomy, Sejong University, Seoul, The Republic of Korea*

CU-12. Research on High Frequency Magnetic Properties for Nanocrystalline Alloys Under Alternating and Rotational Magnetizations. M. Yang[1,2], *Y. Li*[1,2], Q. Yang[1,2], S. Yue[1,2], C. Zhang[1,2] and H. Sun[1,2] *1. School of Electrical Engineering, Hebei University of Technology, State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. School of Electrical Engineering, Hebei University of Technology, Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Tianjin, China*

CU-13. Independent Control of Anti-parallel and Parallel State Thermal Stability Factors in Magnetic Tunnel Junctions for Telegraphic Signals with Two Degrees of Tunability. *B.R. Zink*[1], Y. Lv[1] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

CU-14. Based on Transient Current Analysis a Measurement Method of Residual Flux Density Used in Single-phase Power Transformer. *H. Cailing*[1] *1. Hebei University of Technology, Tianjin, China*

CU-15. Effect of Uniaxial and Biaxial Stress on Alternating Magnetic Properties of Silicon Steel Sheet. Y. Dou[1,3], *Y. Li*[1,3], C. Zhang[1,3] and J. Zhu[2] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. School of Electrical and Information Engineering, University of Sydney, Sydney, NSW, Australia; 3. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*

CU-16. Hysteresis loop tracer based on the anomalous Nernst effect induced by the asymmetric dissipation of Joule heating. *C.A. Gonzalez-Fuentes*[1], C. Romanque[1], C. Orellana[1] and C. Garcia[1] *1. Physics, UTFSM, Valparaiso, Chile*

Session CV

MAGNETORESISTANCE, MAGNETOIMPEDANCE, AND HALL EFFECT
(Poster Session)

Tao Qu, Co-Chair
University of Minnesota, Minneapolis, MN, United States
Paul Crowell, Co-Chair
University of Minnesota, Minneapolis, MN, United States

CV-01. **Strain effects on the magnetotransport properties of transition metals.** *R.J. Gonzalez Hernandez*[1], B. Dupe[2] and J. Sinova[2] *1. Department of Physics, Universidad del Norte, Barranquilla, Colombia; 2. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany*

CV-02. **Perfection of theoretical model for high frequency MI effect of ferromagnetic amorphous microwires.** Y. Wang[1], *F. Qin*[1], Y. Zhao[1], D. Estevez[1], D. Makhnovskiy[1] and H. Peng[1] *1. Zhejiang University, Hangzhou, China*

CV-03. **The Effects of Annealing Rate and Temperature on Ta/TbFeCo bilayers.** *L. Ye*[1,2], C. Lee[1,2], R.C. Bhatt[1,2], S. Chang[1,2], J. Wu[3] and T. Wu[1,2] *1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan; 2. Taiwan SPIN Research Center, National Yunlin University of Science and Technology, Douliou, Taiwan; 3. Department of Physics, National Changhua University of Education, Changhua, Taiwan*

CV-04. **Magnetotransport Properties of Epitaxial Terbium Nanowires.** *G.A. Newman*[1], C.S. Taylor[1], L.J. Calvano[1], P.D. Sparks[1], J.C. Eckert[1], S.K. Patel[2] and E. Fullerton[2] *1. Physics, Harvey Mudd College, Claremont, CA, United States; 2. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States*

CV-05. **Electron transport and magnetoresistance in highly oriented epitaxial magnetite nanorods.** *R. Das*[1,2], V. Kalappattil[2], M. Phan[2] and H. Srikanth[2] *1. Faculty of Materials Science and Engineering, Phenikaa University, Hanoi, Vietnam; 2. Department of Physics, University of South Florida, Tampa, FL, United States*

CV-06. **Anomalous Hall Effect in FePt/Fe3O4 Core/Shell Nanoparticle Thin Films.** F. Sun[1], Y. Li[2,1], *M. Bian*[3,1], S. Yang[2], Y. Hou[3] and H. Zeng[1] *1. Department of Physics, University at Buffalo, SUNY, Buffalo, NY, United States; 2. Department of Material Physics, Xi'an Jiaotong University, Xi'an, China; 3. Department of Materials Science and Engineering, Peking University, Beijing, China*

CV-07. **Perpendicular magnetic anisotropy in TbFeCo/MgO structure with underlayer Ta/Hf.** *L. Ye*[1,2], R.C. Bhatt[1,2], C. Lee[1,2] and T. Wu[1,2] *1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan; 2. Taiwan SPIN Research Center, National Yunlin University of Science and Technology, Douliou, Taiwan*

CV-08. **First-principles study of anomalous Nernst effect in 2D ferromagnet and materials with nontrivial spin textures.** *F. Ishii*[1], R. Syariati[2], S. Minami[2] and H. Sawahata[2] *1. Nanomaterials Research Institute, Kanazawa University, Kanazawa, Japan; 2. Graduate School of Natural Science and Technology, Kanazawa University, Kanazawa, Japan*

CV-09. **Magnetic and Transport Properties of MnRh Thin Films.** *L.J. Calvano*[1,2], S.K. Patel[1], C.S. Taylor[2], G.A. Newman[2], P.D. Sparks[2], J.C. Eckert[2] and E. Fullerton[1] *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 2. Harvey Mudd College, Claremont, CA, United States*

CV-10. **Anomalous Hall effect in Hexagonal Magnetic Alloy Fe_5Sn_3.** *H. Li*[1,2], J. Chen[1,2], B. Ding[1,2], E. Liu[1,3], H. Zhang[1], X. Xi[1], G. Wu[1] and W. Wang[1,3] *1. Institute of Physics, Chinese Academy of Sciences, BeiJing, China; 2. University of Chinese Academy of Sciences, BeiJing, China; 3. Songshan Lake Materials Laboratory, Dongguan, China*

CV-11. **Spin Valve Like Asymmetric Magnetoresistance in Mn_5Si_3.** *V. Singh*[1,2], R. Rawat[2] and R. Nath[1] *1. School of Physics, IISER-Thiruvananthapuram, Thiruvananthapuram, India; 2. UGC-DAE Consortium for Scientific Research, Indore, India*

CV-12. **Fabrication of $D0_{19}$- and B2-type Fe_3Sn epitaxial films and comparison of magneto-transport properties.** A. Maeno[1], Y. Goto[1], M. Tsujikawa[2,3], M. Shirai[2,3], T. Yanase[4], T. Shimada[4] and *T. Nagahama*[4] *1. CSE, Hokkaido University, Sapporo, Japan; 2. RIEC, Tohoku University, Sendai, Japan; 3. CSRN, Tohoku University, Sendai, Japan; 4. Graduate School of Engineering, Hokkaido University, Sapporo, Japan*

CV-13. **Shape dependent Magneto-electronic transport in $Co_{67}Fe_4Mo_1Si_{17}B_{11}$ amorphous heterostructures.** *E. Pinzón-Escobar*[1], H. Montiel[1] and A. Esparza-García[1] *1. Photophysics and thin films, Universidad Nacional Autonoma de Mexico, ICAT, Mexico city, Mexico*

CV-14. **Enhanced MR Raio and Low Coercivity in Dual-Spin-Valve GMR Stack with Synthetic Antiferromagnetic Couplings.** *N. Fukatani*[1], M. Ichimura[1] and J. Hayakawa[1] *1. Hitachi Ltd., Hikigun, Japan*

CV-15. **Magnetotransport Properties Probed by Terahertz Time-Domain Spectroscopy on Ferromagnetic Thin Films.** *L. Huang*[1], S. Lee[1], D. Kim[1], Y. Zhao[1], S. Kim[2], H. Shin[2], J. Park[2], H. Kim[3], J. Hong[3] and D. Kim[1] *1. Chungbuk National University, Cheongju, The Republic of Korea; 2. Pohang Accelerator Laboratory, Pohang, The Republic of Korea; 3. Daegu Gyeongbuk Institute of Science & Technology, Daegu, The Republic of Korea*

CV-16. **Large Magnetoresistance at Small Magnetic Field and Reconfigurable Boolean Logic Functions Based on Diode-enhanced Giant Magnetoresistance Effect.** *J. Nan*[1], K. Zhang[1], S. Yan[1], Z. Zhang[1,2], Z. Zheng[1,2], G. Wang[1], Y. Zhang[1], Y. Zhang[1,2] and W. Zhao[1] *1. Fert Beijing Research Institute, BDBC, School of Microelectronics, Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China*

CV-17. **Withdrawn**

CV-18. **Magnetic and Transport Properties of Multilayered EuO/Pt Thin Films.** *N. Shrestha*[1], J.R. Murphy[1], W.D. Rice[1] and J. Tang[1] *1. Physics and Astronomy, University of Wyoming, Laramie, WY, United States*

WEDNESDAY
MORNING
9:30

RIO PAVILION 8-11

Session CW
RARE-EARTH-FREE MAGNETS
(Poster Session)

Feng Yan, Co-Chair
The University of Alabama, Tuscaloosa, AL, United States
Tetsuji Saito, Co-Chair
Chiba Institute of Technology, Chiba, Japan

CW-01. **Uniaxial magnetic anisotropy and bcc-bct-fcc transformation of FeCo caused by the addition of V and N elements.** *T. Hasegawa*[1], C. Shirai[1] and Y. Takemasa[1] *1. Department of Materials Science, Akita University, Akita, Japan*

CW-02. **Large perpendicular anisotropy of highly (001) oriented MnAl film fabricated on CoGa buffer layer.** *D. Oshima*[1], T. Kato[2] and S. Iwata[1] *1. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 2. Department of Electronics, Nagoya University, Nagoya, Japan*

CW-03. **Structural and magnetic properties of $Mn_{53.3-x}Al_{45}C_{1.7}Ti_x$ (x = 0, 0.5, 1.0, 1.5) melt spun ribbons.** *J.S. Trujillo Hernandez*[2,1], J.A. Tabares[1] and G.A. Pérez Alcázar[1] *1. Physics Department, Universidad del Valle, Cali, Colombia; 2. Facultad de Ciencias Naturales y Matematicas, Universidad de Ibagué, Ibagué, Colombia*

CW-04. **Effect of Al doping on magnetic properties of LTP-MnBi alloys.** *H. Lee*[1], M. Kang[1], G. Lee[1] and J. Kim[1] *1. Materials Science and Chemical engineering, Hanyang University, Ansan, The Republic of Korea*

CW-05. **Withdrawn**

CW-06. **α''-$Fe_{16}N_2$ Foils with a Positive Temperature Coefficient of Coercivity.** *J. Liu*[1], G. Guo[1], F. Zhang[1], B. Ma[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

CW-07. **Synthesis and magnetic properties of α″-$Fe_{16}N_2$ nanowires using an electrospinning method.** *M. Kang*[1], G. Lee[1], J. Lee[1], Y. Choa[1] and J. Kim[1] *1. Hanyang University, Ansan, Ansan, The Republic of Korea*

CW-08. **Design of $Fe_{16}N_2$ magnets assisted with antiferromagnetic matrix.** *X. Hang*[1] and J. Wang[2,1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

CW-09. **Characteristics of a rare earth free $L1_0$-FeNi hard magnet developed through annealing of FeNiPC amorphous alloys.** J. Kim[1] and *H. Yim*[1] *1. Sookmyung Women's University, Seoul, The Republic of Korea*

CW-10. **Magnetic domain wall pinning and rapid thermal annealing in $L1_0$ -FePt/SiO_2 thin films.** *J. Chiou*[1], H. Chang[2], C. Chi[1], C. Hsiao[1] and A. Ranjan[1] *1. National Tsing Hua University, Hsinchu, Taiwan; 2. National Chung Cheng University, Chia-Yi, Taiwan*

CW-11. **High-temperature properties of Fe-Pt film-magnets prepared by electroplating method.** T. Yanai[1], *Y. Omagari*[1], S. Furutani[1], A. Yamashita[1], M. Nakano[1] and H. Fukunaga[1] *1. Electricity and Electronics, Nagasaki University, Nagasaki city, Japan*

CW-12. **Effect of chloride ion on crystal structures and magnetic properties of electroplated Fe-Pt film-magnets.** *S. Furutani*[1], Y. Omagari[1], R. Hasama[1], A. Yamashita[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki-shi, Japan*

CW-13. **Periodic Magnetic Domains in Singlecrystalline Cobalt Dendrites Fabricated by Electrodeposition.** *F. Chen*[1], C. Li[1], R. Peng[1] and M. Wang[1] *1. Physics, Nanjing University, Nanjing, China*

CW-14. **Buffer layer dependence of magnetic properties and crystal structures for C38-type MnGaGe films.** *M. Sun*[1,2], T. Kubota[1,3], K. Ito[1,3], S. Takahashi[4], Y. Sonobe[4] and K. Takanashi[1,3] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Samsung R&D Institute Japan, Yokohama, Japan*

CW-15. **Structure and Magnetic Properties for Fe-Mn-Ga-Sn Thin Films Prepared by Alternate Monoatomic Layer Deposition Method.** *F. Nakagawa*[1], M. Doi[1] and T. Shima[1] *1. Graduate School of Engineering, Tohoku Gakuin University, Tagajo, Japan*

CW-16. **Compositional dependence of critical temperatures in $Ni_2MnGa_{1-x}In_x$ single crystals.** *P. Cejpek*[1], P. Opletal[1], P. Dolezal[1], K. Vlaskova[1] and M. Dopita[1] *1. Department of Condensed Matter Physics, Charles University, Praha, Czechia*

CW-17. **Electronic, magnetic, and structural properties of Fe_2MnSn Heusler alloy.** B.R. Dahal[1], A. Maruf[1], S. Prophet[2], Y. Huh[1], *P.R. Kharel*[1] and P. Lukashev[2] *1. Department of Physics, South Dakota State University, Brookings, SD, United States; 2. Department of Physics, University of Northern Iowa, Cedar Falls, IA, United States*

WEDNESDAY AFTERNOON 1:30 | RIO PAVILION 2

Session DA
GIANT SPIN ORBIT TORQUES BEYOND SPIN HALL

Emilie Jué, Chair
National Institute of Standards and Technology, Boulder, CO, United States

1:30

DA-01. **Interface-Generated Spin-Orbit Torques and Currents. *(Invited)*** V. Amin[3,2], P. Haney[2] and *M.D. Stiles*[1] *1. Alternative Computing Group, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Nanoscale Processes and Measurements Group, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Maryland NanoCenter, University of Maryland, College Park, MD, United States*

2:06

DA-02. **Spin-Orbit Torque Driven by Planar Hall Current. *(Invited)*** *E.A. Montoya*[1], C. Safranski[1] and I. Krivorotov[1] *1. Department of Physics and Astronomy, University of California, Irvine, Irvine, CA, United States*

2:42

DA-03. **Iron Garnet Films for Spintronics. *(Invited)*** *C. Ross*[1], G. Beach[1], E.R. Rosenberg[1], J. Bauer[1], T. Fakhrul[1], C. Avci[1], L.M. Caretta[1] and B. Khurana[1] *1. Massachusetts Institute of Technology, Cambridge, MA, United States*

3:18

DA-04. **Spin-Orbit Torques in Metal-Based Heterostructures. *(Invited)*** *K. Ando*[1] *1. Keio University, Yokohama, Japan*

3:54

DA-05. **Spin-orbit-torques from low-symmetry materials. *(Invited)*** *D. Ralph*[1], G. Stiehl[1], D. MacNeill[1], V. Gupta[1], J. Mittelstaedt[1], S. Karimeddiny[1], M. Guimaraes[1], N. Reynolds[1], N. Sivadas[1], I. El Baggari[1], L. Kourkoutis[1], C. Fennie[1] and R. Buhrman[1] *1. Cornell University, Ithaca, NY, United States*

Session DB
SPIN TRANSPORT AND MAGNETISM IN 2D MATERIALS

Nadya Mason, Chair
University of Illinois at Urbana-Champaign, Urbana, IL, United States

1:30

DB-01. **Tunable spin-to-charge conversion in van der Waals heterostructures at room temperature.** ***(Invited)*** *W.F. Savero Torres*[1], L.A. Benítez[1,2], J.F. Sierra[1], M. Timmermans[1], J.H. Garcia[1], S. Roche[1,3], M. Costache[1] and S.O. Valenzuela[1,3] *1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST), Barcelona, Spain; 2. Universitat Autonòma de Barcelona, Barcelona, Spain; 3. Institució Catalana de Recerca i Estudis Avancats (ICREA), Barcelona, Spain*

2:06

DB-02. **Universal Transfer and Stacking Technique of van der Waals Heterojunctions for Spintronics.** *Y. Cao*[1], X. Wang[1], X. Lin[1] and W. Zhao[1] *1. Beihang University, Beijing, China*

2:18

DB-03. **Observation of Ferromagnetic Resonance in Quasi-2D Ferromagnet CrI_3 using Magneto-Raman Spectroscopy.** *R. Valdes Aguilar*[1], A. McCreary[2], T. Mai[1,2], J.R. Simpson[3,2], F.G. Utermohlen[1], N. Trivedi[1] and A.R. Hight Walker[2] *1. Physics, The Ohio State University, Columbus, OH, United States; 2. NIST, Gaithersburg, MD, United States; 3. Towson University, Baltimore, MD, United States*

2:30

DB-04. **Efficient magnetization switching and Dzyaloshinskii-Moriya interaction in WTe_2/ferromagnet heterostructures.** *S. Shi*[1,2*], Z. Zhu[1], K. Cai[1], S.D. Pollard[1], J. Wang[3,2], P. He[1], G. Eda[3,2], G. Liang[1] and H. Yang[1,2] *1. Electrical and computer engineering, National University of Singapore, Singapore, Singapore; 2. Centre for advanced 2D materials, National University of Singapore, Singapore, Singapore; 3. Department of physics, National University of Singapore, Singapore, Singapore*

2:42

DB-05. **Spin Filtering in CrI_3 Tunnel Junctions.** *T.R. Paudel*[1] and E.Y. Tsymbal[1] *1. Department of Physics and Astronomy & Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, NE, United States*

2:54

DB-06. **Band gaps and 3d-band splittings on the electronic structures in 2D magnetic materials: Application of Quasiparticle Self-Consistent GW method.** *Y. Lee*[1], T. Kotani[2] and L. Ke[1] *1. Ames Laboratory, Ames, IA, United States; 2. Department of Applied Mathematics and Physics, Tottori University, Tottori, Japan*

3:06

DB-07. **Effect of Random Anisotropy on Magnetic Long Range Order of Two-Dimensional Magnets.** P. Tang[1,2], X. Han[2] and *S. Zhang*[1] *1. Physics, The University of Arizona, Tucson, AZ, United States; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

3:18

DB-08. **Giant enhancements of perpendicular magnetic anisotropy and spin-orbit torque by a MoS_2 layer.** *Q. Xie*[1], W. Lin[1], B. Yang[2], X. Shu[1], S. Chen[1], L. Liu[1], X. Yu[1], M. Breese[1], T. Zhou[5], M. Yang[3], Z. Zhang[3], S. Wang[3], H. Yang[4], J. Chai[3], X. Han[2] and J. Chen[1] *1. National University of Singapore, Singapore, Singapore; 2. Chinese Academy of Sciences, Beijing, China; 3. Agency for Science, Technology and Research, Singapore, Singapore; 4. Chinese Academy of Sciences, Ningbo, China; 5. Hangzhou Dianzi University, Hanzhou, China*

3:30

DB-09. **Surface spin-flop transition in CrI_3 probed by Pt.** *T. Su*[1,2], M. Lohmann[2], J. Li[2], M. Al ghamdi[2], K. Watanabe[3], T. Taniguchi[3] and J. Shi[2] *1. International Center for Quantum Materials, Peking University, Beijing, China; 2. Physics and Astronomy, University of California, Riverside, Riverside, CA, United States; 3. National Institute for Materials Science, Tsukuba, Japan*

3:42

DB-10. **Structural, electrical and magnetotransport properties of layered $FeGe_2$ thin films.** *J. Herfort*[1], S. Gaucher[1], D. Czubak[1], B. Jenichen[1] and M. Ramsteiner[1] *1. Paul-Drude-Institute for Solid State Electronics, Berlin, Germany*

3:54

DB-11. **Current-driven magnetization switching in a van der Waals ferromagnet Fe_3GeTe_2.** X. Wang[1], J. Tang[1], X. Xia[2], Y. Liu[1], Z. Han[2], G. Zhang[1], *G. Yu*[1] and X. Han[1] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China, Beijing, China; 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China, Shenyang, China*

4:06

DB-12. **Pressure-Dependent Reduction of Magnetic Ordering in $Fe_{3-x}GeTe_2$.** *D.J. O'Hara*[1,2], Z.E. Brubaker[1], R. Stillwell[1], E. O'Bannon[3], A. Baker[1], D. Weber[4], C. Park[5], J.E. Goldberger[4], R. Kawakami[6], J.R. Jeffries[3] and S.K. McCall[1] *1. Materials Science Division, Lawrence Livermore National Laboratory, Livermore, CA, United States; 2. Materials science and engineering, University of California, Riverside, Riverside, CA, United States; 3. Physics Division, Lawrence Livermore National Laboratory, Livermore, CA, United States; 4. Chemistry and Biochemistry, The Ohio State University, Columbus, OH, United States; 5. X-ray science division, Argonne National Laboratory, Argonne, IL, United States; 6. Physics Department, The Ohio State University, Columbus, OH, United States*

4:18

DB-13. **Quasi-2D Magnon Identification by Magneto-Raman Spectroscopy in Antiferromagnetic $FePS_3$.** *J.R. Simpson*[2,1], A. McCreary[1], T. Mai[1], R. Valdes Aguilar[3] and A.R. Hight Walker[1] *1. National Institute of Standards & Technology, Gaithersburg, MD, United States; 2. Physics, Towson University, Towson, MD, United States; 3. Physics, The Ohio State University, Columbus, OH, United States*

WEDNESDAY AFTERNOON 1:30 | BRASILIA 2

Session DC
SKYRMIONS IN NEW MATERIALS

Myoung-Woo Yoo, Chair
Paris-Sud University, Palaiseau, France

1:30

DC-01. **New materials and devices in skyrmionics: Skyrmion-based artificial synapse and skyrmion lattice in van der Waals magnets.** ***(Invited)*** *S. Woo*[1] *1. IBM TJ Watson Research Center, Yorktown Heights, NY, United States*

2:06

DC-02. **Topological Hall Effects and Topological Spin Hall Effects Caused by a Skyrmion and a Skyrmionium.** *Y. Ishida*[1] and K. Kondo[1] *1. Research Institute for Electronic Science, Hokkaido Univ., Sapporo, Japan*

2:18

DC-03. **Spin-Hall Topological Hall Effect in Highly Tunable Pt/Ferrimagnetic-Insulator Bilayers.** *A.S. Ahmed*[1], A.J. Lee[1], N. Bagués[2], B. McCullian[1], A. Thabt[1], A. Perrine[2], P. Wu[1], J.R. Rowland[1], M. Randeria[1], P.C. Hammel[1], D.W. McComb[2,3] and F. Yang[1] *1. Physics, The Ohio State University, Columbus, OH, United States; 2. Center for Electron Microscopy and Analysis, The Ohio State University, Columbus, OH, United States; 3. Materials Science and Engineering, The Ohio State University, Columbus, OH, United States*

2:30

DC-04. **All Optical Motion of Chiral Domain Walls and Skyrmion Bubbles.** *L.M. Caretta*[1], F. Buettner[1], F. Steinbach[2], D. Suzuki[1], B. Pfau[2], C. von Korff Schmising[2], S. Eisebitt[2] and G. Beach[1] *1. MIT, Cambridge, MA, United States; 2. Max-Born-Institut, Berlin, Germany*

2:42

DC-05. **Temperature dependent skyrmion Hall angle in ferrimagnets.** *M. Vogel*[1], X. Wang[2], P.N. Lapa[3], J. Pearson[1], R. Divan[4], X. Cheng[2], A. Hoffmann[1] and S.G. te Velthuis[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 3. Physics Department, University of California, San Diego, CA, United States; 4. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States*

2:54

DC-06. **Persistence of chiral domain walls in synthetic ferrimagnetic skyrmions through spin reorientation transition in $[Co/Gd/Pt]_{10}$ multilayers.** *X. Wang*[1], A.T. Clark[1], P.N. Lapa[2], R.V. Chopdekar[3], Z. Xiao[3,4], C.M. Quispe Flores[5], A. Fiagbenu[1], M. Vogel[2], J. Pearson[2], K. Buchanan[5], S.G. te Velthuis[2], A. Hoffmann[2] and X. Cheng[1] *1. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Electrical and Computer Enginnering, Univeristy of California, Los Angeles, Los Angeles, CA, United States; 5. Department of Physics, Colorado State University, Fort Collins, CO, United States*

3:06

DC-07. **Magnetic skyrmions, bimerons and antiskyrmions in new materials.** ***(Invited)*** *Y. Zhou*[1] *1. School of Science and Engineering, The Chinese Univerisity of Hong Kong (Shenzhen), Shenzhen, China*

3:42

DC-08. **An accurate model for skyrmion dynamics under spin-orbit torques.** *W. Gan*[1], I. Purnama[1], J.C. Martinez[2] and W. Lew[1] *1. Nanyang Technological University, Singapore, Singapore; 2. Singapore University of Technology and Design, Singapore, Singapore*

3:54

DC-09. **Vanishing skyrmion Hall effect at the angular momentum compensation temperature of a ferrimagnet.** *Y. Hirata*[1], D. Kim[1], S. Kim[2,3], D. Lee[4], S. Oh[5], D. Kim[6], T. Nishimura[1], T. Okuno[1], Y. Futakawa[7], H. Yoshikawa[7], A. Tsukamoto[7], Y. Tserkovnyak[2], Y. Shiota[1], T. Moriyama[1], S. Choe[6], K. Lee[4,5] and T. Ono[1,8] *1. Chemistry, Institute for Chemical Research, Uji, Japan; 2. Physics and Astronomy, University of California Los Angeles, Los Angeles, CA, United States; 3. Physics and Astronomy, University of Missouri, Columbia, MO, United States; 4. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 5. Nano-Semiconductor and Engineering, Korea University, Seoul, The Republic of Korea; 6. Physics and Institute of Applied Physics, Seoul National University, Seoul, The Republic of Korea; 7. College of Science and Technology, Nihon University, Funabashi, Japan; 8. Ceneter for Spintronics Research Network, Osaka University, Osaka, Japan*

Session DD
ULTRAFAST CONTROL OF MAGNETISM

Stefano Bonetti, Chair
Stockholm University, Stockholm, Sweden

1:30

DD-01. **All-optical single shot magnetization switching mediated by angular momentum transfer in spin-valve. *(Invited)***
S. Iihama[1,2], J. Igarashi[2,3], Y. Xu[2], M. Deb[2], G. Malinowski[2], M. Hehn[2], J. Gorchon[2], E. Fullerton[2,4], S. Fukami[3,5], S. Mizukami[1,5] and S. Mangin[2] *1. Advanced Institute for Materials Research, Tohoku university, Sendai, Japan; 2. Institut Jean Lamour, Universite de Lorraine, Nancy, France; 3. Laboratory for Nanoelectronics and Spintronics, Tohoku University, Sendai, Japan; 4. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States; 5. Center for Science and Innovation in Spintronics (CSIS), Tohoku University, Sendai, Japan*

2:06

DD-02. **Ultrafast Holographic Imaging at the European XFEL.**
N. Zhou Hagström[1], N. Kerber[2], M. Schneider[3], C. Günther[3,4], M. Beg[5], R. Rosca[5], M. Pancaldi[1], K. Neeraj[1], D. Polley[1], R. Jangid[6], N. Agarwal[5], L. Le Guyader[5], R. Carley[5], A. Yaroslavtsev[5], L. Mercadier[5], G. Mercurio[5], R. Gort[5], J. Zhu[5], T. Kluyver[5], M. Bergemann[5], E. Kamil[5], A. Philippi-Kobs[7], M. Riepp[7], W. Roseker[7], L. Müller[7,8], G. Grübel[7,8], E. Jal[9], T.J. Silva[10], J.M. Shaw[10], C. Sanchez Hanke[11], R. Kukreja[6], N. Jaouen[12], H. Fangohr[5], S. Eisebitt[3,4], M. Kläui[2], A. Scherz[5] and S. Bonetti[1,13] *1. Department of Physics, Stockholm University, Stockholm, Sweden; 2. Institute of Physics, Johannes Gutenberg-University Mainz, Mainz, Germany; 3. Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany; 4. Institut für Optik und Atomare Physik, Technische Universität Berlin, Berlin, Germany; 5. European XFEL GmbH, Schenefeld, Germany; 6. Department of Materials Science and Engineering, University of California Davis, Davis, CA, United States; 7. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 8. Universität Hamburg, Hamburg, Germany; 9. LCPMR, Sorbonne Université, Paris, France; 10. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 11. Diamond Light Source, Oxford, United Kingdom; 12. Synchrotron SOLEIL, Saint Aubin, France; 13. Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venezia-Mestre, Italy*

2:18

DD-03. **Ultimate Speed Limits for Deterministic All-Optical Toggle Switching.** *Y. van Hees*[1], B. Koopmans[1] and R. Lavrijsen[1]
1. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands

2:30

DD-04. **Pathways for deterministic all-optical switching of magnetization.** C. Davies[1], T. Janssen[1], J. Mentink[2], A. Tsukamoto[4], A. Kimel[2], L. van der Meer[1], A. Stupakiewicz[3] and *A. Kirilyuk*[1] *1. FELIX Laboratory, Radboud University, Nijmegen, Netherlands; 2. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 3. Faculty of Physics, University of Bialystok, Bialystok, Poland; 4. College of Science and Technology, Nihon University, Chiba, Japan*

2:42

DD-05. **Control of Magnetization Precession Excitation via Tuning Ultrafast Laser Polarization Direction.** J. Shi[1], L. Shen[1], L. Zhou[3], Y. Dai[4], H. Zhao[1], H. Xia[1], D. Wu[3,5], S. Zhou[4] and *H. Zhao*[2,1] *1. Department of Optical Science and Engineering, Fudan University, Shanghai, China; 2. Key Laboratory of Micro and Nano Photonics Structure, Fudan University, Shanghai, China; 3. Department of Physics, Nanjing University, Nanjing, China; 4. Physics Department, Tongji University, Shanghai, China; 5. National Laboratory of Solid State Microstructures, Nanjing University, Shanghai, China*

2:54

DD-06. **Selective All-Optical Toggle Switching Defined by Spin Currents in FM/Cu/Co/Gd Systems.** *Y. van Hees*[1], P. van de Meugheuvel[1], B. Koopmans[1] and R. Lavrijsen[1] *1. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

3:06

DD-07. **Comparing all-optical switching in (synthetic-)ferrimagnetic multilayers and alloys.** *M. Beens*[1], M. Lalieu[1], A. Deenen[1], R. Duine[2,1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Utrecht University, Utrecht, Netherlands*

3:18

DD-08. **Enhanced Ultrafast Switching Dynamics at the Nanoscale.** *A. El-Ghazaly*[4], B. Tran[1], A. Ceballos[2], C. Lambert[3], A. Pattabi[5], S. Salahuddin[5], F. Hellman[1,2] and J. Bokor[5] *1. Physics, University of California Berkeley, Berkeley, CA, United States; 2. Materials Science and Engineering, University of California Berkeley, Berkeley, CA, United States; 3. Materials, ETH Zurich, Zurich, Switzerland; 4. Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 5. Electrical Engineering and Computer Science, University of California Berkeley, Berkeley, CA, United States*

3:30

DD-09. **Ultrafast helicity-independent all-optical magnetization reversal of Co/Pt multilayers coupled with CoGd.** *J. Chatterjee*[1], A. Pattabi[1], M. Ruiz[2], S. Salahuddin[1,3], F. Hellman[2,3] and J. Bokor[1,3] *1. Department of Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA, United States; 2. Department of Physics, University of California, Berkeley, Berkeley, CA, United States; 3. Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, CA, United States*

3:42

DD-10. **Field Dependence of Time-Resolved All-Optical Toggle Switching in Co/Gd Bilayers.** *M. Peeters*[1], Y. van Ballegooie[1], M. Beens[1], R. Lavrijsen[1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

3:54

DD-11. **Light-wave dynamic control of magnetism.** ***(Invited)*** *M. Münzenberg*[1] *1. Institute of Physics, Greifswald University, Greifswald, Germany*

WEDNESDAY AFTERNOON 1:30 — BRASILIA 3

Session DE
SKYRMIONS IN MULTILAYERS I
Ivan Lisenkov, Chair
Winchester Technlogies, LLC, Burlington, MA, United States

1:30

DE-01. **Thermoelectric signature of individual skyrmions.** ***(Invited)*** *A. Fernández Scarioni*[1], C. Barton[2], H. Corte-León[2], S. Sievers[1], F. Ajejas[3], W. Legrand[3], N. Reyren[3], V. Cros[3], O. Kazakova[2] and H. Schumacher[1] *1. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; 2. National Physical Laboratory, Teddington, United Kingdom; 3. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

2:06

DE-02. **The 3-dimensional depth profile of magnetic skyrmion tubes.** *W. Liyanage*[1], L.J. Quigley[1], S. Montoya[2,3], N. Tang[1], T. Liu[4], M. Fitzsimmons[5,6], S.Q. Sinha[7], R. Kawakami[4], J. Borchers[8], E. Fullerton[2], B.B. Maranville[8], L. DeBeer-Schmitt[6], A.J. Grutter[8] and D.A. Gilbert[1] *1. Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States; 2. CMRR, University of California, San Diego, La Jolla, CA, United States; 3. Naval Information Warfare Systems Command, San Diego, CA, United States; 4. Department of Physics, The Ohio State University, Columbus, OH, United States; 5. Department of Physics, University of Tennessee, Knoxville, TN, United States; 6. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 7. Department of Physics, University of California, San Diego, La Jolla, CA, United States; 8. NCNR, National Institute of Standards and Technology, Gaithersburg, MD, United States*

2:18

DE-03. **Anatomy of skyrmionic textures in magnetic multilayers.** W. Li[1], I. Bykova[2], S. Zhang[3], *G. Yu*[1], R. Tomasello[4], M. Carpentieri[5], Y. Liu[1], Y. Guang[1], J. Gräfe[2], M. Weigand[2], T. Hesjedal[3], G. Finocchio[6], X. Han[1] and G. Schütz[2] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 3. Department of Physics, Clarendon Laboratory, University of Oxford, Oxford, United Kingdom; 4. Institute of Applied and Computational Mathematics, Heraklion-Crete, Greece; 5. Department of Electrical and Information Engineering, Polytechnic of Bari, Bari, Italy; 6. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

2:30

DE-04. **Controlling skyrmion bubble confinement by dipolar interactions.** *T. Lichtenberg*[1], F.C. Ummelen[1], H. Swagten[1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

2:42

DE-05. **Detection, Motion and Nucleation of Skyrmions.** ***(Invited)*** K. Zeissler[1,2], S. Finizio[3], *C. Barton*[1], A. Huxtable[2], J. Massey[2], M. Rosamond[2], E. Linfield[2], A.V. Sadovnikov[4], S. Nikitov[4], J. Raabe[3], T. Moore[2], G. Burnell[2], O. Kazakova[1] and C.H. Marrows[2] *1. National Physical Laboratory, Teddington, United Kingdom; 2. University of Leeds, Leeds, United Kingdom; 3. Paul Scherrer Institut, Villigen, Switzerland; 4. Saratov State University, Saratov, Russian Federation*

3:18

DE-06. **Magnetic Skyrmion Nanolithography.** *A.S. Samardak*[1], A. Ognev[1], A. Kolesnikov[1], A.V. Sadovnikov[2,3], S. Nikitov[2,3], I. Soldatov[4], A. Talapatra[5], J. Mohanty[5], Y. Kim[6], I. Cha[6] and Y. Kim[6] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Laboratory "Metamaterials", Saratov State University, Saratov, Russian Federation; 3. Kotel'nikov Institute of Radioengineering and Electronics RAS, Moscow, Russian Federation; 4. Leibniz Institute for Solid State and Material Research (IFW-Dresden), Dresden, Germany; 5. Indian Institute of Technology Hyderabad, Hyderabad, India; 6. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

3:30

DE-07. **Nonvolatile creation and annihilation of fixed magnetic skyrmions using VCMA.** *D. Bhattacharya*[1], S. Razavi[2], H. Wu[2], B. Dai[2], K. Wang[2] and J. Atulasimha[1] *1. Virginia Commonwealth University, Richmond, VA, United States; 2. University of California, Los Angeles, Los Angeles, CA, United States*

3:42

DE-08. **Skyrmion nucleation in Pt/Co/Ni-based thin film heterostructures.** *J.A. Brock*[1], S. Montoya[2], M. Im[3,4] and E. Fullerton[1] *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 2. Naval Information Warfare Systems - Pacific, San Diego, CA, United States; 3. Center for X-Ray Optics, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*

3:54

DE-09. **Temperature dependence of skyrmion size in a Ir/Fef/Co/Pt multilayer film.** A. Yagil[1], M. Raju[2], R. Tomasello[3], G. Finocchio[4], S. Chiappini[5], O.M. Auslaender[1], C. Panagopoulos[2] and *M. Reznikov*[1] *1. Physics, Technion, Israel Institute of Thechnology, Haifa, Israel; 2. Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore; 3. Institute of Applied and Computational Mathematics, Foundation for Research and Technology-Hellas, Heraklion, Greece; 4. Department of Mathematical and Computer Sciences Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 5. Istituto Nazionale di Geofifica e Vulcanologia - INGV, Rome, Italy*

4:06

DE-10. **Observation of zero-field skyrmion arrays in Pt/Co/Ni/Ir-based multi-layers.** *M.P. Li*[1], M. De Graef[1] and V. Sokalski[1] *1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

4:18

DE-11. **High-Frequency Domain Wall Oscillations in Ferromagnetic Nanowire with a Nanoscale Dzyaloshinskii–Moriya Interaction (DMI) Region.** *D. Kumar*[1], R. Sbiaa[2], P. Sengupta[1] and S. Piramanayagam[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Department of Physics, Sultan Qaboos University, Muscat, Oman*

Session DF
NEUROMORPHIC COMPUTING
Jean Anne Incorvia, Chair
University of Texas at Austin, Austin, TX, United States

1:30

DF-01. Physical Reservoir Computing based on Spin Torque Oscillator with Synchronization. ***(Invited)*** *S. Tsunegi*[1], T. Taniguchi[1], K. Nakajima[2,3], S. Miwa[4], K. Yakushiji[1], A. Fukushima[1] and H. Kubota[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science And Technology (AIST), Tsukuba, Japan; 2. Graduate School of Information Science and Technology, The University of Tokyo, Bunkyo-ku, Japan; 3. PRESTO, JST, Kawaguchi, Japan; 4. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

2:06

DF-02. Oxygen-Migration-Based Magnetic Device Emulating a Biological Synapse. *R. Mishra*[1], D. Kumar[1] and H. Yang[1] *1. Electical and Computers Engineering, National University of Singapore, Singapore, Singapore*

2:18

DF-03. Hardwired MTJ Circuits for Stochastic Computing. *B. Parks*[1] and S. Majetich[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

2:30

DF-04. Advantage of domain wall synapse over RRAM synapse for "on-chip" learning in hardware Fully Connected Neural Network. *D. Kaushik*[1], U. Singh[2], U. Sahu[1] and D. Bhowmik[1] *1. Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India; 2. Electronics and Communication Engineering, Delhi Technological University, New Delhi, India*

2:42

DF-05. Artificial Synapse and Neuron Based on the Dynamics of Spintronic Devices. ***(Invited)*** *A. Kurenkov*[1,2], S. DuttaGupta[1,2], C. Zhang[1], S. Fukami[1,2], Y. Horio[1] and H. Ohno[1,2] *1. RIEC, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan*

3:18

DF-06. The recognition accuracy and power consumption of weightless neural network adopting spin-torque MRAM with a high write error rate. *H. Arai*[1] and H. Imamura[1] *1. AIST, Tsukuba, Japan*

3:30

DF-07. **Implementation of Spike Time Dependent Plasticity (STDP) enabled supervised learning in a Spiking Neural Network (SNN) using Domain Wall (DW) motion based neurons and synapses.** *U. Sahu*[1], A. Pandey[2], K. Goyal[3] and D. Bhowmik[1] *1. Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India; 2. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States; 3. Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi, India*

3:42

DF-08. **Neuromorphic computing using two-dimensional arrays of spin Hall nano-oscillators.** ***(Invited)*** *J. Åkerman*[1] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden*

WEDNESDAY AFTERNOON 1:30 — RIO PAVILION 3

Session DG
BIOMEDICAL APPLICATIONS II
Maciej Zborowski, Chair
Cleveland Clinic, Cleveland, OH, United States

1:30

DG-01. **Towards Organ Cryopreservation: Nanowarming Using Magnetic Nanowires.** ***(Invited)*** *B. Stadler*[1,2], D. Shore[2], A. Ghemes[3], O. Dragos[3], Z. Gao[4], Q. Shao[4], A. Sharma[4], J. Um[1], I. Tabakovic[1,3] and J.C. Bischof[4] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 3. National Institute of R&D for Technical Physics, Iasi, Romania; 4. Mechanical Engineering, University of Minnesota, Minneapolis, MN, United States*

2:06

DG-02. **Programmable Multiferroic Micromagnets for Single-Cell Manipulation.** *R. Khojah*[1], Z. Xiao[2], M.K. Panduranga[3], M. Goiriena-Goikoetxea[5], R.V. Chopdekar[4], J. Bokor[5], G. Carman[3], R. Candler[2] and D. Di Carlo[1] *1. Bioengineering, University of California Los Angeles, Los Angeles, CA, United States; 2. Electrical Engineering, University of California Los Angeles, Los Angeles, CA, United States; 3. Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, CA, United States; 4. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States*

2:18

DG-03. ***In-Situ* Visualization of Iron Oxide Nanoparticle Growth Within a Hydrogel Network Using Magnetic Resonance Imaging (MRI).** *S. Oberdick*[1,2], G. Zabow[2], K.E. Kennan[2], M.E. Poorman[1,2] and S.E. Russek[2] *1. Physics, University of Colorado Boulder, Boulder, CO, United States; 2. Applied Physics Division, NIST, Boulder, CO, United States*

2:30

DG-04. **Cell Tracking using Iron Nanowires as MRI T2 Contrast Agent.** *A.I. Martínez Banderas*[1], A. Aires[2], S. Plaza-García[2], L. Colás[2], J.A. Moreno[3], T. Ravasi[1], J.S. Merzaban[1], P. Ramos-Cabrer[2,4], A.L. Cortajarena[2,4] and J. Kosel[3] *1. Division of Biological and Environmental Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal Jeddah, Saudi Arabia; 2. CIC BiomaGUNE, Donostia-San Sebastián, Spain; 3. Division of Computer, Electrical and Mathematical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal Jeddah, Saudi Arabia; 4. Ikerbasque, Basque Foundation for Science, Bilbao, Spain*

2:42

DG-05. **Magnetic isolation and identification of exosomes using magnetic nanowires and magnetosomes.** *Z. Nemati Porshokouh*[1,2], J. Alonso Masa[3], M. Zamani Kouhpanji[1], J. Um[1], L. Gandarias[4], D. Gandia[5], A. Muela[4,5], M. Fdez-Gubieda[5,6], R. Franklin[1], J. Modiano[7,2] and B. Stadler[1,2] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Masonic Cancer Center, University of Minnesota, Minneapolis, MN, United States; 3. CITIMAC, Universidad de Cantabria, Santander, Spain; 4. Dpto. Inmunología, Universidad del País Vasco (UPV/EHU), Leioa, Spain; 5. BCMaterials, Leioa, Spain; 6. Depto. de Electricidad y Electrónica, Universidad del País Vasco (UPV/EHU), Leioa, Spain; 7. Veterinary Clinical Sciences, University of Minnesota, St Paul, MN, United States*

2:54

DG-06. **Can Magnetic Nanoparticles Operate as Temperature Sensitive MRI Contrast Agents in the Motional-Narrowing Regime?** *J.H. Hankiewicz*[1,2], J. Stroud[1], J. Stoll[1], Y. Garbovskiy[1], S.E. Russek[2], S. Jurga[3], M. Kempka[3], T. Zalewski[3] and Z. Celinski[1] *1. Biofrontiers, University Colorado Colorado Springs, Colorado Springs, CO, United States; 2. National Institute of Standards and Technology, Boulder, CO, United States; 3. NanoBioMedical Center, Adam Mickiewicz University, Poznan, Poland*

3:06

DG-07. **Oleic acid functionalized Fe_3O_4 magnetic nanoparticles and its adsorption capability of oil for potential biomedical applications.** *G.C. Hermosa*[1], K. Chen[1], C. Liao[1], S. Wang[2], Y. Chen[3,4], C. Koh[4] and A. Sun[1] *1. Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan; 2. Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan; 3. Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan; 4. Surgery, Far Eastern Memorial Hospital, New Taipei, Taiwan*

3:18

DG-08. **New MnO-based Nanoparticle Contrast Agents for Magentic Resonance Imaging.** *S. Trudel*[1], A. Banerjee[1] and B. Tomanek[2] *1. Chemistry, University of Calgary, Calgary, AB, Canada; 2. Clinical Neurosciences, University of Calgary, Calgary, AB, Canada*

3:30

DG-09. **2D and 3D magnetic nanoparticles for biomedical applications.** *P. Tiberto*[1], F. Celegato[1], G. Barrera[1], M. Coisson[1] and M. Cialone[2] *1. Advanced Materials and life sciences, INRIM, Torino, Italy; 2. Chemistry, Università di Torino, Torino, Italy*

3:42

DG-10. **Laser Monitoring of Dynamic Behavior of Magnetic Nanoparticles in Magnetic Field Gradient.** *K. Tsunashima*[1], K. Jinno[1], B. Hiramatsu[1], K. Fujimoto[1], K. Sakai[1], T. Kiwa[1], M. Saari[2] and K. Tsukada[1] *1. Graduate School of Interdisciplinary Science and Engineering in Health Systems, Okayama University, Okayama, Japan; 2. Faculty of Electrical and electronic Engineering, Universiti Malaysia Pahang, Pekan, Malaysia*

3:54

DG-11. **Towards Development of a Temperature Contrast Agent for MRI Guided Laser Ablations.** J.H. Hankiewicz[1], N. Alghamdi[1], K. Gorny[2], D. Woodrum[2], A. Anderson[3,2], A. Cruz Hernandez[4], J. Brown[4] and *Z. Celinski*[1] *1. Biofrontiers, University Colorado Colorado Springs, Colorado Springs, CO, United States; 2. Radiology, Mayo Clinic College of Medicine, Rochester, MN, United States; 3. Philips Healthcare, Best, Netherlands; 4. Colorado Center for Nanomedicine and Nanosafety, University of Colorado Anschutz Medical Campus, Aurora, CO, United States*

4:06

DG-12. **Evaluation of Local and Global Induced Temperature Therapeutic Profile in Magnetic and Photo-thermal Nanoparticle-based Therapies.** *A. Espinosa*[1], G. Castro[2,3], J. Reguera[4,5], A. Curcio[6], C. Castellano[7], C. Wilhelm[6], M. García[8] and A. Muñoz-Noval[9] *1. IMDEA Nanociencia, Madrid, Spain; 2. Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), Madrid, Spain; 3. Spanish CRG - ESRF-European Synchrotron Radiation Facility, Grenoble, France; 4. BCMaterials - Basque Center for Materials, Applications and Nanostructures - UPV/EHU, Leioa, Spain; 5. Ikerbasque - Basque Foundation for Science, Bilbao, Spain; 6. Laboratoire Matière et Systèmes Complexes, University Paris Diderot, Paris, France; 7. Dipartimento di Chimica, Università degli Studi di Milano, Milano, Italy; 8. Instituto de Cerámica y Vidrio, Consejo Superior de Investigaciones Científicas (ICV-CSIC), Madrid, Spain; 9. Dpto. Física Materiales - Facultad CC. Fisicas, Universidad Complutense de Madrid, Madrid, Spain*

4:18

DG-13. **Effect of direct-current magnetic field on the specific absorption rate of metamagnetic CoMnSi: A potential approach to switchable hyperthermia therapy.**
K.C. Ugochukwu[1], M.M. Sadiq[2,3], L. Meagher[1], M.R. Hill[2,3], K.G. Sandeman[4,5], A. Haydon[6], J. Lickliter[7] and K. Suzuki[1]
1. Department of Materials Science and Engineering, Monash University, Clayton, VIC, Australia; 2. Department of Chemical Engineering, Monash University, Clayton, VIC, Australia; 3. CSIRO, Private Bag 33, Clayton South MDC, VIC, Australia; 4. Department of Physics, Brooklyn College of The City University of New York, 2900 Bedford Avenue, Brooklyn, NY, United States; 5. Physics Program, The Graduate Center, CUNY, New York, NY, United States; 6. Department of Medical Oncology, Alfred Hospital, Melbourne, VIC, Australia; 7. Nucleus Network, Melbourne, VIC, Australia

WEDNESDAY AFTERNOON 1:30 — MIRANDA 7

Session DH
EMERGENT PHENOMENA IN COMPLEX OXIDES

Michel Viret, Co-Chair
CEA, Gif sur Yvette Cedex, France
Dan Read, Co-Chair
Cardiff University, Cardiff, United Kingdom

1:30

DH-01. **$LaTiO_3$/ $SrTiO_3$ Interfaces: From Giant Rashba Spin Splitting to Edge State Conduction.** ***(Invited)*** M. Veit[1,2], R. Arras[3], B. Ramshaw[4,5], M. Chan[4], D. Yi[2], R. Pentcheva[6] and *Y. Suzuki*[1,2] *1. Applied Physics, Stanford University, Stanford, CA, United States; 2. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA, United States; 3. CEMES, University of Toulouse, Toulouse, France; 4. Los Alamos National Laboratory, Los Alamos, NM, United States; 5. Laboratory for Atomic and Solid Statre Physics, Cornell University, Ithaca, NY, United States; 6. Department of Physics and Center for Nanointegration, University of Duisburg-Essen, Duisburg, Germany*

2:06

DH-02. **Current-induced effective magnetic field in $La_{0.67}Sr_{0.33}MnO_3$/ $LaAlO_3$/$SrTiO_3$.** *M. Yamanouchi*[1,2], T. Oyamada[2] and H. Ohta[1,2]
1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan

2:18

DH-03. **Spin susceptibility of topological Kondo insulator.**
P. Goswami[1] *1. Physics, University of Delhi, D.B. College, New Delhi, India*

2:30

DH-04. **Epitaxial growth of RVO_3 by ozone assisted MBE towards multiferroism in $(LaVO_3)_n/(PrVO_3)_m$ superlattices.** *G. Masset*[1], O. Copie[1], K. Dumesnil[1], J. Ghanbaja[1] and S. Andrieu[1] *1. Institut Jean Lamour, Nancy, France*

2:42

DH-05. **Transverse resistivity anomalies in the ferromagnetic oxide $SrRuO_3$ and their interpretation: Topological or Traditional? *(Invited)*** *D. Kan*[1] *1. Kyoto University, Uji, Japan*

3:18

DH-06. **Unusual Magnetic and Electric Properties of $SrRuO_3$(111) Thin Films.** *J. Flores*[1], K. Meng[1], A.S. Ahmed[1] and F. Yang[1] *1. Physics, The Ohio State University, Columbus, OH, United States*

3:30

DH-07. **Strain-induced Majority Carrier Inversion in Ferromagnetic Epitaxial $LaCoO_{3-\delta}$ Thin Films.** *V. Chaturvedi*[1], J. Walter[1], A. Paul[1], J. Jeong[1], B. Yu[2], Z. Zhang[3], H. Zhou[3], A.J. Grutter[4], B.J. Kirby[4], J. Borchers[4], A. Mkhoyan[1], M. Greven[2], T. Birol[1] and C. Leighton[1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 3. Advanced Photon Source, Argonne National Laboratory, Argonne, IL, United States; 4. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States*

3:42

DH-08. **La_2CoMnO_6 Ordered Double Perovskite Epitaxial Thin Films Grown by Polymer Assisted Deposition.** H. Wang[1], J. Gazquez[1], C. Frontera[1], M. Chisholm[2], A. Pomar[1], N. Mestres[1] and *B. Martinez*[1] *1. Magnetic Materials and Complex Oxides, ICMAB-CSIC, Bellaterra, Spain; 2. Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Oak Ridge, TN, United States*

3:54

DH-09. **Interfacial control of chiral magnetic interactions and Hall effect in iridate-manganite superlattices.** *E. Skoropata*[1], J. Nichols[1,2], J. Ok[1], R.V. Chopdekar[3], C. Eun Sang[4], A. Rastogi[1], C. Sohn[1], X. Gao[1], T. Farmer[1], R.D. Desautels[1], Y. Choi[5], D. Haskel[5], S. Okamoto[1], M. Brahlek[1] and H. Lee[1] *1. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. University of Arkansas at Little Rock, Little Rock, AR, United States; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. National High Field Magnet Laboratory, Tallahassee, FL, United States; 5. Argonne National Laboratory, Argonne, IL, United States*

4:06

DH-10. **Size evolution of magnetostructural transitions in spin and orbital-frustrated $NiCr_2O_4$: A possible magnetic multiferroic.** *A. Rathi*[1], P. Babu[2], A. Awasthi[3], P. Rout[4], R. Pant[1] and G. Basheed[1] *1. AcSIR, CSIR-National Physical Laboratory (NPL) Campus, New Delhi, India; 2. UGC-DAE Consortium for Scientific Research, R-5 Shed, B. A. R. C., Mumbai, India; 3. UGC-DAE Consortium for Scientific Research, D. A. University Campus, Indore, India; 4. CSIR-National Physical Laboratory (NPL), New Delhi, India*

4:18

DH-11. **Spin Reorientation, Metamagnetism and Spin-Phonon Coupling in Polycrystalline $EuFe_{0.5}Mn_{0.5}O_3$.** *K. Chandran*[1], P. Lekshmi[1] and S. P N[1] *1. Physics, Indian Institute of technology Madras, Chennai, India*

WEDNESDAY AFTERNOON 1:30 — MIRANDA 5

Session DI

SPIN, MAGNETISM, AND SUPERCONDUCTIVITY

Elena Vedmedenko, Chair
University of Hamburg, Hamburg, Germany

1:30

DI-01. **Emergent Phenomena in the Shastry-Sutherland Model System as Function of Magnetic Field, Pressure and Chemical Doping.** ***(Invited)*** *S. Haravifard*[1] *1. Physics, Duke University, Durham, NC, United States*

2:06

DI-02. **Ferromagnetic order in a cuprate superconductor.** *R.L. Greene*[1], T. Sarkar[1], N.R. Poniatowski[1] and P. Mandal[1] *1. Physics, University of Maryland, College Park, MD, United States*

2:18

DI-03. **Vortex state study of superconducting Fe(Te, Se) thin films deposited on $SrTiO_3$ substrate by pulsed laser deposition technique.** *R. Kumar*[1], D. Mitra[1] and G.D. Varma[1] *1. Physics, I.I.T. Roorkee, Roorkee, India*

2:30

DI-04. **Magnetic Screening Effects in Superconductor/Ferromagnet Heterostructures.** *P. Quarterman*[1], N. Satchell[2], B.J. Kirby[1], R. Loloee[2], N. Birge[2] and J. Borchers[1] *1. NIST, Gaithersburg, MD, United States; 2. Michigan State University, East Lansing, MI, United States*

2:42

DI-05. Spin Hall Current Dependence of Superconducting Transition Temperature in Superconductor/Spin-Valve Nanowires. *A. Jara*[1], I. Krivorotov[1], E. Moen[2] and O. Valls[2] *1. Physics and Astronomy, University of California - Irvine, Irvine, CA, United States; 2. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States*

2:54

DI-06. Unprecedented Electronic Structure, Magnetic Anisotropy and Orbital Moment in Rare Earth (RE) - Cobalt Systems. *D. Paudyal*[1], R. Choudhary[1] and R. Skomski[2] *1. Ames Laboratory, Ames, IA, United States; 2. University of Nebraska, Lincoln, NE, United States*

3:06

DI-07. Exchange interaction and Curie temperature in R_2Co_2Al. *X. Liu*[1], Z. Altounian[2] and C.I. Nlebedim[1] *1. Ames Lab, Ames, IA, United States; 2. Physics, McGill University, Montreal, QC, Canada*

3:18

DI-08. Spin Current: a Probe for Quantum Materials. ***(Invited)*** *W. Han*[1] *1. Peking University, Beijing, China*

3:54

DI-09. Lattice and magnetic excitations in CrAs: A Raman spectroscopy study. *K. Sen*[1], Y. Yao[1], R. Heid[1], A. Omoumi[1], F. Hardy[1], K. Willa[1], M. Merz[1], A. Haghighirad[1] and M. Le Tacon[1] *1. Institute for Solid State Physics, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany*

4:06

DI-10. Origin of Itinerant Carriers in an Antiferromagnetic $LaFe_{1-x}Mo_xO_3$ Studied by X-ray Spectroscopies. *D. Phuyal*[1], S. Mukherjee[1], S. Jana[1,2], C.U. Segre[3], L. Simonelli[4], S.M. Butorin[1], H. Rensmo[1] and O. Karis[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Methods and Instrumentation for Synchrotron Radiation, Helmholtz-Zentrum Berlin, Berlin, Germany; 3. CSRRI & Department of Physics, Illinois Institute of Technology, Chicago, IL, United States; 4. BL22 CLÆSS, CELLS-ALBA Synchrotron, Barcelona, Spain*

4:18

DI-11. Fine Tuning of Canted Magnetization in Stepped Fe Films Through Thickness Variation, Au Capping and Quantum Confinement. M. Dabrowski[1], M. Cinal[2] and *M. Przybylski*[3] *1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Institute of Physical Chemistry of the Polish Academy of Sciences, Warszawa, Poland; 3. Academic Centre for Materials and Nanotechnology, AGH University of Science and Technology, Kraków, Poland*

Session DP
2D AND TOPOLOGICAL MATERIALS (Poster Session)

Fatima Ibrahim, Chair
Université Grenoble Alpes, CEA, CNRS, Grenoble, France

DP-01. **Controlling the Magnetic Properties of $MoSe_2$ Monolayer by Mn and Cr Substitutional Doping and Vacancy Clustering: A First-Principles Study.** *M.B. Kanoun*[1] and S. Goumri-Said[1] *1. Physics, Alfaisal University, Riyadh, Saudi Arabia*

DP-02. **Magnetotransport properties of Ni-nanoparticle-decorated graphene.** E. Argüello[1], P. Ducos[1], Z. Gao[2], A.T. Johnson[2] and *D. Niebieskikwiat*[1] *1. Departamento de Física, Universidad San Francisco de Quito, Quito, Ecuador; 2. Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA, United States*

DP-03. **Topological spin-Hall effect in 2D Cr-halogenated materials.** *Y. Dahnovsky*[1] and A. Zadorozhniy[1] *1. Physics and Astronomy, University of Wyoming, Laramie, WY, United States*

DP-04. **Demonstration of low Schottky barrier height in monolayer MoS_2 field effect transistor with ferromagnetic metal contacts.** *S. Gupta*[1], F. Rortais[1], R. Ohshima[1], Y. Ando[1], T. Endo[2], Y. Miyata[2] and M. Shiraishi[1] *1. Kyoto University, Japan, Kyoto, Japan; 2. Tokyo Metropolitan University, Tokyo, Japan*

DP-05. **Electrical detection of current generated spin in topological insulator surface states: Role of interface resistance.** *C.H. Li*[1], O. Van't Erve[1], C. Yan[2], L. Li[2] and B. Jonker[1] *1. Naval Research Lab, Washington, DC, United States; 2. Physics and Astronomy, West Virginia University, Morgantown, WV, United States*

DP-06. **Giant Spin-Orbit Torque in Sputtered Perpendicular Bi_2Te_3/FM Films.** *H. Yang*[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China*

DP-07. **Helicity-dependent photo-induced magnetoresistance in topological insulator/semiconductor heterostructures.** *T. Guillet*[1], C. Zucchetti[2], A. Marchionni[2], F. Bottegoni[2], A. Marty[1] and M. Jamet[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-Spintec, Grenoble, France; 2. LNESS-Dipartimento di Fisica, Politecnico di Milano, Milan, Italy*

DP-08. **Mapping Giant Spin-Charge Conversion to the Band Structure in a Topological Oxide Two-Dimensional Electron Gas.** D.C. Vaz[1], *M. Cosset-Chéneau*[2], A. Johansson[3,4], B. Göbel[3], F. Bruno[5], G. Singh[6], S. McKeown[5], F. Trier[1], A. Sanders[1], P. Bruneel[7], M. Vivek[7], N. Bergeal[6], F. Baumberger[5], H. Okuno[8], A. Barthelemy[1], A. Fert[1], L. Vila[2], I. Mertig[3,4], J. Attané[2] and M. Bibes[1] *1. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Spintec, Institut Nanosciences et Cryogénie, Univ. Grenoble Alpes, CEA, CNRS, Grenoble, France; 3. Max Planck Institute of Microstructure Physics, Halle, Germany; 4. Institute of Physics, Martin Luther University Halle-Wittenberg, Halle, Germany; 5. Department of Quantum Matter Physics, University of Geneva, Geneva, Switzerland; 6. Laboratoire de Physique et d'Etude des Matériaux, ESPCI Paris, PSL Research University, CNRS, Paris, France; 7. Laboratoire de Physique des Solides, CNRS, Univ. Paris-Sud, Université Paris-Saclay, 91405, Orsay, France; 8. Univ. Grenoble Alpes, CEA, Grenoble INP, INAC-MEM, Grenoble, France*

DP-09. **Higher-Order Topological Insulator Taking into Consideration Uniaxially Anisotropic Hopping.** *S. Komori*[1] and K. Kondo[1] *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan*

DP-10. **Strong Spin-textures Anisotropy of Ultra-Thin 3*d* Transition Metals Induced by Topological Surface States.** *S. Laref*[1] and A. Manchon[1] *1. Physical Science and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia*

DP-11. **Characterization of Traps in Sputtered Topological Insulator FET (TI-FET).** *P. Sahu*[1], J. Chen[2] and J. Wang[2,1] *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

DP-12. **Highly Efficient Spin-to-Charge Current Conversion at Room Temperature in Strained HgTe Surface States.** P. Noel[1], *M. Cosset-Chéneau*[1], C. Thomas[2], P. Ballet[3], L. Vila[1], T. Meunier[2] and J. Attané[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC, SPINTEC, Grenoble, France; 2. Institut Néel, C.N.R.S. and Université Joseph Fourier, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus, Grenoble, France*

DP-13. **Bulk and Layered Magnetic Properties of Two-Dimensional van der Waals ferromagnetic VI_3.** *E.E. Gordon*[1] and L. Ke[1] *1. Division of Materials Science & Engineering, Ames Laboratory, Ames, IA, United States*

DP-14. **Experimental evidence of the valley Nernst effect in WSe_2.** M. Dau[1], C. Vergnaud[1], *T. Guillet*[1], A. Marty[1], C. Beigné[1], S. Gambarelli[2], V. Maurel[2], H. Okuno[3] and M. Jamet[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-Spintec, Grenoble, France; 2. Univ. Grenoble Alpes, CEA, CNRS, IRIG-SYMMES, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, IRIG-MEM, 38000 Grenoble, France, Grenoble, France*

DP-15. **Spin and Valley Transport in Strained Silicene Heterojunctions: Zigzag versus Armchair Interface.** *Z. Siu*[1] and M.B. Jalil[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

DP-16. **Spin reorientation in quasi-2D ferromagnet Cr_5Te_8.** *Y. Chen*[1], J.G. Lin[1,2], C. Kuo[3] and C. Lue[3] *1. Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan; 2. Center for Atomic Initials for New Materials, National Taiwan University, Taipei, Taiwan; 3. Department of Physics, National Cheng Kung University, Tainan, Taiwan*

DP-17. **The application of machine learning on the optical identification of two-dimensional nanostructures.** X. Lin[1], Z. Si[1], W. Fu[1], *X. Wang*[1], G. Wei[1] and W. Zhao[1] *1. Microelectronics, Beihang University, Beijing, China*

DP-18. **Controllable growth of 2D magnetic and non-magnetic van der Waals crystals via temperature-oscillating chemical vapor transport.** *Z. Li*[1,2], X. Xi[1] and W. Wang[1] *1. State Key Laboratory for Magnetism, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. University of Chinese Academy of Sciences, Beijing, China*

DP-19. **A New Method for Probing the Light-controlled Ferromagnetism in a Two-dimensional van der Waals Heterostructure System.** *V. Ortiz-Jimenez*[1], V. Kalappattil[1] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States*

DP-20. **Lateral non-local black phosphorus spin valve.** *C. Li*[1], X. Xu[1], Y. Wu[1], K. Meng[1], J. Miao[1] and Y. Jiang[1] *1. University of Science and Technology Beijing, Beijing, China*

WEDNESDAY AFTERNOON 2:30 | RIO PAVILION 8-11

Session DQ
MAGNETOCALORIC MATERIALS I (Poster Session)

Karl Sandeman, Co-Chair
Brooklyn College of The City University of New York, Brooklyn, NY, United States
Mohamed Balli, Co-Chair
International University of Rabat, Rabat, Morocco

DQ-01. **Structural, magnetic, and magnetocaloric characterization of Mn_2FeGe Heusler alloy.** *A. Aryal*[1], J. Sánchez Llamazares[2], J. Zamora[2], C. Sanchez-Valdes[3], I. Dubenko[1], D. Mazumdar[1], S. Talapatra[1], S. Stadler[4] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL, United States; 2. Instituto Potosino de Investigación Científica y Tecnológica A.C., San Luis Potosí, Mexico; 3. División Multidisciplinaria, Ciudad Universitaria, Universidad Autónoma de Ciudad Juárez, Chihuahua, Mexico; 4. Physics and astronomy, Louisiana State University, Baton Rouge, LA, United States*

DQ-02. **Phase transitions and magnetic properties in $Mn_{1-x}La_xCoGe$ system.** *P. Zhang*[1], H. Zhang[2], H. Imam[2] and B. Song[2] *1. Shaanxi University of Science & Technology, Xi'an, China; 2. Beijing University of Technology, Beijing, China*

DQ-03. **Influence of A-site Cation Size-Disorder on the Magnetocaloric Response of $La_{0.6}Ca_xSr_{0.4-x}MnO_3$ Nanoparticles.** *C.S. Hunt*[1], R. Barua[2] and E. Carpenter[2] *1. Chemistry, Virginia Commonwealth University, Richmond, VA, United States; 2. Nuclear and Mechanical Engineering, Virginia Commonwealth University, Richmond, VA, United States*

DQ-04. **Geometrically designed Gd-alloy microwire arrays with enhanced magnetocaloric properties for energy-efficient magnetic refrigeration.** *C. Hung*[1], H. Srikanth[1] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States*

DQ-05. **Giant baromagnetic effect in Sn-doped MnNiGe.** *F. Shen*[1], F. Liang[1], J. Hao[1], F. Hu[1], J. Wang[1], J. Chen[2], L. He[1], T. Liang[2], J. Sun[1] and B. Shen[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Spallation Neutron Source Science Center, Dongguan, China*

DQ-06. **Fe-Ni-Al-Zr Amorphous Thin Films for Magnetic Refrigerants near Room Temperature.** *R. P*[1], P. Svedlindh[1] and G. Andersson[1] *1. Uppsala University, Sweden, Uppsala, Sweden*

DQ-07. **Rotating Magnetocaloric Effect in the Region of Spin-Reorientation Transition in the Fe_7Se_8 Single Crystal.** *I. Radelytskyi*[1,2] and Y. Konopelnyk[2] *1. Jülich Centre for Neutron Science at MLZ, Garching, Germany; 2. Institute of Physics PAS, Warsaw, Poland*

DQ-08. **Near Room Temperature Magnetocaloric Effect in CrTe1-xSbx Alloys.** M.K. Hamad[1], E. Martinez-Teran[2], Y. Maswadeh[3], R. Hamad[1], E.G. Alnahari[1], *A.A. El-Gendy*[2] and K.A. Ziq[1] *1. Physics, King Fahd University of Petroleum & Minerals, El Damam, Saudi Arabia; 2. Physics, University of Texas at El Paso, El Paso, TX, United States; 3. Department of Physics and Science of Advanced Materials Program, Central Michigan University, Mt. Pleasant, MI, United States*

DQ-09. **Tuning of structural transition and phase stability in MnCo(Ge, V) system.** H. Imam[1], *H. Zhang*[1], B. Song[1], Q. Lu[1], W. Liu[1], Y. Li[1], Z. Altounian[2] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Center for the Physics of Materials, Department of Physics, McGill University, Montreal, QC, Canada*

DQ-10. **Quadrupolar ordering effect on magnetocaloric effect in rare-earth tetraborides.** *M. Song*[1], K. Cho[1], J. Lee[1] and B. Cho[1] *1. Gwangju institute science and technology, Gwangju, The Republic of Korea*

DQ-11. **Magnetostructural Transition and Giant Magnetocaloric Effect near Room Temperature in Al doped ($Mn_{0.6}Fe_{0.4}$)NiSi Alloys.** *S. Ghosh*[1], P. Sen[2] and K. Mandal[1] *1. Condensed Matter Physics & Material, S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Physics group, Variable Energy Cyclotron Centre, Kolkata, India*

DQ-12. **Magnetocaloric effect in Ni_2MnIn-based Heusler alloys with second-order phase transition.** *B.R. Dahal*[1], Z. Lehmann[1], Y. Huh[1] and P.R. Kharel[1] *1. Department of Physics, South Dakota State University, Brookings, SD, United States*

DQ-13. **Magneto-elastic coupling in $AlFe_2B_2$-based compounds.** *R. Barua*[1,2], B. Lejeune[2], Y. Mudryk[3], B.A. Jensen[3], M. Kramer[3], V.K. Pecharsky[3] and L. Lewis[2,4] *1. Department of Mechanical & Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, VA, United States; 2. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 3. Division of Materials Sciences and Engineering, Ames Laboratory, Ames, IA, United States; 4. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States*

DQ-14. **Magnetocaloric effect and magnetic properties of $Gd_{(1-x)}Nd_{(x)}$ alloys.** *R.D. Rodrigues*[1], É. Usuda[2,3], L. Soares de Oliveira Paixão[2], C. Salazar Mejia[4], K. Roberto Pirota[1] and A. Magnus Gomes Carvalho[2] *1. DFMC, UNICAMP, Campinas, Brazil; 2. Laboratório Nacional de Luz Síncrotron, Campinas, Brazil; 3. Departamento de Ciências Exatas e da Terra, UNIFESP, Diadema, Brazil; 4. Hochfeld-Magnetlabor Dresden, Helmholtz-Zentrum Dresden - Rossendorf e.V. (HZDR), Dresden, Germany*

DQ-15. **Magnetic properties and large magnetocaloric effect in R_3NiSi_2 (R=Tb, Dy) compounds.** *J. Liu*[4,3], W. Liang[4,3], L. Wang[2], J. Xu[1], X. Zheng[1], T. Zhao[4], F. Hu[4,3], J. Sun[4,3] and B. Shen[4,3] *1. University of Science & Technology Beijing, Beijing, China; 2. Capital Normal University, Beijing, China; 3. University of Chinese Academy of Sciences, Beijing, China; 4. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

DQ-16. **Magnetic properties and magnetocaloric effect in $Ho_{1-x}Tm_xGa$ (x=0.2, 0.3, 0.4) compounds.** *S. Yang*[1,2], X. Zheng[1], J. Xu[1], S. Shao[1], J. Zhang[1], S. Wang[1], J. Liu[2], Y. Zhang[2], Y. Liu[2], Z. Xu[3], L. Wang[4] and B. Shen[2,1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China; 2. State Key Laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences & University of Chinese Academy of Sciences, Beijing, China; 3. National Institute of Metrology, Beijing, China; 4. Department of Physics, Capital Normal University, Beijing, China*

DQ-17. **Comparison of Magnetic Entropy Change Measured in Standard and Loop Modes for $Ni_{50}Mn_{35}In_{15}$.** *F. Liang*[1,2], Z. Yu[1,2], F. Hu[1,2], J. Hao[1,2], F. Shen[1,2], K. Qiao[1,2], J. Li[1,2], J. Wang[1,2], J. Sun[1,2] and B. Shen[1,2] *1. Beijing National Laboratory for Condensed Matter Physics and State Key Laboratory of Magnetism, Insititute of Physics, Beijing, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China*

DQ-18. **Multiferroic Polymer Composites with Combined Magnetoelectric and Multicaloric Effects.** *I. Baraban*[1], V. Rodionov[1], A. Amirov[1,2] and A. Kamantsev[1,3] *1. Laboratory of Novel Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. Amirkhanov Institute of Physics, Daghestan, Russian Federation; 3. Kotelnikov Institute of Radio Engineering and Electronics, Moscow, Russian Federation*

DQ-19. **Ising Model Simulations of the Magnetocaloric Material $Gd_5(Si_xGe_{1-x})_4$.** *A. Evans*[1], M. Gao[2] and D. Read[1] *1. Physics & Astronomy, Cardiff University, Cardiff, United Kingdom; 2. Engineering, Cardiff University, Cardiff, United Kingdom*

WEDNESDAY AFTERNOON 2:30 | RIO PAVILION 8-11

Session DR
HEUSLER ALLOYS AND MAGNETIC SEMICONDUCTORS I (Poster Session)

Wei Zhang, Co-Chair
Oakland University, Rochester, MI, United States
Maciej Sawicki, Co-Chair
Institute of Physics, Polish Academy of Sciences, Warszawa, Poland

DR-01. **NMR Studies of the Ground State of $Ni_{50-x}Co_xMn_{35}In_{15}$ (x=1, 2.5) and $Ni_{45}Co_5Mn_{37}In_{13}$ Heusler Alloys.** *A. Aryal*[1], I. Dubenko[1], S. Pandey[1], S. Talapatra[1], V. Chlan[2], H. Stepankova[2], V. Matveev[3], M. Blinov[4], V. Prudnikov[4], A. Granovsky[4], E. Lähderanta[5], S. Stadler[6] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL, United States; 2. Department of Low Temperature Physics, Charles University in Prague, Prague, Czechia; 3. Faculty of Physics, Saint-Petersburg State University, Saint-Petersburg, Russian Federation; 4. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 5. Lappeenranta University of Technology, Lappeenranta, Finland; 6. Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States*

DR-02. **Ferromagnetism in C-doped ZnO powder: the role of oxygen vacancies and carbon defects.** *S. Akbar*[1,2], S. Hasanain[3,4], M. Jamil[8], G. Jaffri[5,6], S. Shah[7] and P. Rudolf[9] *1. Physics Department, Zernike Institute of Advanced Materials, Groningen University, The Netherlands, Groningen, Netherlands; 2. Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan; 3. Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan; 4. COMSTECH Secretariat, 33-Constitution Avenue, Islamabad, Pakistan; 5. Physics Department, Quaid-i-Azam University, Islamabad, Pakistan; 6. Department of Physics and Astronomy, University of Delaware, Delaware, DE, United States; 7. Department of Physics and Astronomy, University of Delaware, Delaware, DE, United States; 8. Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan; 9. Department of Physics, Zernike Institute of Advanced Materials, Groningen University, The Netherlands, Groningen, Netherlands*

DR-03. **Vacancy and doping modulated magnetic properties of InN monolayer.** *R. Chaurasiya*[1], N. Kumar[1] and A. Dixit[1] *1. Physics, Indian Institute of Technology Jodhpur, Jodhpur, India*

DR-04. **Spin wave resonance study in a series of etched ferromagnetic semiconductor films.** *X. Liu*[1], Y. Zhou[1], S. Bac[2,1], S. Lee[2], M. Dobrowolska[1] and J.K. Furdyna[1] *1. Physics, University of Notre Dame, Notre Dame, IN, United States; 2. Physics, Korea University, Seoul, The Republic of Korea*

DR-05. **Effect of annealing on magnetic properties of graded GaMnAsP film.** *S. Bac*[1,2], K. Lee[1], S. Lee[1], X. Liu[2], M. Dobrowolska[2] and J.K. Furdyna[2] *1. Department of Physics, Korea University, Seoul, The Republic of Korea; 2. Department of Physics, University of Notre Dame, Notre Dame, IN, United States*

DR-06. **Muon-Spin-Relaxation Study of Ferromagnetic Insulator (Ga,Mn)N.** *K. Gas*[1], T. Prokscha[2] and M. Sawicki[1] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institute, Villigen PSI, Switzerland*

DR-07. **Investigating Surface-Induced Ferromagnetism in Pristine SnO_2 Film.** *J. Kim*[1], S. Song[1], Y. Choi[1], D. Lee[1], H. Kim[2], H. Lee[2], J. Bae[3] and S. Park[1,3] *1. Physics, Pusan National University, Busan, The Republic of Korea; 2. Core Research Facilities, Pusan National University, Busan, The Republic of Korea; 3. Busan Center, Korea Basic Science Institute, Busan, The Republic of Korea*

DR-08. **Large Tunable Magnetoresistance in Half-Heusler Compound RPtBi (R=rear earth).** *J. Chen*[1,2], H. Li[1,2], B. Ding[1,2], Z. Li[1,2], Z. Hou[3], E. Liu[1,4], H. Zhang[1], X. Xi[1], G. Wu[1] and W. Wang[1,4] *1. Institute of Physics, Chinese Academy of Sciences, BeiJing, China; 2. University of Chinese Academy of Sciences, BeiJing, China; 3. South China Normal University, Guangzhou, China; 4. Songshan Lake Materials Laboratory, Dongguan, China*

DR-09. **Resonant inelastic soft x-ray scattering under magnetic field for Mn_2VAl Heusler alloy.** *R.Y. Umetsu*[2,3], H. Fujiwara[1], F. Kuroda[4,5], H. Fujii[4,5], T. Oguchi[4,5], A. Sekiyama[1], J. Miyawaki[6,7], Y. Harada[6,7] and S. Suga[4] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Institution of Scientific and Industrial Research, Osaka University, Ibaraki, Japan; 5. CMI2-MaDIS, National Institute for Materials Science, Tsukuba, Japan; 6. Institute for Solid State Physics, The University of Tokyo, Kashiwanoha, Japan; 7. Synchrotron Radiation Research Organization, The University of Tokyo, Sayo-cho, Japan*

DR-10. **Disorder and the Spin Gapless Semiconductor, Mn_2CoAl.** R.G. Buckley[1,2], T. Butler[1], C. Pot[1], N.M. Strickland[1] and *S. Granville*[1,2] *1. Robinson Research Institute, Victoria University of Wellington, Lower Hutt, New Zealand; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

DR-11. **Magnetic properties and tunnel magnetoresistance effect of fully compensated ferrimagnetic Mn-Co-V-Al Heusler alloy.**
T. Tsuchiya[1] and S. Mizukami[2,1] *1. Center for Science and Innovation in Spintronics (Core Research Center) and Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

DR-12. **Experimental and theoretical investigations of half-metallic $Co_{2-x}Fe_xCrAl$ (x = 0.25, 0.50 and 0.75) Heusler alloys.**
A.K. Patel[1], L. Bainsla[2], V. Yenugonda[1], K. Suresh[1] and A. Alam[1] *1. Physics, IIT Bombay, Mumbai, India; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

DR-13. **Resistivity Anomaly in Weyl Semimetal Candidate – $MoTe_2$.**
D. Suri[1,6], C. Linderalv[2], B. Karpiak[3], S.K. Singh[3], A. Dankert[3], R. Sankar[4,5], F. Chou[4,5], P. Erhart[2], S.P. Dash[3] and R. Patel[1] *1. Department of Physics, Birla Institute of Technology and Science Pilani, K K Birla Goa Campus, Zuarinagar, India; 2. Department of Physics, Chalmers University of Technology, Göteborg, Sweden; 3. Department of Microtechnology and Nanoscience, Chalmers University of Technology, Göteborg, Sweden; 4. Institute of Physics, Academia Sinica, Taipei, Taiwan; 5. Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan; 6. Francis Bitter Magnet Laboratory and Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, MA, United States*

DR-14. **Structural, magnetic, and electrical properties of collinear antiferromagnetic heteroepitaxy cubic Mn_3Ga thin films.**
H. Bang[1], W. Yoo[1], C. Kim[1], S. Lee[2], J. Gu[3], Y. Park[4], K. Lee[5] and *M. Jung*[1] *1. Department of Physics, Sogang University, Seoul, The Republic of Korea; 2. Department of Physics and Astronomy, Sejong University, Seoul, The Republic of Korea; 3. Department of Physics and Astronomy, California State University LongBeach, Long Beach, CA, United States; 4. National Nanofab Center, Daejeon, The Republic of Korea; 5. Mainz University, Mainz, Germany*

DR-15. **Drastic Violation of the Basic Correlation Between the Hall Effect and Resistivity in the Heusler Alloy $Ni_{45}Cr_5Mn_{37}In_{13}$.**
S. Pandey[1,3], M. Blinov[2], A. Aryal[3], I. Dubenko[3], V. Prudnikov[2], E. Lähderanta[4], A. Granovsky[2], N. Kazachkova[2], S. Stadler[5] and N. Ali[3] *1. Department of Physics, University of California San Diego, La Jolla, CA, United States; 2. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Department of Physics, Southern Illinois University Carbondale, Carbondale, IL, United States; 4. Lappeenranta University of Technology, Lappeenranta, Finland; 5. Department of Physics & Astronomy, Louisiana State University, Baton Rouge, LA, United States*

DR-16. **Effect of stoichiometry on crystal structure and magnetism in $Mn_{3-x}Cr_xGa$ ($0 \leq x \leq 2$) Heusler alloy.** S. Perween[1,2], A. Rathi[1,2], B. Gahtori[1,2] and *G. Basheed*[1,2] *1. National Physical Laboratory, Delhi, India; 2. NPL -Campus, Academy of Scientific and Innovative Research (AcSIR), Delhi, India*

Session DS

EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM (Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

DS-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

DS-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

DS-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

DS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

Session DT
MAGNETIC CHARACTERIZATION IV: PHOTON, ELECTRON AND NEUTRON BASED TECHNIQUES (Poster Session)

Hendrik Ohldag, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

DT-01. **Super-Resolution Magnetic Microscopy using Nitrogen-Vacancy Centers in Diamond.** *N. Mosavian*[1], B.A. Richards[1], P. Kehayias[2] and V.M. Acosta[1] *1. Center for High Technology Materials and Department of Physics and Astronomy, University of New Mexico, Albuquerque, NM, United States; 2. Sandia National Labs, Albuquerque, NM, United States*

DT-02. **Ultrafast Magnetic Spectroscopy, Scattering and Full-Field Imaging Using Tabletop High Harmonic Sources.** *P.C. Johnsen*[1], R. Karl[1], J. Thurston[1], J. Knobloch[1], C. Gentry[1], H. Kapteyn[1] and M. Murnane[1] *1. JILA / CU Boulder, Boulder, CO, United States*

DT-03. **Polarization analysis on the small-angle neutron scattering diffractometer KWS-1: A faster, more versatile instrument.** *L. Barnsley*[1], A. Feoktystov[1], E. Babcock[1], Z. Salhi[1] and H. Frielinghaus[1] *1. Jülich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), Forschungszentrum Jülich GmbH, Garching, Germany*

DT-04. **Second harmonic response of magnetic nanoparticles enhanced by a static bias magnetic field perpendicular to an alternating excitation field for magnetic particle imaging.** S. Ota[1], K. Nishimoto[2], T. Yamada[2] and *Y. Takemura*[2] *1. Department of Electrical and Electronic Engineering, Shizuoka University, Hamamatsu, Japan; 2. Department of Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan*

DT-05. **Automated visualization of the origin of the coercivity by using persistent homology.** *M. Kotsugi*[1,2], T. Yamada[1,2], C. Mitsumata[2], T. Ueno[3], I. Obayashi[4,5], K. Akagi[5,2] and Y. Hiraoka[6,2] *1. Tokyo University of Science, Katsushika, Japan; 2. NIMS-MI2I, Tsukuba, Japan; 3. QST, Sayo, Japan; 4. RIKEN-AIP, Tokyo, Japan; 5. Tohoku Univ., Sendai, Japan; 6. Kyoto Univ., Kyoto, Japan*

DT-06. **Precision Magneto-optical Measurements of Magnetically Doped Mn-PbSnSe.** *L. Riney*[1], B. Assaf[1], G. Krizman[2], X. Liu[1], J. Wang[1] and L. de Vaulchier[2] *1. University of Notre Dame, South Bend, IN, United States; 2. Ecole Normale Supérieure, Paris, France*

DT-07. **Use of AC Faraday Rotation as a Complementary Technique in Material Characterization.** *M. Syed*[1], J. Monarch[1], W.J. Li[1] and N. Fried[1] *1. Physics & Optical Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN, United States*

DT-08. **C-scan imaging with magnetic Barkhausen emission measurements for the detection of shallow surface micro-cracks.** N. Prabhu Gaunkar[2], *G. Prabhu Gaunkar*[1] and D.C. Jiles[2] *1. Mechanical Engg, IIT Goa, Farmagudi, India; 2. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

DT-09. **Crystal & Magnetic Structure Studies of Li-ion Battery Materials with Neutron Powder Diffraction.** *S. Lee*[1] *1. Kaeri, Daejeon, The Republic of Korea*

DT-10. **Kerr Effect Microscope with Rotating Analyzer for Exact Spatial Determination of Kerr Angle of Magnetic Domains.** *J. Zázvorka*[1], A. Papackova[1], L. Beran[1], L. Nowak[1], V. Kletečka[1], T. Maleček[1] and M. Veis[1] *1. Charles University, Prague, Czechia*

DT-11. **POLREF: Time of flight Polarised Reflectometer for Magnetism.** *C. Kinane*[1] and A. Caruana[1] *1. STFC, Rutherford Appleton Laboratory, Oxford, United Kingdom*

DT-12. **Control and observation of ferromagnetic domains in resistive random access memory conducting filament nanostructures formed in epitaxial NiO thin films.** *E. Lee*[1] and J. Son[1] *1. Kyung Hee University, Yong-in, The Republic of Korea*

DT-13. **Magnetic Bubble States and Their Current-Driven Motion in C-Added MnNiGa.** *S. Zuo*[1,2], J. Liu[1,2], K. Qiao[1,2], T. Zhao[1], F. Hu[1,2], J. Sun[1,2] and B. Shen[1,2] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. University of Chinese Academy of Sciences, Beijing, China*

DT-14. **Scanning laser magneto-optical microscopy for the study of magnetization dynamics of magnetic nanoparticles.** *R. Soucaille*[1], M.E. Sharifabad[2], N. Telling[2] and R. Hicken[1] *1. University of Exeter, Exeter, United Kingdom; 2. Keele University, Stoke-on-Trent, United Kingdom*

DT-15. **Element Specific Magnetometry of Buried Layers by HAXPES.** *A. Gloskovskii*[1], G. Fecher[2], K. Ederer[1], C. Schlueter[1], G. Schönhense[3] and W. Drube[1] *1. Photon Science / Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Institut für Physik, Johannes Gutenberg-Universität, Mainz, Germany*

Session DU
BIOMEDICAL APPLICATIONS III (Poster Session)
Shin Yabukami, Chair
Tohoku University, Sendai, Japan

DU-01. **Immuno-magnetic sorting of circulating tumor cells using microstructured NdFeB-PDMS composites.** *D. Le Roy*[4], L. Descamps[1], S. Mekkaoui[1], E. Laurenceau[2], M. Audry[1], A. Deman[1], J. Garcia[3] and L. Payen[3] *1. Univ. Lyon 1, INL, Villeurbanne, France; 2. Ecole Centrale Lyon, INL, Lyon, France; 3. Hospices Civils Lyon, Lyon, France; 4. Univ. Lyon 1, ILM, Villeurbanne, France*

DU-02. **Flexibility of Undulating Magnetic Microbead Swimmers.** *Y. Li*[1] and S. Chen[1] *1. Department of Mechanical and Aerospace Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan*

DU-03. **Fe_3O_4-BPQDs Nanoplatforms as Dual Mode Detection Probe.** *Y. Ma*[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China*

DU-04. **Investigating the Role of Pulsed Magnetic Field Intensity on the Growth and Proliferation of N27 Dopaminergic Neuronal Cells.** *J. Boldrey*[1], L. Que[1], I. Schneider[2], R.L. Hadimani[3] and D.C. Jiles[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Chemical and Biological Engineering, Iowa State University, Ames, IA, United States; 3. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*

DU-05. **Selective Separating and Retrieving Mechanism of Untethered Magnetic Robot for the Application of Human Vascular Disease.** *J. Park*[1], W. Lee[1], J. Kim[1], E. Jung[1], N. Kim[1] and G. Jang[1] *1. Hanyang University, Seoul, The Republic of Korea*

DU-06. **Effect of Microstructure on r_2 Relaxivity for T_2 Weighted Magnetic Resonance Imaging in Magnetite Nanoparticles.** *B. Park*[2,1], M. Ko[2] and Y. Kim[2] *1. Research Institute of Engineering and Technology, Korea University, Seoul, The Republic of Korea; 2. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

DU-07. **Experimental Validation of an Analytical Model for Diametrically Magnetized Permanent Magnets.** *N. Riahi*[1] and A. Komaee[1] *1. ECE, Southern Illinois University, Carbondale, IL, United States*

DU-08. **Development of a procedure for experimental mapping of electric field induced by TMS in an anatomically accurate brain phantom.** *H. Magsood*[1] and R.L. Hadimani[1] *1. Virginia Commonwealth University, Richmond, VA, United States*

DU-09. **Detailed Analysis of Specific Absorption Rate of Magnetic Nanowires for Biomedical Applications.** *M. Zamani Kouhpanji*[1,2], A. Ghoreyshi[1], D. Bilardello[4], P.B. Visscher[3] and B. Stadler[1] *1. Electrical and Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Biomedical Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 3. Physics and Astronomy, University of Alabama, Tuscaloosa, AL, United States; 4. Institute for Rock Magnetism, University of Minnesota Twin Cities, Minneapolis, MN, United States*

DU-10. **Study on the Blood Flow in Stenosed Microvascular Model under Pulsed Magnetic Field.** S. Han[1], J. Mok[1] and *H. Lee*[1] *1. Sangji University, Wonju, The Republic of Korea*

DU-11. **Cavity-shaped magnet for highly sensitive magnetic detection of magnetic nanoparticles in breast cancer patients.** *A. Kuwahata*[1], M. Kusakabe[2,1], S. Chikaki[1], I. Saito[3] and M. Sekino[1] *1. The University of Tokyo, Tokyo, Japan; 2. Matrix Cell Research Institute Inc., Ibaraki, Japan; 3. iMed Japan Inc., Tokyo, Japan*

DU-12. **Exploring exchange-coupled cobalt ferrite/iron oxide and iron oxide/cobalt ferrite core/shell nanoparticles for advanced magnetic hyperthermia.** *J. Robles-Garcia*[1], E. Fuller[2], R. Das[3], M. Phan[1] and H. Srikanth[1] *1. Physics, University of South Florida, Tampa, FL, United States; 2. Physics, Ohio State University, Columbus, OH, United States; 3. Phenikaa Unversity, Hanoi, Vietnam*

DU-13. **Development of Temperature Responsive Electrospun Fiber for Magnetic Nanoparticles Releasing.** *T. Chen*[1], C. Huang[1], C. Tsou[1] and T. Ger[1] *1. Biomedical Engineering, Chung Yuan Christian University, Taoyuan City, Taiwan*

DU-14. **Image-based feedback control of a distal part of magnetic catheter to enhance a path-following capability of its position and orientation.** *N. Kim*[1], W. Lee[1], J. Kim[1], E. Jung[1], J. Park[1] and G. Jang[1] *1. Convergence Mechanical Engineering, Hanyang University, Seoul, The Republic of Korea*

DU-15. **Enhanced Steering Capability of the Distal End of a Magnetic Catheter by Utilizing Magnets with Optimized Magnetization Direction.** *E. Jung*[1], W. Lee[1], J. Kim[1], N. Kim[1], J. Park[1] and G. Jang[1] *1. Mechanical Engineering, Hanyang University, Seoul, The Republic of Korea*

Session DV
SENSORS I
(Poster Session)

Simon Greaves, Chair
Tohoku University, Sendai, Japan

DV-01. **Structue and Output Voltage Model Optimization of Magnetostrictive Force Sensor.** *B. Wang*[1,2], X. Cui[1,2], W. Huang[1,2] and L. Weng[1,2] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Tianjin, China*

DV-02. **A Highly Sensitive Coplanar Line Thin Film Sensor for Magnetocardiographic Measurement.** H. Kudo[1], H. Uetake[3], H. Onodera[2], *L. Ton That*[1,2], S. Yabukami[1,2], J. Hayasaka[3] and K. Arai[3] *1. Tohoku University, Sendai, Japan; 2. Tohoku Gakuin University, Tagajo, Japan; 3. Research Institute for Electromagnetic Materials, Tomiya, Japan*

DV-03. **Design and Output Characteristics of Magnetostrictive Flexible Tactile Sensor Array.** *L. Weng*[1], S. Gao[1], B. Zhang[1], S. Liu[1], B. Wang[1] and W. Huang[1] *1. Hebei University of Technology, Tianjin, China*

DV-04. **Controlling domain configuration for the sensing layer of magnetic tunneling junction by using exchange bias.** *S. Ranjbar*[1], M. Al-Mahdawi[2], M. Oogane[1,2] and Y. Ando[1,2] *1. Applied Physics, Tohoku University, Sendai, Japan; 2. Center for Science and Innovation in Spintronics (Core Research Cluster), Organization for Advanced Studies, Tohoku University, Sendai, Japan*

DV-05. **Improving Filmed Planar Inductor by Grooved Gratings for Sensor Applications.** *X. Zhou*[1], Y. Wen[1], Y. Mu[1] and P. Li[1] *1. Shanghai Jiao Tong University, Shanghai, China*

DV-06. **Withdrawn**

DV-07. **Analysis of Output Characteristic Model of 3D Tactile Sensor Based on Cantilever Beams.** *L. Wan*[1] and B. Wang[1] *1. Hebei University of Technology, Tianjin, China*

DV-08. **The output characteristic of texture tactile sensor based on the inverse-magnetostrictive effect and the surface texture detection.** *L. Wan*[1] and B. Wang[1] *1. Hebei University of Technology, Tianjin, China*

DV-09. **Dependence of the noise of an orthogonal fluxgate on the composition of its amorphous wire-core.** *M. Butta*[1,2], M. Vázquez[2], R. Pérez del Real[2] and E. Calle[2] *1. Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czechia; 2. Consejo Superior de Investigaciones Científicas - CSIC, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain*

DV-10. **Elastomer Based Force Sensor Fabricated by 3D Additive Manufacturing.** *M.G. Kisic*[1], N.V. Blaz[1], L.D. Zivanov[1] and M.S. Damnjanovic[1] *1. Department of Power, Electronic and Telecommunication Engineering, University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia*

DV-11. **High-Performance Magneto-Resistive Cytometer of Filtered Magnetically Labeled Cells.** *S. Amara*[1], M. Alawein[1] and H. Fariborzi[1] *1. CEMSE, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

DV-12. **Magneto-mechano-electric devices operating in torque mode without magnetic bias field.** *J. Wu*[1], Z. Hu[1], Z. Wang[1], Z. Zhou[1] and M. Liu[1] *1. Xi'an Jiaotong University, Xi'an, China*

DV-13. **Investigation of low-frequency noise dependent on serial MTJs with various junction areas.** *Z. Jin*[1], Y. Wang[1], M. Oogane[1,2] and Y. Ando[1,2] *1. Applied of Physics, Tohoku University, Sendai, Japan; 2. Center for Science and Innovation in Spintronics, Tohoku university, Sendai, Japan*

WEDNESDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session DW
SOFT MAGNETIC MATERIALS (Poster Session)

Masaki Nakano, Chair
Nagasaki University, Nagasaki, Japan

DW-01. **Effect of Plastic and Elastic Deformations on Magnetic Properties of Electrical Steel Sheets.** *U. Aydin*[1,3], P. Rasilo[2], F. Martin[1], A. Belahcen[1], R. Kouhia[3], S. Laakso[4], L. Daniel[5] and A. Arkkio[1] *1. Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland; 2. Electrical Energy Engineering, Tampere University, Tampere, Finland; 3. Civil Engineering, Tampere University, Tampere, Finland; 4. Department of Mechanical Engineering, Aalto University, Espoo, Finland; 5. CentraleSupélec, Univ. Paris-Sud, Université Paris-Saclay, Sorbonne Université, GeePs UMR CNRS 8507, Paris, France*

DW-02. **Soft Magnetic Properties of a FeCoNiGaNb High Entropy Alloy.** *C. Bormio-Nunes*[1], F. Martins Cardoso[1] and P. Pereira[1] *1. Engenharia de Materiais, Universidade de São Paulo - Escola de Engenharia de Lorena, Lorena, Brazil*

DW-03. **Effects of neutron irradiation on magnetic first-order reversal curves in reactor pressure vessel steels.** *S. Kobayashi*[1], H. Murakami[1], A. Horvath[2], L. Almasy[2], F. Gillemot[2] and A. Feoktystov[3] *1. Iwate University, Morioka, Japan; 2. Hungarian Academy of Science, Budapest, Hungary; 3. Forschungszentrum Julich GmbH, Garching, Germany*

DW-04. **FeSiAl Thin Films with Low Magnetic Anisotropy for the Free Layer of Magnetic Tunnel Junction Based Sensors.** *S. Akamatsu*[1], M. Oogane[1,3], M. Tsunoda[2,3] and Y. Ando[1,3] *1. Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

DW-05. **Magnetization Process and Loss Decomposition in Fiber-Laser-Irradiated Grain-Oriented Steel Sheets.** *S. Dobak*[1], J. Fuzer[1], P. Kollar[1], I. Petryshynets[2] and F. Kovac[2] *1. Institute of Physics, Faculty of Science, P. J. Safarik University, Kosice, Slovakia; 2. Division of Metal Systems, Institute of Materials Research, Slovak Academy of Sciences, Kosice, Slovakia*

DW-06. **Magnetoimpedance studies on electrodeposited NiFe composite wires.** *S. Vasam*[1] and S. Veeturi[1] *1. Physics, Indian Institute of Technology Madras, Chennai, India*

DW-07. **A Statistical Method for Modeling the Magneto-elastic Coupling Behavior of Magnetic Materials.** *X. Yuan*[1] and L. Li[1] *1. North China Electric Power University, Beijing, China*

DW-08. **Magnetic properties of Fe-Ni-system films prepared by electroless deposition.** *R. Tanaka*[1], R. Ueno[1], K. Mieda[1], J. Kaji[1], A. Yamashita[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki-Shi, Japan*

DW-09. **Magnetic Loss Reduction in FeGa/NiFe Laminates for Strain-Mediated Multiferroic Micro-Antenna Applications.** *K. Fitzell*[1], A. Acosta[1], C. Rementer[1,2], J.D. Schneider[3], J. Hu[3], A. Sepulveda[3], G. Carman[3] and J.P. Chang[1] *1. Chemical & Biomolecular Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Lam Research, Fremont, CA, United States; 3. Mechanical & Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States*

DW-10. **Development of Rapid Cooling Atomizing Method and Production of High-B_s Nanocrystalline Powder with Large Particle Sizes.** *K. Uji*[1], T. Tomita[1], K. Yoshida[1], T. Takahashi[1] and H. Kuwata[1] *1. Tohoku magnet institute Co., LTD., Sendai, Japan*

DW-11. **Soft Magnetic Co-rich Nanocrystalline Alloys for GMI Applications at Elevated Temperatures.** F. Andrejka[1], *J. Marcin*[1], P. Svec[2] and I. Skorvanek[1] *1. Institute of Experimental Physics SAS, Kosice, Slovakia; 2. Institute of Physics SAS, Bratislava, Slovakia*

DW-12. **Oxygen dependence of transparent amorphous magnetic thin films Co-Fe-Ta-B-O magnetization: experiments and simulations.** *C. Xiong*[1] and X. Zhang[1] *1. Material Science and Engineering, Tsinghua University, Beijing, China*

DW-13. Strain Induced Anisotropy in Nanocomposite $Co_{74.6}Fe_{2.7}Mn_{2.7}Nb_4Si_2B_{14}$. *A. Srivastava*[1,2], K. Cole-Piepke[1,2], A. Koenig[3], T. Burton[3], C.K. Mewes[1,2], T. Mewes[1,2], G. Thompson[3], R. Noebe[4] and A. Leary[4] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL, United States; 2. Physics and Astronomy, University of Alabama, Tuscaloosa, AL, United States; 3. Department of Materials and Metallurgical Engineering, University of Alabama, Tuscaloosa, AL, United States; 4. Materials and Structures Division, NASA Glenn Research Center, Cleveland, OH, United States*

DW-14. Role of Jahn-Teller Distortions and Ferrimagnetic Transitions in $(Co_{1-x}Cu_x)Cr_2O_4$ (x = 0.5, 0.25) Nanoparticles. *P. Mohanty*[1], C. Sheppard[1], B. Doyle[1], E. Carleschi[1] and A. Prinsloo[1] *1. Department of Physics, University of Johannesburg, Johannesburg, South Africa*

DW-15. *In-vitro* evaluation of $Zn_xFe_{3-x}C$ ($0 \leq x \leq 1$) nanoparticles for magnetic hyperthermia treatment. *A. Gangwar*[1], K.V. Matte[2], K. Neogi[2], M.S. Muthu[2], S. Kumar[3], A. Sharma[4], S. Singh Meena[5] and N.K. Prasad[1] *1. Metallurgical Engineering, IIT(BHU) Varanasi, Varanasi, India; 2. Pharmaceutical Engineering, IIT(BHU) Varanasi, Varanasi, India; 3. Metallurgical Engineering, NIT, Rourkela, Rourkela, India; 4. Metallurgical and Materials Engineering, IIT, Bombay, Mumbai, India; 5. Solid State Physics Division, BARC, Mumbai, Mumbai, India*

DW-16. Electroplated Fe-Co films prepared in citric-acid-based plating baths. *K. Mieda*[1], R. Tanaka[1], J. Kaji[1], A. Yamashita[1], T. Morimura[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki-shi, Japan*

DW-17. Iron Loss Separation Model Under DC Bias for Filter Inductors of Power Electronic Converters. H. Sun[1,2], *Y. Li*[1,2], S. Yue[1,2] and M. Yang[1,2] *1. State Key Lab of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. Key Lab of EFEAR of Hebei Province, Hebei University of Technology, Tianjin, China*

DW-18. Improvement in soft magnetic properties exchange-coupled Fe-Ni/$Fe_{22}Ni_{78}$ bilayer films. *J. Kaji*[1], R. Tanaka[1], K. Mieda[1], A. Yamashita[1], T. Yanai[1], M. Nakano[1] and F. Hirotoshi[1] *1. Nagasaki University, Nagasaki, Japan*

WEDNESDAY
EVENING
6:00

RIO PAVILION 2

Session XA
MEMORIAL SESSION FOR JOHN SLONCZEWSKI
Alina Deac, Chair
Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

6:00

Awards Presentations

6:15

XA-01. **Spin-transport physics – a gift from John, a new field of science.** ***(Invited)*** *J. Sun*[1] *1. IBM T. J. Watson Research Center, Yorktown Heights, NY, United States*

7:00

XA-02. **J. C. Slonczewski: From Bubble to MRAM.** ***(Invited)*** *S. Maekawa*[1,2] *1. Center for Emergent Matter Science, Riken, Wako, Japan; 2. Kavli Institute for Theoretical Sciences, Beijing, China*

THURSDAY
MORNING
8:30

RIO PAVILION 2

Session EA
PHYSICS AND APPLICATIONS OF SYNTHETIC ANTIFERROMAGNETS (SAFS)
Olav Hellwig, Chair
Chemnitz University of Technology, Chemnitz, Germany

8:30

EA-01. **The fundamental properties and applications of synthetic antiferromagnetc systems.** ***(Invited)*** *E. Fullerton*[1] *1. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States*

9:06

EA-02. **Tuning magnetic phases in synthetic antiferromagnets with perpendicular anisotropy via control of micromagnetic energy balance.** ***(Invited)*** *N.S. Kiselev*[1] *1. Peter Grünberg Institute and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, Germany*

9:42

EA-03. **Perspectives of Synthetic Antiferromagnetic Spintronics.** ***(Invited)*** *R. Duine*[1,2] *1. Physics, Institute for Theoretical Physics, Utrecht, Netherlands; 2. Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

10:18

EA-04. **Using Synthetic AntiFerromagnetic (SAF) Structures for Biomedical Applications.** ***(Invited)*** T. Vemulkar[1], J. Verheyen[1], S. Leulmi Pichot[1], E. Welbourne[1], M. Stanton[1], D. Petit[1] and *R. Cowburn*[1] *1. Cavendish Physics Laboratory, University of Cambridge, Cambridge, United Kingdom*

10:54

EA-05. **Giant Tunneling Magnetoresistance in van der Waals Layered Antiferromagnet.** ***(Invited)*** *T. Song*[1], X. Cai[1], Z. Fei[1], M. Tu[4], X. Zhang[3], C. Carnahan[3], M. McGuire[2], D. Cobden[1], D. Xiao[3], W. Yao[4] and X. Xu[1] *1. University of Washington, Seattle, WA, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. Carnegie Mellon University, Pittsburgh, PA, United States; 4. University of Hong Kong, Hong Kong, Hong Kong*

THURSDAY MORNING 8:30 — RIO PAVILION 6

Session EB
SPINS AND MAGNETISM IN TOPOLOGICAL MATERIALS
Hongxin Yang, Chair
Chinese Academy of Sciences, Ningbo, China

8:30

EB-01. **Spin-to-charge conversion in topological insulator/semiconductor heterostructures probed by optical spin orientation.** *T. Guillet*[1], C. Zucchetti[2], A. Marchionni[2], F. Bottegoni[2], A. Marty[1] and M. Jamet[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-Spintec, Grenoble, France; 2. LNESS-Dipartimento di Fisica, Politecnico di Milano, Milan, Italy*

8:42

EB-02. **Butterfly-shaped magnetoresistance and topological Hall effect induced by spin fluctuations on triangular lattice.** *H. Taniguchi*[1], M. Watanabe[1], M. Tokuda[1], S. Suzuki[1], T. Ibe[1], T. Arakawa[1,2], H. Yoshida[3], H. Ishizuka[4], K. Kobayashi[1,5] and Y. Niimi[1,2] *1. Graduate School of Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. Graduate School of Science, Hokkaido University, Sapporo, Japan; 4. Department of Applied Physics, University of Tokyo, Bunkyo, Japan; 5. Graduate School of Science, University of Tokyo, Bunkyo, Japan*

8:54

EB-03. **Study of surface-spin accumulation in topological insulators using scanning tunneling microscopy.** *S. Tyagi*[1], M. Dreyer[2], D. Bowen[2], D. Hinkel[2], A.L. Friedman[2], P. Taylor[3], R.E. Butera[2], C. Krafft[2] and I. Mayergoyz[1] *1. University of Maryland, College Park, MD, United States; 2. Laboratory for Physical Sciences, College Park, MD, United States; 3. US Army Research Laboratory, Adelphi, MD, United States*

9:06

EB-04. **Surface State Magnetoresistance in Proximity Magnetized Topological Insulators.** ***(Invited)*** *N. Mason*[1], J. Sklenar[1], J. Oh[1], Y. Zhang[2] and M. Gilbert[3] *1. Physics, University of Illinios at Urbana-Champaign, Urbana, IL, United States; 2. Materials Science, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

9:42

EB-05. **Magnetoelectric Induced Topological Phases in Graphene on Chromia Interface.** *H. Takenaka*[1], S. Sandhoefner[1], A. Kovalev[1] and E.Y. Tsymbal[1] *1. University of Nebraska-Lincoln, Lincoln, NE, United States*

9:54

EB-06. **Adiabatic and Resonant Spin Pumping in Two-dimensional Quantum Spin Hall Insulator.** *Y. Araki*[1], T. Misawa[2] and K. Nomura[3] *1. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Institute for Materials Research, Tohoku University, Sendai, Japan*

10:06

EB-07. **Antiferromagnetic topological insulator $MnBi_2Te_4$ and its applications.** *M.M. Otrokov*[1,2], I.P. Rusinov[3,4], M. Blanco-Rey[5,6], M. Hoffmann[7], A.Y. Vyazovskaya[3,4], S.V. Eremeev[8,3], Y.M. Koroteev[8,3], A. Ernst[7], P.M. Echenique[5,6], A. Arnau[1,5] and E.V. Chulkov[5,6] *1. Centro de Física de Materiales (CFM-MPC), Centro Mixto CSIC-UPV/EHU, San Sebastian, Spain; 2. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 3. Tomsk State University, Tomsk, Russian Federation; 4. Saint Petersburg State University, Saint Petersburg, Russian Federation; 5. Departamento de Física de Materiales, Universidad del País Vasco (UPV/EHU), San Sebastian, Spain; 6. Donostia International Physics Center (DIPC), San Sebastian, Spain; 7. Institut für Theoretische Physik, Johannes Kepler Universität, Linz, Austria; 8. Institute of Strength Physics and Materials Science, Tomsk, Russian Federation*

10:18

EB-08. **Giant Spin Hall Angle in $Bi_{1-x}Sb_x$ Semimetals Driven by Thermally Excited Dirac-like Electrons.** *Z. Chi*[1,2], Y. Lau[1,2] and M. Hayashi[1,2] *1. Department of Physics, The University of Tokyo, Tokyo, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*

10:30

EB-09. **Spin valve-like magnetoresistance of a topological insulator in proximity to a perpendicular magnet.** *J. Oh*[1], V. Humbert[1], J. Sklenar[1] and N. Mason[1] *1. Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

10:42

EB-10. **Spin-orbit torque switching of ferromagnets and ferrimagnets by topological surface states.** *H. Wu*[1], P. Zhang[1], P. Deng[1], Y. Xu[2], S. Razavi[1], S. Mangin[2] and K. Wang[1] *1. Department of Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Institut Jean Lamour, CNRS UMR 7198, Université de Lorraine, Nancy, France*

10:54

EB-11. **Non-local electrical detection of helical surface states in three-dimensional topological insulators.** *S. Jafarpisheh*[1,2], F. Volmer[1], Z. Wang[3], Y. Ando[3], C. Stampfer[1,2] and B. Beschoten[1] *1. 2nd Institute of Physics and JARA-FIT, RWTH Aachen University, Aachen, Germany; 2. Peter Grünberg Institute (PGI-9), Forschungszentrum Jülich, Jülich, Germany; 3. Physics Institute II, University Cologne, Cologne, Germany*

11:06

EB-12. **Observation of opposite current-induced spin polarization in bulk-metallic Bi_2Se_3 and bulk-insulating Bi_2Te_2Se topological insulator thin flakes.** *J. Tian*[1,2], C. Sahin[3], I. Miotkowski[1], M.E. Flatté[3] and Y.P. Chen[1] *1. Physics and Astronomy, Purdue University, West Lafayette, IN, United States; 2. Physics & Astronomy, University of Wyoming, Laramie, WY, United States; 3. Physics and Astronomy, University of Iowa, Iowa City, IA, United States*

11:18

EB-13. **Point Contact Spectroscopy of Zero-energy Modes in Topological Materials.** G.P. Mazur[1], K. Dybko[1,2], A. Szczerbakow[2], J.Z. Domagala[2], A. Kazakov[1], M. Zgirski[2], E. Lusakowska[2], S. Kret[2], J. Korczak[1,2], T. Story[1,2], *M. Sawicki*[2] and T. Dietl[1,2] *1. International Research Centre MagTop, Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 2. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland*

THURSDAY MORNING 8:30 — BRASILIA 2

Session EC
SPIN CURRENTS AND RESULTING SPIN TORQUES I

Markus Münzenberg, Chair
Universität Greifswald, Greifswald, Germany

8:30

EC-01. **High Spin Hall Conductivity and Current-Induced Magnetization Switching by α-W.** *W. Liao*[1], T. Chen[1], Y. Ferrante[3], S.S.P. Parkin[2] and C. Pai[1] *1. Materials Science and Engineering, National Taiwan University, Taichung, Taiwan; 2. Max Plank Institute of Microstructure Physics, Halle, Germany; 3. IBM Research-Almaden, San jose, CA, United States*

8:42

EC-02. **Ultra-Low Switching Current Density in All-Amorphous W-Hf/CoFeB/TaO_x Films.** *K. Fritz*[1], L. Neumann[2] and M. Meinert[1] *1. Center for Spinelectronic Materials and Devices, Department of Physics, Bielefeld University, Bielefeld, Germany; 2. Argelander Institute for Astronomy, Bonn University, Bonn, Germany*

8:54

EC-03. **Spin Planar Hall Effect.** *V. Amin*[1,2], P. Haney[2] and M.D. Stiles[2] *1. University of Maryland, College Park, MD, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States*

9:06

EC-04. **Manipulating spin currents with graphene-based heterostructures.** ***(Invited)*** *F. Casanova*[1,2] *1. CIC nanoGUNE, San Sebastian, Spain; 2. IKERBASQUE, Bilbao, Spain*

9:42

EC-05. **Determination of Spin Freezing Temperature in Nanoscale Spin Glasses.** *H. Taniguchi*[1], M. Tokuda[1], T. Taniguchi[1], T. Arakawa[1,2], B. Gu[3], T. Ziman[4], S. Maekawa[5], K. Kobayashi[1,6] and Y. Niimi[1,2] *1. Graduate School of Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. Kavli Institute for Theoretical Sciences, University of Chinese Academy of Sciences, Beijing, China; 4. Institut Laue Langevin, LPMMC, Université Grenoble-Alpes, Grenoble, France; 5. Center for Emergent Matter Science, RIKEN, Wako, Japan; 6. Graduate School of Science, University of Tokyo, Bunkyo, Japan*

9:54

EC-06. **Enhanced Performance of Spintronic Terahertz Emitters Based on Defect Engineering.** *L. Scheuer*[1], D. Nenno[1], G. Torosyan[2], A. Brodyanski[3], R.H. Binder[4], H.C. Schneider[1], R. Beigang[1] and E.T. Papaioannou[1] *1. Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. Photonic Center Kaiserslautern, Kaiserslautern, Germany; 3. Institut für Oberflächen- und Schichtanalytik (IFOS) and Landesforschungszentrum Optimas, Kaiserslautern, Germany; 4. College of Optical Sciences, Tucson, AZ, United States*

10:06

EC-07. **Making Magnonic Spin Currents Useful – Controlling Spin Transport.** J. Cramer[1], F. Fuhrmann[1], R. Lebrun[1], L. Baldrati[1], A. Ross[1], T. Niizeki[2], R. Ramos[2], D. Hou[2], Z. Qiu[2], E. Saitoh[2,3] and *M. Kläui*[1] *1. Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. IMR, Tohoku University, Sendai, Japan; 3. Applied Physics, University of Tokyo, Tokyo, Japan*

10:18

EC-08. **Influence of alloying Ta and V on spin-orbit torque efficiency in W/CoFeB/MgO junctions.** *G. Kim*[1], Y. Kim[1], I. Cha[1], T. Kim[1], M. Lee[1] and Y. Kim[1] *1. Materials science and engineering, Korea University, Seoul, The Republic of Korea*

10:30

EC-09. **Self-Induced Inverse Spin Hall Effect in Ferromagnets: Demonstration through Non-Monotonous Temperature-Dependence.** O. Gladii[1], L. Frangou[1], A. Hallal[1], R.L. Seeger[1], P. Noel[1], G. Forestier[1], S. Aufftet[1], M. Rubio-Roy[1], P. Warin[1], L. Vila[1], S. Gambarelli[2], M. Chshiev[1] and *V. Baltz*[1] *1. Univ. Grenoble Alpes / CNRS / CEA, SPINTEC, Grenoble, France; 2. Univ. Grenoble Alpes / CEA, Symmes, Grenoble, France*

10:42

EC-10. **Giant spin Hall effect in ultrathin Au/Si multilayers.** *M. El Hadri*[1], J. Gibbons[2], Y. Xiao[1], H. Ren[1], H. Wang[1], A. Hoffmann[2] and E. Fullerton[1] *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States*

10:54

EC-11. **Spin Hall effect investigated by spin Hall magnetoresistance in $Pt_{100-x}Au_x$/CoFeB/MgO systems.** *Y. Saito*[1], N. Tezuka[2,3], S. Ikeda[1,3], H. Sato[1,4] and T. Endoh[1,5] *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 5. Department of Electrical Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan*

11:06

EC-12. **Spin Hall Magnetoresistance and Proximity Induced Magnetism in CoFeTaB-Pt Bilayers.** *O.A. Inyang*[1,5], K. Moran[2], C. Kinane[3], L. Bouchenoire[4], B. Hickey[2], D. Atkinson[1] and A. Hindmarch[1] *1. Department of Physics, Durham University, Durham, United Kingdom; 2. Department of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. ISIS neutron facility, Rutherford Appleton Laboratory, Didcot, United Kingdom; 4. XMaS beamline, ESRF, Grenoble, France; 5. Department of Physics, Akwa Ibom State University, Mkpat Enin, Nigeria*

11:18

EC-13. **Temperature dependent spin Hall angles of Pt thin films with different crystalline structures.** *H. Wang*[1], Y. Xiao[1] and E. Fullerton[1] *1. University of California, San Diego, La Jolla, CA, United States*

Session ED
SKYRMIONS IN MULTILAYERS II

Katharina Zeissler, Co-Chair
University of Leeds, Leeds, United Kingdom
Craig Barton, Co-Chair
University of Manchester, Manchester, United Kingdom

8:30

ED-01. **Interactions of Chiral Magnetic Textures with Electrical Currents Studied with X-ray Microscopy.** ***(Invited)*** *S. Finizio*[1], K. Zeissler[2], A. Huxtable[3], S. Wintz[1,4], S. Mayr[1,5], J. Bailey[1,6], M. Langer[1], G. Burnell[3], C.H. Marrows[3] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland; 2. National Physical Laboratory, Teddington, United Kingdom; 3. University of Leeds, Leeds, United Kingdom; 4. Max Planck Institut für Intelligiente Systeme, Stuttgart, Germany; 5. ETH Zürich, Zürich, Switzerland; 6. EPFL, Lausanne, Switzerland*

9:06

ED-02. **Evolution of Skyrmion Character with Interfacial Chiral Interactions in Co/Pt-Based Multilayers.** X. Chen[1,2], M. Lin[1], H. Tan[1], A. Tan Kok Cheng[1], J. Kong[3], K. Khoo[3], H. Tan[1,2] and *A. Soumyanarayanan*[4,5] *1. A*STAR Institute of Materials Research and Engineering, Singapore, Singapore; 2. A*STAR Data Storage Institute, Singapore, Singapore; 3. A*STAR Institute of High Performance Computing, Singapore, Singapore; 4. A*STAR Institute of Materials Research and Engineering and Data Storage Institute, Singapore, Singapore; 5. Physics, National University of Singapore, Singapore, Singapore*

9:18

ED-03. **Imaging magnetic domain wall skyrmions in Pt/Co/Ni/Ir-based multi-layers using Lorentz transmission electron microscopy.** *M.P. Li*[1], A. Sapkota[3], A. Rai[3], A. Pokhrel[3], R. Cheng[4], D. Xiao[1,2], T. Mewes[3], C.K. Mewes[3], M. De Graef[1] and V. Sokalski[1] *1. Department of Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Department of Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Department of Physics and Astronomy/MINT Center, The University of Alabama, Tuscaloosa, AL, United States; 4. Department of Electrical and Computer Engineering, University of California, Riverside, CA, United States*

9:30

ED-04. **Current-Inudced Skyrmion Nucleation/Annihilation in Synthetic Antiferromagnetic Multilayers.** *R. Juge*[1], Q. Zhang[1], K. Rana[1], M. Foerster[2], L. Aballe[2], B. Sarpi[3], S. Stanescu[3], R. Belkhou[3], J. Gräfe[4], M. Weigand[4], J. Vogel[5], S. Aufftet[1], G. Gaudin[1] and O. Boulle[1] *1. SPINTEC, Univ. Grenoble Alpes, CNRS, CEA-IRIG, Grenoble INP, Grenoble, France; 2. CIRCE beamline, ALBA Synchrotron Light Facility, Cerdanyola del Vallès, Barcelona, Spain; 3. Hermès beamline, SOLEIL Synchrotron, Saint-Aubin, France; 4. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 5. Néel Institute, Grenoble, France*

9:42

ED-05. **Antiferromagnetic skyrmions in synthetic antiferromagnetic multilayers at room-temperature.** W. Legrand[1], *F. Ajejas*[1], A. Haykal[2], Y. Sassi[1], A. Finco[2], S. Chouaieb[2], D. Maccariello[1], S. Collin[1], K. Bouzehouane[1], A. Vechiola[1], N. Reyren[1], V. Cros[1], V. Jacques[2] and A. Fert[1] *1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Laboratoire Charles Coulomb, Université de Montpellier and CNRS, Montpellier, France*

9:54

ED-06. **Current induced creation, annihilation and motion of skyrmions in Py with perpendicular magnetic anisotropy.** *R. Kumar*[1], L. Ranno[2], Y. Ou[3], R. Buhrman[3], C. Baraduc[1] and H. Bea[1] *1. SPINTEC - SPINtronique et TEchnologie des Composants, IRIG CEA, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, Néel Institute, Grenoble, France; 3. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States*

10:06

ED-07. **Skyrmion diffusion in thin film multilayers.** ***(Invited)*** *U. Nowak*[1] *1. Physics Department, University of Konstanz, Konstanz, Germany*

10:42

ED-08. **Controlling long-range skyrmion lattices using field and temperature in Fe/Gd multilayers.** *L. DeBeer-Schmitt*[1], R. Desautels[2,1], N. Tang[3], S. Montoya[4,5], L. W.L.N.C.[6], S.K. Patel[4,8], M. Fitzsimmons[1,6], E. Fullerton[4], J. Borchers[7] and D.A. Gilbert[3] *1. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. Seagate Inc, Londonderry, United Kingdom; 3. Material Science Depeartment, University of Tennessee, Knoxville, TN, United States; 4. CMRR, University of California San Diego, La Jolla, CA, United States; 5. Naval Information Warfare Systems Command, San Diego, CA, United States; 6. Physics, University of Tennessee, Knoxville, TN, United States; 7. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 8. Physics, University of California San Diego, La Jolla, CA, United States*

10:54

ED-09. **Thermal Brownian Motion of Skyrmion for Ture Random Number Generation.** *Y. Yao*[1], X. Chen[1], W. Kang[1] and W. Zhao[1] *1. Beihang University, Beijing, China*

11:06

ED-10. **Skyrmiogenesis: Skyrmion–antiskyrmion asymmetry from pair generation.** U. Ritzmann[1,2], B. Dupe[3], R. Camley[4] and *J. Kim*[5] *1. Department for Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Physics, Freie Universität Berlin, Berlin, Germany; 3. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 4. Department of Physics and Energy Science, University of Colorado, Colorado Springs, CO, United States; 5. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

11:18

ED-11. **Skyrmions in Ta/CoFeB-wedge/MgO.** *C. Denker*[1], S. Nielsen[2], H. Heyen[1], E. Lage[2], Y.L. Junk[1], J. Walowski[1], M. Münzenberg[1] and J. McCord[2] *1. Institut fuer Physik, Universitaet Greifswald, Greifswald, Germany; 2. Institute for Materials Science, Christian-Albrechts-Universitaet zu Kiel, Kiel, Germany*

THURSDAY MORNING 8:30 — BRASILIA 3

Session EE
ANTIFERROMAGNETIC ORDER AND DOMAINS
Elizabeth Skoropata, Chair
Oak Ridge National Laboratory, Oak Ridge, TN, United States

8:30

EE-01. **Magneto-electric driven antiferromagnetic domain reversal and domain wall dynamics.** *K. Toyoki*[1], Y. Shiratsuchi[1], H. Yoshida[1], S. Watanabe[1], Y. Kotani[2], T. Nakamura[2] and R. Nakatani[1] *1. Department of Materials Science and Engineering, Graduate School of Engineering, Osaka University, Suita, Japan; 2. Japan Synchrotron Radiation Research Institute, Sayo, Japan*

8:42

EE-02. **A Journey into the Antiferromagnetic Spin Textures of $BiFeO_3$.** *A. Haykal*[1], J. Fischer[2], W. Akhtar[1], A. Finco[1], J. Chauleau[3], C. Carrétéro[2], N. Jaouen[4], M. Bibes[2], M. Viret[3], S. Fusil[2,5], V. Garcia[2] and V. Jacques[1] *1. Laboratoire Charles Coulomb CNRS-UM2, Montpellier, France; 2. Unité Mixte de Physique, CNRS, Thales, Palaiseau, France; 3. SPEC, CEA, CNRS, Gif-sur-Yvette, France; 4. Synchrotron SOLEIL, Gif-sur-Yvette, France; 5. Université d'Evry, Université Paris-Saclay, Evry, France*

8:54

EE-03. **Mapping Spin Textures in Epitaxial Oxide Ferromagnet-Antiferromagnet Heterostructures with X-ray Photoemission Electron Microscopy.** *R.V. Chopdekar*[1], Y. Jia[2], M. Lee[2] and Y. Takamura[2] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Materials Science and Engineering, University of California, Davis, Davis, CA, United States*

9:06

EE-04. **Electric control of antiferromagnetic/ferromagnetic order.** ***(Invited)*** *I. Fina*[1,2] *1. Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain; 2. IGSresearch, La Poble de Mafumet, Spain*

9:42

EE-05. **Multi-stimuli manipulation of domains in multiferroics.** ***(Invited)*** *J. Chauleau*[1] *1. SPEC, CEA Saclay, Gif-sur-Yvette, France*

10:18

EE-06. **Chiral antiferromagnetic and electric orders at multiferroic domain walls in $BiFeO_3$ striped films.** J. Chauleau[1], S. Fusil[3], T. Chirac[1], V. Garcia[3], P. Thibaudeau[4], J. Tranchida[5], I. Gross[6], W. Akhtar[6], A. Finco[6], M. Bibes[3], V. Jacques[6], N. Jaouen[2] and *M. Viret*[1] *1. IRAMIS/SPEC, CEA Saclay, Gif sur Yvette cedex, France; 2. Synchrotron Soleil, Saint Aubin, France; 3. Unité mixte de physique CNRS/Thales, Palaiseau, France; 4. CEA – DAM le Ripault, Monts, France; 5. Sandia National Laboratories, Albuquerque, NM, United States; 6. Université de Montpellier and CNRS, Montpellier, France*

10:30

EE-07. **Control of Highly Anisotropic Ferroelastic Domains in $LaCoO_3$ Films and Ferromagnetism Using Strain and Pressure.** *T.R. Charlton*[1], E. Guo[1,7], R. Desautels[1], D. Lee[1], M. Roldan[2], Z. Liao[1], H. Ambaye[1], J.J. Molaison[1], R. Boehler[1,3], D. Keavney[4], A. Herklotz[1,5], T.Z. Ward[1], H. Lee[1] and M. Fitzsimmons[1,6] *1. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. Eyring Materials Center, Arizona State University, Tempe, AZ, United States; 3. Geophysical Laboratory, Carnegie Institution for Sciences, Washington, DC, United States; 4. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States; 5. Institute for Physics, Martin-Luther-University Halle-Wittenberg, Halle (Saale), Germany; 6. Department of Physics and Astronomy, University of Tennessee, Knoxville, TN, United States; 7. Beijing National Laboratory for Condensed Matter Physics and Institute of Physics, Chinese Academy of Sciences, Beijing, China*

10:42

EE-08. **Possible Emergence of a Skyrmion Phase in Ferroelectric $GaMo_4S_8$.** *H. Zhang*[1], J. Chen[1], P. Barone[2], K. Yamauchi[3], S. Dong[1] and S. Picozzi[2] *1. School of Physics, Southeast University, Nanjing, China; 2. Institute for Superconducing and Innovative Materials and devices (CNR-SPIN), Consiglio Nazionale delle Ricerche, Chieti, Italy; 3. Institute of Scientific and Industrial Research, Osaka University, Ibaraki, Osaka, Japan*

10:54

EE-09. **Presence of Conductive Path at the Grain Boundaries of Multiferroic $GaFeO_3$.** *S. Ghose*[1] and K. Mandal[1] *1. CMPMS, SNBNCBS, Kolkata, India*

11:06

EE-10. **Ion irradiation effect in complex oxides: Another degree of freedom or complexity?** *S. Zhou*[1], C. Wang[1], P. Pandey[1], M. Helm[1], S. Gemming[1,6], C. Chang[2], R. Ganesh[3], D. Chen[4] and Y. Chu[5] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Department of Physics, National Cheng Kung University, Tainan, Taiwan; 3. The Institute of Mathematical Sciences, Chennai, India; 4. Institute for Advanced Materials and Guangdong Provincial Key Laboratory of Optical Information Materials and Technology, South China Normal University, Guangzhou, China; 5. Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan; 6. Institute of Physics, Technische Universität Chemnitz, Chemnitz, Germany*

11:18

EE-11. **Concept of artificial magnetoelectric materials via geometrically controlling curvilinear helimagnets.**
O. Volkov[1], U. Roessler[2], J. Fassbender[1] and D. Makarov[1]
1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Leibniz Institute for Solid State and Materials Research Dresden, Dresden, Germany

THURSDAY
MORNING
8:30

RIO PAVILION 1

Session EF

APPLICATIONS OF SPIN-TORQUES INCLUDING NEUROMORPHIC COMPUTING

Witold Skowronski, Chair
AGH University of Science and Technology, Krakow, Poland

8:30

EF-01. **Spintronic Nano-Neurons: Using Spin-Torque Nano Oscillators for Solving Machine Learning Tasks.** *F. Abreu Araujo*[1], M. Riou[2], J. Torrejon[2], S. Tsunegi[3], D. Querlioz[4], K. Yakushiji[3], A. Fukushima[3], H. Kubota[3], S. Yuasa[3], M.D. Stiles[5] and J. Grollier[2] *1. IMCN, Université catholique de Louvain, Louvain-la-Neuve, Belgium; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 4. Centre de Nanosciences et de Nanotechnologies, Palaiseau, France; 5. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States*

8:42

EF-02. **Meander Domain Wall Device as a Synaptic Element for Neuromorphic Computing.** *N. Sernicola*[1], T. Jin[1], D. Kumar[1], W. Lew[1], R. Sbiaa[2] and S. Piramanayagam[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Department of Physics, Sultan Qaboos University, Muscat, Oman*

8:54

EF-03. **Neuromorphic computing with magnetic Josephson junctions.** *M.L. Schneider*[1], C.A. Donnelly[2], A. Wynn[3], I.W. Haygood[1], S.E. Russek[1], M. Pufall[1], P. Hopkins[1] and W.H. Rippard[1] *1. NIST, Boulder, CO, United States; 2. Electrical Engineering, Stanford, Palo Alto, CA, United States; 3. MIT Lincoln Laboratory, Lexington, MA, United States*

9:06

EF-04. **Mode Attraction and Antiresonance in a Dynamic Rashba System with Spin-Orbit Torques.** *I. Proskurin*[1,2] and R.L. Stamps[1] *1. Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation*

9:18

EF-05. **Synchronization and Chaos in Spin Torque Oscillator with Two Free Layers.** *T. Taniguchi*[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

9:30

EF-06. **Nonlinear dynamics of spin-torque nano-oscillators with delayed feedback.** J. Williame[1], A. Difini Accioly[1], D. Rontani[2], M. Sciamanna[2] and *J. Kim*[1] *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Laboratoire Matériaux Optiques, Photonique et Systèmes, CentraleSupelec, Université de Lorraine, Metz, France*

9:42

EF-07. **Macrospin simulation with dry friction of a spintronic memristor based on angular variation of TMR.** M. Mansueto[1], A. Chavent[1], U. Ebels[1], R. Sousa[1], L. Buda-Prejbeanu[1], I. Prejbeanu[1] and *B. Dieny*[1] *1. CEA - IRIG, Spintec, Grenoble, France*

9:54

EF-08. **Pronounced Scaling of the Tunnel Spin Polarization of Fe/MgO/silicon Contacts with MgO Thickness.** *A.M. Spiesser*[1], H. Saito[1], S. Yuasa[1] and R. Jansen[1] *1. Spintronics Research Center, AIST, Tsukuba, Japan*

10:06

EF-09. **Spin Signals in Two-terminal Devices with a Nonmagnetic Channel and Ferromagnetic Tunnel Contacts.** *R. Jansen*[1], A.M. Spiesser[1], H. Saito[1], Y. Fujita[1], S. Yamada[2], K. Hamaya[2] and S. Yuasa[1] *1. 1National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Osaka University, Toyonaka, Japan*

10:18

EF-10. **Understanding of mechanism for gate-controlled spin accumulation in Si-based lateral spin valve.** *S. Lee*[1], F. Rortais[1], R. Ohshima[1], Y. Ando[1], Y. Suzuki[2], H. Koike[3] and M. Shiraishi[1] *1. Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 3. Advanced Products Development Center, TDK, Ichikawa, Japan*

10:30

EF-11. **Optical spin-orbit torque in heavy metal/ ferromagnet heterostructures.** *G. Choi*[1], J. Oh[2], D. Lee[2], S. Lee[2], K. Kim[3], M. Lim[4], B. Min[5], K. Lee[2] and H. Lee[4] *1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Korea University, Seoul, The Republic of Korea; 3. Institute for Basic Science, Daejeon, The Republic of Korea; 4. Pohang University of Science and Technology, Pohang, The Republic of Korea; 5. Korea Institute of Science and Technology, Seoul, The Republic of Korea*

10:42

EF-12. **Crystalline-orientation Dependent Charge-spin Conversion and SOT Switching of Epitaxial Pt Films.** *Y. Xiao*[1], H. Wang[1] and E. Fullerton[1] *1. Center for Memory and Recording Research, La Jolla, CA, United States*

10:54

EF-13. **Magneto-Seebeck Tunneling on the Atomic Scale.** ***(Invited)*** *C. Friesen*[1], H. Osterhage[1], J. Friedlein[1], A. Schlenhoff[1], R. Wiesendanger[1] and S. Krause[1] *1. Institute of Applied Physics and Interdisciplinary Nanoscience Center Hamburg, University of Hamburg, Hamburg, Germany*

THURSDAY MORNING 8:30 — RIO PAVILION 3

Session EG
VOLTAGE-CONTROLLED MAGNETIC ANISOTROPY AND SWITCHING II

Ilya Krivorotov, Chair
University of California, Irvine, CA, United States

8:30

EG-01. **Higher Order Magnetic Anisotropy in a Perpendicularly Magnetized Epitaxial Ultrathin Fe Layer under Various Applied Voltage.** *A. Sugihara*[1], T. Nozaki[1], H. Kubota[1], H. Imamura[1], A. Fukushima[1], K. Yakushiji[1] and S. Yuasa[1] *1. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

8:42

EG-02. **Voltage-controlled tunability of threshold current and frequency in spin Hall nano-oscillators.** *H. Fulara*[1,2], M. Zahedinejad[1], R. Khymyn[1,2], M. Dvornik[1], S. Fukami[3], S. Kanai[3], H. Ohno[3] and J. Åkerman[1,2] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. NanOsc AB, Kista, Sweden; 3. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

8:54

EG-03. **Pseudo-magnetization as a New Order Parameter for Voltage Controlled Magnetism.** *O. Hassan*[1], K.Y. Camsari[1] and S. Datta[1] *1. Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States*

9:06

EG-04. **Voltage-induced dynamic magnetization switching with low write error rate. *(Invited)*** *T. Nozaki*[1], T. Yamamoto[1], H. Imamura[1], M. Endo[2], T. Nozaki[1], M. Konoto[1], H. Ohmori[2], Y. Higo[2], H. Kubota[1], A. Fukushima[1], M. Hosomi[2] and Y. Suzuki[1,3] *1. Spintronics Research Center, AIST, Tsukuba, Japan; 2. Sony Semiconductor Solutions Corp., Atsugi, Japan; 3. Graduate School of Engineering Science, Osaka Univ., Toyonaka, Japan*

9:42

EG-05. **Voltage-torque-driven magnetization switching using microwave-superimposed voltage pulse.** *T. Yamamoto*[1], T. Nozaki[1], H. Imamura[1], S. Tamaru[1], K. Yakushiji[1], H. Kubota[1], A. Fukushima[1], Y. Suzuki[1,2] and S. Yuasa[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

9:54

EG-06. **Voltage Induced 180 Degree Switching of the Néel Vector in a Ferrimagnet by Solid-State Ionic Gating.** *M. Huang*[1], L.M. Caretta[1], J. Bartell[1] and G. Beach[1] *1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

10:06

EG-07. **Highly efficient magneto-ionic control of interfacial magnetism using YSZ gate oxide.** *K. Lee*[1], S. Jo[1], J. Park[2], A. Tan[3], J. Son[2], J. Chang[1], G. Beach[3] and S. Woo[4] *1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. High Temperature Energy Materials Research Center, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4. TJ Watson Research Center, IBM, Yorktown Heights, NY, United States*

10:18

EG-08. **Impact of spin transfer torque on the write error rate of a voltage-torque MRAM.** *H. Imamura*[1] and R. Matsumoto[1] *1. Spintronics RC, AIST, Tsukuba, Japan*

10:30

EG-09. **Temperature dependence of VCMA in $SrTiO_3$\Co\Pt trilayers: insights into the mechanism.** *B.F. Vermeulen*[1,2], J. Swerts[2], S. Couet[2], M.I. Popovici[2], Y. Wu[5,2], W. Kim[2], G.S. Kar[2], P.J. Roussel[2], J. Vande Vondel[3], K. Temst[4], G. Groeseneken[5,2] and K.M. Martens[1,2] *1. Laboratorium voor Halfgeleiderfysica, KULeuven, Leuven, Belgium; 2. imec, Leuven, Belgium; 3. Laboratory for Solid State Physics and Magnetism, KULeuven, Leuven, Belgium; 4. Instituut voor Kern- en Stralingsfysica, KULeuven, Leuven, Belgium; 5. Department of Electrical Engineering, KULeuven, Leuven, Belgium*

10:42

EG-10. **Electric-field induced spin pumping in an in-plane magnetized CoFeB/MgO junction.** *A. Deka*[1], B. Rana[2], R. Anami[1], K. Miura[3], H. Takahashi[3], Y. Otani[4,2] and Y. Fukuma[1,2] *1. Computer Science and Systems Engineering, Kyushu Institute of Technology, Iizuka, Japan; 2. Center for Emergent Matter Science, RIKEN, Wako, Japan; 3. Research and Development Group, Hitachi Ltd., Kokubunji, Japan; 4. Institute for Solid State Physics, University of Tokyo, Chiba, Japan*

10:54

EG-11. **Study of GHz VCMA Precessional Switching Speed in BEOL-compatible Perpendicular MTJ.** *Y. Wu*[1,2], W. Kim[1], S. Couet[1], K. Garello[1], S. Rao[1], B.F. Vermeulen[1,2], S. Van Beek[1], S. Kundu[1], S. Houshmand Sharifi[1], F. Yasin[1], J. Swerts[1], D. Crotti[1], J. Van Houdt[1,2], G. Groeseneken[1,2] and G.S. Kar[1] *1. IMEC, Leuven, Belgium; 2. KULeuven, Leuven, Belgium*

11:06

EG-12. **Voltage Tuning of Switching Probability in Voltage-controlled Switching.** *A. Fukushima*[1], T. Yamamoto[1], T. Nozaki[1], K. Yakushiji[1], H. Kubota[1] and S. Yuasa[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

11:18

EG-13. **Giant Electric Field Modulation of Magnetism in Ferrimagnetic Heusler Heterostructures.** Q. Sun[1], S. Kwon[1] and *N. Kioussis*[1] *1. California State University, Northridge, Northridge, CA, United States*

Session EH
RARE-EARTH-FREE PERMANENT MAGNETS
Hideto Yanagihara, Chair
University of Tsukuba, Tsukuba, Japan

8:30

EH-01. **A New Generation of MnBi Permanent Magnets.** ***(Invited)*** *G.C. Hadjipanayis*[1], A. Gabay[1] and J. Cui[2,3] *1. University of Delaware, Newark, DE, United States; 2. Iowa State University, Ames, IA, United States; 3. Ames Laboratory, Ames, IA, United States*

9:06

EH-02. **The Effect of Sn Addition on the Magnetic and Physical Properties of Mn-Bi Magnetic Materials.** *J. Park*[1], Y. Yang[1], J. Kim[1] and C. Choi[1] *1. Functional Powder Material Department, Korea Institute of Materials Science, Changwon, The Republic of Korea*

9:18

EH-03. **Effect of Quench Rate on the Magnetic Properties of Cr Doped MnBi Melt Spun Ribbons.** *K. Anand*[1], N. Christopher[1] and N. Singh[1] *1. Physico Mechanical Metrology Division, CSIR-National Physical Laboratory, Delhi, India*

9:30

EH-04. **Phase Transformation and Large Coercivity in Severely Deformed MnAl Alloys Doped with B+N Elements.** P. Si[1], H. Ge[1], *C. Choi*[2] and J. Du[3] *1. College of Materials Science & Engineering, China Jiliang University, Hangzhou, China; 2. Powder & Ceramic Division, Korea Institute of Materials Science, Changwon, The Republic of Korea; 3. School of Material Science & Engineering, Shanghai University, Shanghai, China*

9:42

EH-05. **Enhancement of Maximum Energy Product in Exchange-Coupled Fe_3O_4 Coated $BaFe_{12}O_{19}$ Nanocomposites.** F. Mohseni[1,2], R.C. Pullar[2], J.M. Vieira[2] and *J.S. Amaral*[1] *1. Department of Physics and CICECO, University of Aveiro, Aveiro, Portugal; 2. Department of Materials and Ceramic Engineering and CICECO, University of Aveiro, Aveiro, Portugal*

9:54

EH-06. **High Coercivity of Rare-earth Free Alnico Thin Film.** X. Han[1], H. Won[3], M. Choi[3], L. Guo[1], Z. Liu[1], R. Wang[1,2], L. Li[1], Y. Hong[3,2] and *F. Yan*[1,2] *1. Department of Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, AL, United States; 2. Alabama Transportation Institute, The University of Alabama, Tuscaloosa, AL, United States; 3. Department of Electrical and Computer Engineering and Center for Advanced Vehicle Technologies, The University of Alabama, Tuscaloosa, AL, United States*

10:06

EH-07. **Nanoporous FePt alloys with ultrahigh coercivity.** *W. Zhang*[1], D. Ma[1], Y. Wang[1], K. Yubuta[2], Y. Li[1], P. Sharma[2] and R.Y. Umetsu[2] *1. Dalian University of Technology, Dalian, China; 2. Institute for Materials Research, Tohoku University, Sendai, Japan*

10:18

EH-08. **Co nano-cluster inclusions in $L1_0$-FePt matrix as a model system of nanocomposite magnets.** C. Paléo[1], F. Wilhelm[2], T. Epicier[3], V. Dupuis[1] and *D. Le Roy*[1] *1. Univ. Lyon 1, ILM, Villeurbanne, France; 2. E.S.R.F., Grenoble, France; 3. INSA Lyon, Villeurbanne, France*

10:30

EH-09. **A Two-dimensional Magnet Based on the Shell-Ferromagnetic Effect.** *A. Cakir*[1] and M. Acet[2] *1. Metallurgical and Materials Engineering, Mugla Sitki Kocman University, Mugla, Turkey; 2. Physics, Duisburg-Essen University, Duisburg, Germany*

10:42

EH-10. **Rehabilitation of "Failed" Ferromagnetic Materials.** *A. Palasyuk*[1], T.N. Lamichhane[1,2], V. Taufour[3], O. Palasyuk[1,4], S. Bud'ko[1,2] and P. Canfield[1,2] *1. Ames Laboratory, Ames, IA, United States; 2. Department of Physics and Astronomy, Iowa State University, Ames, IA, United States; 3. Department of Physics, University of California, Davis, Davis, CA, United States; 4. Department of Material Science and Engineering, Iowa State University, Ames, IA, United States*

10:54

EH-11. **First Principles Study of Doped $RE\text{-}TM_5$ Systems for the Development of Hard Magnetic Properties.** *H. Ucar*[1], R. Choudhary[2] and D. Paudyal[2] *1. Chemical and Materials Engineering, California Polytechnic University, Pomona, Pomona, CA, United States; 2. Ames Laboratory, Ames, IA, United States*

11:06

EH-12. **Data integration approach for multiple-sublattice ferromagnetism in rare-earth permanent magnets based on *ab initio* electronic structure and neutron diffraction measurements.** *M. Matsumoto*[1], T. Hawai[1] and K. Ono[1] *1. High Energy Accelerator Research Organization, Tsukuba, Japan*

11:18

EH-13. **Correlation Corrections in Rare-Earth Transition-Metal Permanent Magnets.** *R. Skomski*[1], B. Balasubramanian[1] and D.J. Sellmyer[1] *1. Physics and Astronomy & NCMN, University of Nebraska, Lincoln, NE, United States*

Session EI
EFFECTS OF DIMENSIONALITY
Anna Isaeva, Chair
TU Dresden, Dresden, Germany

8:30

EI-01. **2D Magnetism and Novel Spintronic Devices.** ***(Invited)*** *C. Gong*[1] *1. University of Maryland, College Park, MD, United States*

9:06

EI-02. **Magnetic interactions and excitations in 2D van der Waals materials.** *L. Ke*[1] *1. Ames Laboratory, Ames, IA, United States*

9:18

EI-03. **The Effect of High Pressure on Ferromagnetic Properties of the van-der-Waals Materials VI_3 and CrI_3.** M. Kratochvilova[1], *K. Uhlirova*[1], J. Valenta[1], S. Son[2,3], P. Proschek[1], J. Prchal[1], V. Sechovsky[1] and J. Park[2,3] *1. Department of Condensed Matter Physics, Charles University, Prague, Czechia; 2. Center for Correlated Electron Systems, Institute for Basic Science, Seoul, The Republic of Korea; 3. Department of Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea*

9:30

EI-04. **Magnetic Spectroscopy of One-Dimensional Iron Chains.** *A. Baker*[1], N. Vargas[4], F. Torres[2], M. Kiwi[2], T. Willey[1], I. Schuller[4] and C. Monton[3] *1. Materials Science Division, Lawrence Livermore National Laboratory, Livermore, CA, United States; 2. Universidad de Chile, Santiago, Chile; 3. University of Texas, San Antonio, TX, United States; 4. University of California, San Diego, CA, United States*

9:42

EI-05. **Chiral magnetic ordering in ultra-short 1D iron chains.** *M. Kiwi*[1], N. Vargas[2], F. Torres[1], A. Baker[3], J. Lee[3], T. Willey[3], I. Schuller[2] and C. Monton[4] *1. Physics, Universidad de Chile, Santiago, Chile; 2. Physics, University of California, San Diego, San Diego, CA, United States; 3. Material Science Div., Lawrence Livermors National Lab, Berkely, CA, United States; 4. Physics, Univ. of Texas, San Antonio, San Antonio, TX, United States*

9:54

EI-06. **Magnetic Correlations at Different Length Scales in the Solid Solution Alloy Ni-V Close to the Ferromagnetic Critical Point Revealed with Small Angle Neutron Scattering.** *A. Schroeder*[1], S. Bhattarai[1], J.L. Lussier[1], A. Gebretsadik[1] and K.L. Krycka[2] *1. Physics, Kent State University, Kent, OH, United States; 2. NIST, Gaithersburg, MD, United States*

10:06

EI-07. **Secnond Spin Phase Transition in Spin Spiral $ZnCr_2Se_4$ at Low Temperatures.** *S. Park*[1], S. Kwon[2], S. Lee[1], S. Khim[3], D. Bhoi[3], C. Park[3] and K. Kim[3] *1. Department of Physics, KAIST, Daejeon, The Republic of Korea; 2. University of Waterloo, Waterloo, ON, Canada; 3. Department of Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea*

10:18

EI-08. **Giant Antiferromagnetic Response in a Two-dimensional Spin-orbit Mott Insulator.** ***(Invited)*** *L. Hao*[1], D. Meyers[2], H. Suwa[1], J. Yang[1], H. Xu[3], C. Batista[1], M.P. Dean[2] and J. Liu[3] *1. Department of Physics and Astronomy, University of Tennessee, Knoxville, TN, United States; 2. Department of Condensed Matter Physics and Materials Science, Brookhaven National Laboratory, Upton, NY, United States; 3. Department of Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States*

10:54

EI-09. **Spin disorder near nonmagnetic impurities in $YMnO_3$.** *S. Lim*[1], H. Sim[2,3], K. Park[2,3], J. Park[2,3] and S. Lee[1] *1. Department of Physics, KAIST, Daejeon, The Republic of Korea; 2. Center for Correlated Electron Systems, Institute for Basic Science (IBS), Seoul, The Republic of Korea; 3. Department of Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea*

11:06

EI-10. **Understanding Magnetic Exchange Interactions through the Pressure Dependence of the Susceptibility in FeCoNiCuMn High Entropy Alloys.** *A.E. Perrin*[1], S.K. McCall[2], M. McElfresh[2], D.E. Laughlin[1] and M. McHenry[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Lawrence Livermore National Lab, Livermore, CA, United States*

11:18

EI-11. **Influence of sample quality on the physical properties of the S=1 antiferromagnetic spin-ladder CaV_2O_4.** S. Hiller[1], S. Guitarra[1], A. Caneiro[2], M. Salamon[3] and *D. Niebieskikwiat*[1] *1. Departamento de Física, Universidad San Francisco de Quito, Quito, Ecuador; 2. Instituto Balseiro - Centro Atómico Bariloche, Bariloche, Argentina; 3. The University of Texas at Dallas, Richardson, TX, United States*

Session EP
MRAM, MAGNETIC LOGIC, NEUROMORPHIC COMPUTING, AND RELATED DEVICES (Poster Session)

Satoru Emori, Co-Chair
Virginia Tech, Blacksburg, VA, United States
Ye Du, Co-Chair
Tohoku University, Sendai, Japan

EP-01. **Non-volatile NDR-assisted Magnetic Half-adder.** *Z. Lu*[1] and X. Zhang[1] *1. School of Material Science & Engineering, Tsinghua University, Beijing, China*

EP-02. **Closely packed magnetic tunnel junction arrays for reservoir computing.** *H. Kubota*[1], K. Yakushiji[1], A. Fukushima[1], S. Tamaru[1], S. Tsunegi[1], T. Taniguchi[1], A. Sugihara[1], T. Nozaki[1], T. Yamamoto[1], T. Nozaki[1], S. Yuasa[1], M. Goto[2,3], K. Takahashi[2], H. Nomura[2,3] and Y. Suzuki[2,3] *1. National Institute of Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Osaka University, Toyonaka, Japan; 3. CSRN-Osaka, Toyonaka, Japan*

EP-03. **Investigation of Radiation Effect on Magnetic Tunnel Junction against Proton and Ion Beam.** *J. Park*[1], J. Kim[1], J. Ryu[1], J. Jeong[1] and B. Park[1] *1. Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea*

EP-04. **Six-State Magnetic Tunnel Junction Memory Driven by Spin Hall Effect.** *M. Alawein*[1], S. Amara[1], S. Wasef[1], U. Myrzakhan[1] and H. Fariborzi[1] *1. Electrical Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

EP-05. **$L1_0$-(MnCo)Al thin film with high perpendicular magnetic anisotropy grown on Pt seed layer.** *L. Yu*[1], M. Oogane[1], M. Tsunoda[2] and Y. Ando[1] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan*

EP-06. **STT-MRAM Error Correction Technology Based on LDPC Coding.** *X. Zhang*[1] and Y. Jiang[1] *1. Internet of Things Engineering, Jiangnan University, Wuxi, China*

EP-07. **Industrial Level Thermal Model of STT-MTJ Device with Parameter Extraction.** *Y. Jiang*[1] and L. Jiang[2] *1. Jiangnan University, Wuxi, China; 2. UC Berkeley, Berkeley, CA, United States*

EP-08. **Passive and active microwave signal detection using magnetic tunnel junctions with perpendicular magnetic anisotropy.** *A. Sidi El Valli*[1], V. Iurchuk[1], N. Lamard[1], A. Chavent[1], J. Langer[2], J. Wrona[2], B. Dieny[1], I. Prejbeanu[1], L. Vila[1], R. Sousa[1] and U. Ebels[1] *1. Univ. Grenoble Alpes, CEA, CNRS, G-INP, IRIG-SPINTEC, Institute of Engineering Univ. Grenoble Alpes, SPINTEC, Grenoble, France; 2. Singulus Technologies AG, Kahl, Germany, Kahl, Germany*

EP-09. **The Design of 1Gb Parallel STT-MRAM with Pipeline Architecture.** *G. Zhang*[1] and Y. Jiang[1] *1. School of Internet of Things Engineering, Jiangnan University, Wuxi, China*

EP-10. **Synchronization of Stochastic Magnetic Oscillators Based on Thermally Stable Magnetic Tunnel Junctions by Supply Voltage Modulation.** *Y. Lv*[1], R. Bloom[1], B.R. Zink[1] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

EP-11. **Micromagnetic study of fast switching mechanism in perpendicular double MTJ with a switchable reference layer.** *C. Yoshida*[1], T. Tanaka[1], T. Ataka[1] and A. Furuya[1] *1. Fujitsu Limited, Kawasaki, Japan*

EP-12. **Coupled Spin-Torque-Oscillator based Distance Computation.** *M. Pufall*[1], W.H. Rippard[1], E. Jué[1], M. Koo[2], Y. Shim[2], K. Roy[2], G. Csaba[3] and W. Porod[4] *1. National Institute of Standards and Technology, Boulder, CO, United States; 2. Purdue University, Lafayette, IN, United States; 3. Pazmany University, Budapest, Hungary; 4. Notre Dame University, South Bend, IN, United States*

EP-13. **Time-Resolved Study of the Switching of Spin Transfer Torque Random Access Memories.** *P. Bouquin*[1,2], S. Rao[2], S. Couet[2], S. Kundu[2], D. Crotti[2], J. Swerts[2], G.S. Kar[2] and T. Devolder[1] *1. Centre de Nanosciences et Nanotechnologies, Palaiseau, France; 2. IMEC, Leuven, Belgium*

EP-14. **Thermally assisted STT switching MRAM cell using hybrid memory layer consisting of CoPd/Pd and Co/Pd multilayers.** *W. Zhao*[1], T. Kato[1], D. Oshima[2], Y. Sonobe[3], S. Takahashi[3] and S. Iwata[2] *1. Department of Electronics, Nagoya University, Nagoya, Japan; 2. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 3. Sumsung R&D Institute Japan, Yokohama, Japan*

EP-15. **Spintronic Processing in Memory for Convolutional Neural Network Based on STT-MRAM.** *H. Zhang*[1], W. Kang[1], Y. Zhang[1] and W. Zhao[1] *1. Beihang University, Beijing, China*

EP-16. **Domain Wall Mediated Reversal Dynamics in Perpendicular Magnetic Tunnel Junctions with SAF Free Layer.** *O. Bultynck*[1,2], V. Nguyen[2], S. Couet[2], D. Wan[2], E. Raymenants[1,2], B. Soree[1,2], M. Heyns[1,2], I. Radu[2] and T. Devolder[3] *1. KU Leuven, Leuven, Belgium; 2. imec, Leuven, Belgium; 3. Novel magnetic devices, C2N, Palaiseau, France*

EP-17. **A Study of Domain Wall Switching and Structural Properties of Perpendicular $Co_{25}Pd_{75}$ Alloys for STT-RAM Applications.** *S. Gupta*[1], P.B. Visscher[8], B.D. Clark[2,3], J.B. Abugri[2], K.E. Tippey[4,7], I.M. Oikonomou[5], P. Komninou[5] and J. Gong[6] *1. Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, AL, United States; 2. Electrical and Computer Engineering, University of Alabama, Tuscaloosa, AL, United States; 3. Intel Corporation, Tuscaloosa, OR, United States; 4. Metallurgical and Materials Engineering, Colorado School of Mines, Golden, CO, United States; 5. Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece; 6. Seagate Technology, Bloomington, MN, United States; 7. EVRAZ, Portland, OR, United States; 8. Physics and MINT Center, University of Alabama, Tuscaloosa, AL, United States*

THURSDAY MORNING 9:30 — RIO PAVILION 8-11

Session EQ

MAGNETIC TEXTURES AND MAGNETIZATION DYNAMICS II (Poster Session)

Christoph Klewe, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

EQ-01. **Stoichiometry Controlled Ultrafast Demagnetization in $Co_2Fe_XMn_{1-X}Si$ Heusler Alloy.** S. Pan[1], T. Seki[2,3], *A. De*[1], K. Takanashi[2] and A. Barman[1] *1. Condensed Matter Physics and Material Sciences, Satyendranath Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

EQ-02. **Reconfigurable Magnonic Band Structure with Field-Bifurcation Dynamics in Coupled Ferromagnetic Nanodot Array.** A.K. Mondal[1], C. Banerjee[1], A. Adhikari[1], A.K. Chaurasiya[1], S. Choudhury[1], *A. De*[1], J. Sinha[1,2] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. SRM Institute of Science and Technology, Kattankulathur, India*

EQ-03. **Microwave Power Controlled Nonlinear Ferromagnetic Resonance in $Ni_{80}Fe_{20}$ Nano-Cross Array.** K. Adhikari[1], S. Sahoo[1], A.K. Mondal[1], *A. De*[1], Y. Otani[2,3] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute for Solid State Physics, Kashiwa, Japan; 3. CEMS-RIKEN, Wako, Japan*

EQ-04. **Extending the Intrinsic Memory of the Spintronic Nano-Neuron Through Time-Delayed Feedback.** M. Riou[2], *F. Abreu Araujo*[1], J. Torrejon[2], B. Garitaine[2], P. Bortolotti[2], V. Cros[2], S. Tsunegi[3], K. Yakushiji[3], A. Fukushima[3], H. Kubota[3], S. Yuasa[3], D. Querlioz[4], M.D. Stiles[5] and J. Grollier[2] *1. IMCN, Université catholique de Louvain, Louvain-la-Neuve, Belgium; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Spintronic Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 4. Center for Nanoscience and Nanotechnology, Palaiseau, France; 5. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States*

EQ-05. **Influence of Vortex Configuration on the Spin-torque Diode Effect for Unbiased RF Energy Harvesting.** *M. Jotta Garcia*[1], S. Wittrock[1], J. Moulin[2], S. Menshawy[1], R. Ferreira[3], A. Solignac[2], U. Ebels[4], P. Bortolotti[1] and V. Cros[1] *1. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, 91767 Palaiseau, France; 2. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, 91191 Gif-sur-Yvette, France; 3. International Iberian Nanotechnology Laboratory, Braga, Portugal; 4. SPINTEC, CEA-Grenoble, CNRS and Université Grenoble Alpes, 38054 Grenoble, France*

EQ-06. **Coupling of spin waves propagating along domain walls with magnetic vortex in thin-film nanostrip cross-structure.** *H. Park*[1], J. Lee[1], J. Yang[1] and S. Kim[1] *1. Department of Material Science and Engineering, Seoul National University, Seoul, The Republic of Korea*

EQ-07. **Determination of magnetization alignment speed by observing nucleation process of magnetic vortices.** *T. Ohkochi*[1,2], M. Oura[2], H. Osawa[1], A. Yamaguchi[3,2], H. Fujiwara[4,2], A. Sekiyama[4,2] and T. Kinoshita[1] *1. Japan Synchrotron Radiation Research Institute, Sayo, Japan; 2. RIKEN/SPring-8, Sayo, Japan; 3. University of Hyogo, Kamigori, Japan; 4. Osaka University, Toyonaka, Japan*

EQ-08. **Core Orbit of a Rigid Vortex Magnetic Texture.** D. Carvajal[1], *A. Riveros*[2] and J. Escrig[2,3] *1. Departamento de Matemática y Ciencia de la Computación, Universidad de Santiago de Chile, Santiago, Chile; 2. Departamento de Física, Universidad de Santiago de Chile, Santiago, Chile; 3. Center for the Development of Nanoscience and Nanotechnology (CEDENNA), Santiago, Chile*

EQ-09. **Coupling between gyrating motion and breathing mode of a magnetic skyrmion.** *K. Wang*[1], S. Ying[1] and G. Xiao[1] *1. Department of Physics, Brown University, Providence, RI, United States*

EQ-10. **Dissipative magnetic solitons: nucleation and annihilation timescales and multiple soliton modes.** *N. Statuto*[1], C. Hahn[3], J. Hernàndez Ferras[1], A.D. Kent[2] and F. Macià[1] *1. University of Barcelona, Barcelona, Spain; 2. New York University, New York, NY, United States; 3. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*

EQ-11. **The effects of Dzyaloshinskii Moriya interactions on the dynamics of magnetic vortices.** *C.M. Quispe Flores*[1], K. Livesey[2] and K. Buchanan[1] *1. Physics, Colorado State University, Fort Collins, CO, United States; 2. Physics, University of Colorado, Colorado Springs, CO, United States*

EQ-12. **Time-dependent ab initio insight to the ultrafast demagnetization mechanism.** *Z. Chen*[1] and L. Wang[1] *1. Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

EQ-13. **Analytical calculation of fringe field and magnetization in V[TCNE]$_{x\sim 2}$ cylindrical disks.** *D.R. Candido*[1,2] and M.E. Flatté[1,2] *1. Department of Physics and Astronomy and Optical Science and Technology Center, University of Iowa, Iowa City, IA, United States; 2. Pritzker School of Molecular Engineering, University of Chicago, Chicago, IL, United States*

EQ-14. **Parallel-pump FMR based Non-linear Magnon Dynamics in Magnetic Insulators.** *A. Venugopal*[1], T. Qu[1] and R. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

THURSDAY MORNING 9:30 — RIO PAVILION 8-11

Session ER

MAGNETIZATION DYNAMICS: ULTRAFAST AND QUASI-PARTICLE COUPLING II (Poster Session)

Stefano Bonetti, Chair
Stockholm University, Stockholm, Sweden

ER-01. **Influence of Magnetic Anisotropy on the Ultrafast Magnetization Dynamics of Gd-Fe Thin Films with Different Thicknesses.** S. Mondal[1], A. Talapatra[2], J. Chelvane[3], *A. De*[1], S. Sahoo[1], J. Mohanty[2] and A. Barman[1] *1. Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Bidhan Nagar, India; 2. Department of Physics, Indian Institute of Technology Hyderabad, Hyderabad, India; 3. Defence Metallurgical Research Laboratory Hyderabad, Kanchan Bagh, India*

ER-02. **Phonon Transport Properties Obtained from Phonon Driven Ferromagnetic Resonance.** *C. Zhao*[1,2], M. Vogel[1], Y. Li[1], J. Holanda[1], Z. Zhang[1], J. Pearson[1], W. Zhang[3], Q. Liu[2], V. Novosad[1], J. Wang[2] and A. Hoffmann[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Key Laboratory of Magnetism and Magnetic Materials of the Ministry of Education, Lanzhou University, People's Republic of China, Lanzhou, China; 3. Department of Physics, Oakland University, Rochester, MI, United States*

ER-03. Direct light-induced spin transfer between different elements in a spintronic Heusler material via femtosecond laser excitation. *C. Gentry*[1], P. Tengdin[1], A. Blonsky[1], D. Zusin[1], M. Gerrity[1], L. Hellbruck[2], M. Hofherr[2], J.M. Shaw[3], Y. Kvashnin[4], E.K. Delczeg-Czirjak[4], M. Arora[3], H. Nembach[3], T.J. Silva[3], B. Stadtmuller[2], S. Mathias[5], M. Aeschlimann[2], H. Kapteyn[1], D. Thonig[4], K. Koumpouras[6], O. Eriksson[4,7] and M. Murnane[1] *1. Department of Physics and JILA, CU Boulder, Boulder, CO, United States; 2. University of Kaiserslautern, Kaiserslautern, Germany; 3. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 4. Department of Physics and Astronomy, University Uppsala, Uppsala, Sweden; 5. Georg-August-Universitat Gottingen, Physikalishes Institut, Gottingen, Germany; 6. Department of Engineering Sciences and Mathematics, Lulea University, Lulea, Sweden; 7. School of Science and Technology, Orebro University, Orebro, Sweden*

ER-04. Ultrafast Demagnetization Processes in Low-Damping Ni-Ferrite Films. R. Knut[1], *R. Malik*[1], R. Stefanuik[1], Y. Kvashnin[1], D. Thonig[1], A. Gupta[2], O. Eriksson[1], O. Karis[1] and D.A. Arena[3] *1. Uppsala University, Uppsala, Sweden; 2. Univ. of Alabama, Tuscaloosa, AL, United States; 3. Univ. of South Florida, Tampa, FL, United States*

ER-05. Stacking Order Dependent Sign Change of Microwave Phase Due to Eddy Currents in Nanometer-Scale NiFe/Cu Heterostructures. O. Gladii[1], R.L. Seeger[1], L. Frangou[1], G. Forestier[1], U. Ebels[1], S. Aufftet[1] and *V. Baltz*[1] *1. Univ. Grenoble Alpes / CNRS / CEA, SPINTEC, Grenoble, France*

ER-06. Optical detection of magnetization dynamics for synthetic ferrimagnetic thin film and nano dots. *S. Iihama*[1,2] and S. Mizukami[1,2] *1. WPI Advanced Institute for Materials Research (AIMR), Tohoku university, Sendai, Japan; 2. Center for Spintronics Research Network (CSRN), Tohoku university, Sendai, Japan*

ER-07. Study of Static and Dynamic Properties of Planar Dumbell Shaped Structure of $Ni_{20}Fe_{80}$. *S. Khanal*[1,2], P. Sherpa[2] and L. Spinu[2] *1. Physics and Mathematics, Charles University, Prague, Czechia; 2. AMRI, University of New Orleans, New Orleans, LA, United States*

ER-08. Chaotic Dynamics and Thermal Switching in AC-driven Nanomagnets. M. d'Aquino[1], *S. Perna*[2] and C. Serpico[2] *1. Department of Engineering, University of Naples "Parthenope", Naples, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy*

ER-09. Non-reciprocal phenomena in non-equilibrium magnetization dynamics. *A. Galda*[1,2] and V. Vinokur[2] *1. James Franck Institute, University of Chicago, Chicago, IL, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States*

ER-10. **Experimental Detection of Dynamic Phase Transitions in $Co_{1-x}Ru_x$ Thin Films.** *J.M. Marin*[1,2], P. Riego[1,3], E. Oblak[1], G.E. Campillo[4], J.A. Osorio[2], O.L. Arnache[2] and A. Berger[1] *1. CIC nanoGUNE, Donostia-San Sebastian, Spain; 2. Instituto de Física, Universidad de Antioquia, Medellin, Colombia; 3. IKERBASQUE, Fundación Vasca para la Ciencia, Bilbao, Spain; 4. Facultad de Ciencias Básicas, Universidad de Medellín, Medellin, Colombia*

ER-11. **Precession damping in $[Co_{60}Fe_{40}/Pt]_5$ multilayers with varying magnetic homogeneity investigated with femtosecond laser pulses.** *M.A. B. Tavares*[1], L.H. F. Andrade[1], M.D. Martins[1], G.F. Moura Gomes[2,3], L.E. Fernandez-Outon[3,1] and F.M. Matinaga[3] *1. Nanotechnology, CDTN/CNEN, Belo Horizonte, Brazil; 2. PPGMCS, Unimontes, Montes Claros, Brazil; 3. 3 Depto de Fisica - UFMG, Belo Horizonte, Brazil*

ER-12. **Detection of torque effects in Co/Pt via ferromagnetic resonance.** *Y. Weng*[1,2], C. Liang[1] and J.G. Lin[2,3] *1. Graduate Institute of Applied Physics, National Taiwan University, Taipei, Taiwan; 2. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 3. Center for Atomic Initials for New Materials, National Taiwan University, Taipei, Taiwan*

THURSDAY
MORNING
9:30

RIO PAVILION 8-11

Session ES

EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM (Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

ES-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

ES-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

ES-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

ES-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

THURSDAY MORNING 9:30 | RIO PAVILION 8-11

Session ET
MICROMAGNETICS AND HYSTERESIS MODELING I (Poster Session)

Mario Carpentieri, Chair
Politecnico of Bari, Bari, Italy

ET-01. **Quantitative Evaluation and Reduction of Error in Computation of the Demagnetization Tensor.** *M.J. Donahue*[1] and D. Porter[1] *1. Applied and Computational Mathematics Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*

ET-02. **Microresonator-integrated magnetic tunnel junctions allowing for thermal gradient sign reversal designed using COMSOL simulations.** *H. Cansever*[1], J. Lindner[1], A. Niesen[2], T. Huebner[2], G. Reiss[2], J. Fassbender[1,3] and A.M. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, HZDR, Dresden, Germany; 2. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 3. Institute of Solid State Physics, TU Dresden, Dresden, Germany*

ET-03. **Topological states and skyrmions in thick spherical shells.** *D.A. Rodríguez Cid*[1,2], F. Valencia[1,2], M. Kiwi[1,2] and F. Torres[1,2] *1. Departamento de Física, Universidad de Chile, Santiago, Chile; 2. Centro para el Desarrollo de la Nanociencia y la Nanotecnología, CEDENNA, Santiago, Chile*

ET-04. **On Hysterisis Based Random Number Generation.** *C.E. Korman*[1] and I. Mayergoyz[2] *1. Electrical and Computer Engineering, George Washington University, Washington, DC, United States; 2. Electrical and Computer Engineering, University of Maryland, College Park, MD, United States*

ET-05. **General nature of the step-induced frustration at ferromagnetic/antiferromagnetic interfaces: Topological origin and quantitative understanding.** X. Chen[1], T. Ji[1], L. Sun[1], B. Miao[1], Y. Millev[2] and *H. Ding*[1] *1. National Laboratory of Solid State Microstructures, Department of Physics and Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, China; 2. American Physical Society, New York, NY, United States*

ET-06. **Massively parallel O(N) space-time hierarchical dipole-dipole method implemented in the VAMPIRE code for atomistic spin dynamics.** *S. Jenkins*[1], R.W. Chantrell[1] and R.F. Evans[1] *1. Physics, University of York, York, United Kingdom*

ET-07. **Micromagnetic Study of Soft Magnetic Nanowires.** *F. Ahmadi*[1], M.J. Donahue[2], Y. Sozer[3] and I. Tsukerman[3] *1. Electrical and Computer Engineering, Youngstown State University, Youngstown, OH, United States; 2. Applied and Computational Mathematics Division, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Electrical and Computer Engineering, University of Akron, Akron, OH, United States*

ET-08. **Role of the shape anisotropy in curved magnetic slabs.** *S. Castillo*[1], R. Corona[2,3], P. Landeros[4,3] and D. Altbir[2,3] *1. Departamento de Ingenieria, Universidad Autonoma de Chile, Santiago, Chile; 2. Física, Universidad de Santiago de Chile, Santiago, Chile; 3. CEDENNA, Santiago, Chile; 4. Física, Universidad Tecnica Federico Santa María, Valparaiso, Chile*

ET-09. **Micromagnetics of thin films based on k-space fast convolution.** V. Scalera[1], *G. Tortora*[1], C. Serpico[1], S. Perna[1] and M. d'Aquino[2] *1. Department of Electrical Engineering and ICT, University of Naples Federico II, Naples, Italy; 2. Department of Engineering, University of Naples "Parthenope", Naples, Italy*

ET-10. **Iron Loss Modeling and Analysis of Grain Oriented Silicon Steel Sheet under Harmonic Magnetization.** *X. Zhao*[1], R. Wang[1], L. Li[2] and R. Liu[2] *1. North China Electric Power University, Baoding, China; 2. North China Electric Power University, Beijing, China*

ET-11. **The dynamic susceptibility tensor of nanostructured systems and the spectra of interface pinned walls.** S.M. Martins Jr.[1], L.L. Oliveira[2], *A.L. Dantas*[2] and A.S. Carriço[1] *1. Department of Physics, Federal University of Rio Grande do Norte, Natal, Brazil; 2. Department of Science and Technology, State University of Rio Grande do Norte, Natal, Brazil*

ET-12. **Withdrawn**

ET-13. **Magnetization Reversal Spin-Transfer-Torque Driven in Perpendicular Shape Anisotropy Magnetic Tunnel Junctions.** N. Caçoilo[1,2], S. Lequeux[1], N. Strelkov[1,3], B. Dieny[1], *I. Prejbeanu*[1], R. Sousa[1] and L. Buda-Prejbeanu[1] *1. Université Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 2. Department of Physics & I3N, University of Aveiro, Aveiro, Portugal; 3. Department of Physics, Lomonosov Moscow State University, Moscow, Russian Federation*

ET-14. **Micromagnetic Simulations of First-Order Reversal Curves in Nanowire Arrays Using MuMax3.** *R. Eimerl*[1], K. Muster[1] and R. Heindl[1] *1. Physics & Astronomy, San Jose State University, San Jose, CA, United States*

ET-15. **Optimized Lateral Inhibition in Magnetic Domain Wall Tracks for Neuromorphic Computing.** *C. Cui*[1], N. Hassan[2], C.H. Bennett[3], M.J. Marinella[3], J.S. Friedman[2] and J.C. Incorvia[1] *1. Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX, United States; 2. Electrical and Computer Engineering, The University of Texas at Dallas, Dallas, TX, United States; 3. Sandia National Laboratory, Albuquerque, NM, United States*

ET-16. **A Hopfield Neural Network-Based Bouc-Wen Model for Magnetic Shape Memory Alloy Actuator.** Y. Wang[1], C. Zhang[1], Z. Wu[1] and *M. Zhou*[1] *1. Department of Control Science and Engineering, Jilin University, Changchun, China*

ET-17. **Ferromagnetic Branch Design of Alnico for High Coercivity.** *H. Won*[1], Y. Hong[1,2], M. Choi[1], R. Wang[3,2] and F. Yan[2,3] *1. Department of Electrical and Computer Engineering and Center for Advanced Vehicle Technologies, The University of Alabama, Tuscaloosa, AL, United States; 2. Alabama Transportation Institute, Tuscaloosa, AL, United States; 3. Department of Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, AL, United States*

THURSDAY MORNING 9:30 | RIO PAVILION 8-11

Session EU
POWER MAGNETICS - INDUCTORS AND TRANSFORMERS (Poster Session)

Fumihiro Sato, Chair
Tohoku Gakuin University, Tagajo, Japan

EU-01. **A Multiphysics Assessment on Permeability Tuning Techniques in Power Inductors.** *V. Cabral do Nascimento*[1], S. Moon[2], S. D. Sudhoff[1], K. Byerly[2], P. Ohodnicki[2] and R. Beddingfield[2] *1. Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States; 2. National Energy Technology Laboratory, Pittsburgh, PA, United States*

EU-02. **Study on the Performance of HCFCL Considering Different Magnetic Materials.** J. Yuan[1], *Z. Zhang*[1], P. Gan[1] and H. Zhou[1] *1. School of Electrical Engineering and Automation, Wuhan University, Wuhan, China*

EU-03. **Study of thermal characteristics in variable inductor employing magnetic nanofluids driven by a high-frequency pulsed voltage source.** *H. Lee*[1] *1. Changshin University, Changwon-si, The Republic of Korea*

EU-04. **Research on Hot-spot Temperature of Transformer with Nanopartical TiO_2.** *X. Yang*[1], G. Xu[1], Y. Zhang[3], L. Li[2], W. Fu[3], S. Ho[3] and Q. Yang[1] *1. Electircal Engineering, Hebei University of Technology, Tianjin, China; 2. Tianjin Polytechnic University, Tianjin, China; 3. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

EU-05. **A Novel Iron Core Structure Design for Power Transformers Considering Magnetostriction and Joints.** *J. Li*[1], B. Qu[2] and K. Yu[3] *1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. Global Information and Telecommunication Institute, Waseda University, Tokyo, Japan*

EU-06. **High frequency properties of Fe-1.5wt% Si powder cores.** *J. Ahn*[1], K. Lee[1], D. Lee[1] and J. Kim[1] *1. Hanyang University, Ansan, The Republic of Korea*

EU-07. **Withdrawn**

EU-08. **Withdrawn**

EU-09. **Analytical Modeling of Multiple Segment Permanent Magnet Eddy Current Brake with Hybrid Secondary.** B. Kou[1], *W. Chen*[1,2] and L. Zhang[1] *1. Harbin Institute of Technology, Harbin, China; 2. Harbin University of Science and Technology, Harbin, China*

EU-10. **Numerical Study on Nanofluids Natural Convection Heat Transfer inside Power Transformer Windings.** *Y. Zhang*[1], S. Ho[1], W. Fu[1], H. Wu[1] and X. Yang[2] *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Hebei University of Technology, Tianjin, China*

EU-11. **Modeling of Suspension Force on the Novel Integrated Five Degrees of Freedom DC Magnetic Levitated High-Speed Motor.** *T. Zhang*[1], Z. Wang[1] and X. Ye[1] *1. Huaiyin Institute of Technology, Huai'an, China*

EU-12. **Analytical Calculation to Evaluate Influence of Structural Parameters on Performance in a Single-sided HTS Linear Induction Motor.** *W. Qin*[1] *1. Electrical Engineer, Beijing Jiaotong university, BEIJING, China*

THURSDAY
MORNING
9:30

RIO PAVILION 8-11

Session EV
SENSOR, HIGH FREQUENCY, AND POWER DEVICES (Poster Session)

Arkady Zhukov, Co-Chair
Basque Foundation for Science, San Sebastian, Spain
Conrad Rizal, Co-Chair
SeedNanoTech & Consulting, Brampton, ON, Canada

EV-01. **Design and Fabrication of Miniature Magnetoelectric Antennas Using a Solidly Mounted Resonator Structure.** *N. Sun*[2], Y. Gao[1], M. Sanghadasa[3] and N. Sun[2,1] *1. Winchester Technologies LLC, Burlington, MA, United States; 2. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 3. U.S. Army Combat Capabilities Development Command Aviation & Missile Center, Redstone Arsenal, AL, United States*

EV-02. **Characteristics Analysis and Experimental Verification of a High-Speed Permanent Magnet Synchronous Generator with Magnetic Saturation Reactance Derived from Short Circuit Analysis.** *H. Lee*[1], J. Lee[1], T. Bang[1], K. Shin[1], J. Nah[1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

EV-03. **Experimental Verification and Electromagnetic Characteristics Analysis of Wound-Rotor Synchronous Generator Using Magnetic Equivalent Circuit Method.** *D. Kwon*[1], C. Kim[1], T. Bang[1], I. Yoon[1] and J. Choi[1] *1. Electrical Engineering, Chung-Nam National University, Daejeon, The Republic of Korea*

EV-04. **Design Criteria and Experiments Considering the Mechanical Characteristics of High-Speed Permanent Magnet Synchronous Generators of 8kW and 40krpm Class.** *J. Lee*[1], K. Shin[1], G. Jang[1], T. Bang[1], D. Ryu[1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

EV-05. **Experimental Verification and Analysis of Temperature Characteristics of Induction Generator Considering Stator Loss Distribution.** *C. Kim*[1], G. Jang[1], D. You[2], C. Baek[1] and J. Choi[1] *1. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Fire Safety Engineering, Chungnam State University, Chungnam, The Republic of Korea*

EV-06. **Electromagnetic analysis of interior permanent magnet motor with dual and single layer magnet rotor.** C. Baek[1,2], *C. Kim*[2] and J. Choi[2] *1. R&D, Hanon-systems, Daejeon, The Republic of Korea; 2. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea*

EV-07. **Core loss analysis of a permanent magnet synchronous motor of an electric vehicle refrigerant compressor.** C. Baek[1,2], *C. Kim*[2] and J. Choi[2] *1. R&D, Hanon-systems, Daejeon, The Republic of Korea; 2. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea*

EV-08. **Quasi-3D Electromagnetic Analysis and Experimental Verification of Multi-pole Magnetization BLDC Motor.** *H. Shin*[1], G. Jang[1], J. Lee[1], J. Nah[1] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

EV-09. **Experimental and Comparative Study of Electromagnetic and Mechanical Aspects of a High-Speed Motor Using SmCo and Ferrite Permanent Magnets.** *J. Woo*[1], T. Bang[1], C. Kim[1], I. Yoon[1] and J. Choi[1] *1. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea*

EV-10. **Optimal Design of Reducing Cogging Torque in the V-shape Interior Permanent Magnet Synchronous Motor Using Random Walk Method.** *J. O*[1], M. Shin[1], K. Shin[1], T. Bang[1], J. Choi[1] and H. Cho[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

EV-11. **Studies of Magnetic and Thermodynamic Characteristics Iron Core Under High Frequencies for Traction Motors.** *R. Pei*[1] *1. InnMag New Energy Ltd., Suzhou, China*

EV-12. **Withdrawn**

EV-13. **A Study on De-icing for Railway Turnouts Using 250kHz-200W-Class Induction Heating System.** *H. Oh*[1], C. Park[1], J. Lee[1], T. Kim[2], I. Jo[1], J. Lim[1], K. Seo[1] and H. Lee[1] *1. Korea National University of Transportation (KNUT), Uiwang-si, The Republic of Korea; 2. University of Michigan-Dearborn, Dearborn, MI, United States*

EV-14. **Design and application of the magnetic driven device in the microwave filtering tunable phase shifter.** *F. Meng*[1], C. Ding[1] and S. Xu[2] *1. Harbin Institute of Technology, Harbin, China; 2. Emergency Department, First Hospital of Harbin City, Harbin, China*

EV-15. **Withdrawn**

EV-16. **Very Broad Bandwidth Permeability Measurement of Thin Film Using a Flexible Microstrip Line-Type Probe up to 67 GHz.** *K. Nozawa*[1], L.T. Ton[1], K. Okita[1], S. Yabukami[1], Y. Endo[1], Y. Shimada[2], S. Saito[1] and R. Utsumi[2] *1. Tohoku University, Sendai, Japan; 2. Toei Scientific Industrial co.,Ltd., Natori, Japan*

EV-17. **Development of a spintronic vision system based on spin-torque diodes and its optimization for autonomous driving tasks.** *G.D. Demin*[1,2], A. Buzdakov[2], N.A. Djuzhev[1], V.A. Bespalov[1] and K.A. Zvezdin[2] *1. R&D Center "MEMSEC", National Research University of Electronic Technology (MIET), Moscow, Russian Federation; 2. Laboratory of Physics of Magnetic Heterostructures and Spintronics for Energy-Efficient Information Technologies, Moscow Institute of Physics and Technology (MIPT), Dolgoprudny, Russian Federation*

EV-18. **Magnetoelectric control of the microwave sensitivity of a spin-torque diode based on the magnetic tunnel junction with a ferromagnetic/ferroelectric bilayer by short THz electromagnetic pulse.** *G.D. Demin*[1,2], A.V. Popov[1] and N.A. Djuzhev[1] *1. R&D Center "MEMSEC", National Research University of Electronic Technology (MIET), Moscow, Russian Federation; 2. Laboratory of Physics of Magnetic Heterostructures and spintronics for energy-efficient information technologies, Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russian Federation*

EV-19. **Theoretical Study on Lowering Loss of Skin Effect Suppressed Multi-layer Transmission Line with Positive/Negative (Cu/NiFe) Permeability Materials for High Data-Rate and Low Delay-Time I/O Interface Board.** H. Nakayama[1], *Y. Aizawa*[2], K. Kubomura[2], R. Nakamura[1] and H. Tanaka[1] *1. Department of Electronics and Control Engineering, National Institute of Technology (KOSEN), Nagano College, Nagano, Japan; 2. Advanced Course of Production and Environment System, National Institute of Technology (KOSEN), Nagano College, Nagano, Japan*

EV-20. **Frequency shift-based reader of magnetic lateral flow immunoassays for point of use bioanalysis.** *M. Rivas*[1], J.C. Martínez García[1], M.C. Blanco-López[2], M. Salvador[1,3], A. Moyano[1,2], J.L. Marqués[1], P. Fernández-Miaja[4] and J. Sebastián[4] *1. Department of Physics, University of Oviedo, Gijón, Spain; 2. Department of Physical and Analytical Chemistry, University of Oviedo, Oviedo, Spain; 3. Institute of the Structure of Matter, Centre of National Research, Rome, Italy; 4. Department of Electrical Engineering, University of Oviedo, Gijón, Spain*

THURSDAY MORNING 9:30 — RIO PAVILION 8-11

Session EW
SPIN WAVES: LOCALIZATION & MANIPULATION (Poster Session)

Oleksandr Dobrovolskiy, Chair
University of Vienna, Vienna, Austria

EW-01. **Existence of left handed spin wave in ferrimagnet film studied by Brillouin light scattering.** *K. Changsoo*[1], S. Lee[2,4], K. Moon[1], S. Kim[3], B. Park[4], K. Kim[2] and C. Hwang[1] *1. Quantum Technology Institute, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 2. Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 3. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States; 4. Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea*

EW-02. **Controlling the Dzyaloshinkskii-Moriya interaction by varying the thickness of an oxide layer.** *M. Arora*[1,2], J.M. Shaw[1] and H. Nembach[1,3] *1. National Institute of Standards and Technology, Boulder, CO, United States; 2. Physics, University of Colorado, Boulder, CO, United States; 3. JILA, University of Colorado, Boulder, CO, United States*

EW-03. **Manipulation of parametric spin wave mode in a Permalloy nanowire using Oersted field.** *S. Hwang*[1], S. Han[2] and B. Cho[1] *1. School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea; 2. Division of Navigation Science, Mokpo National Maritime University, Mokpo, The Republic of Korea*

EW-04. **Manipulation of Quantized Spin Waves by Laterally Proximate Micromagnets.** *Z. Zhang*[1,2], M. Vogel[1], J. Holanda[1], J. Ding[1], M. Jungfleisch[3], Y. Li[1,4], J. Pearson[1], R. Divan[5], W. Zhang[4], A. Hoffmann[1], Y. Nie[2] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 4. Department of Physics, Oakland University, Rochester, MI, United States; 5. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States*

EW-05. **Spin wave modes in Permalloy nanowires detected by spin orbit torque induced ferromagnetic resonance.** *J. Xu*[1], Y. Quessab[1] and A.D. Kent[1] *1. physics department, New York University, New York, NY, United States*

EW-06. **Spin-Wave Dynamics in Planar Connected Ferromagnetic Nanodot Arrays.** S. Sahoo[1], S.N. Panda[1], *A. De*[1], Y. Otani[2] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. University of Tokyo, Tokyo, Japan*

EW-07. **Frequency Selective Spin-Wave Valve and Phase-Shifter in Damon-Eshbach Geometry.** *K.G. Fripp*[1], F. Mushenok[1], V.D. Poimanov[2] and V.V. Kruglyak[1] *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Donetsk National University, Donetsk, Ukraine*

EW-08. **Unique Spin Wave Eigenmodes of Magnetic Domain Walls.** *I. Purnama*[1] and C. You[1] *1. DGIST, Daegu, The Republic of Korea*

EW-09. **The Realization of Spin-Wave Frequency Division Multiplexer via Laterally and Inhomogeneously Magnetized Microstripe.** *Z. Zhang*[1,2], M. Vogel[1], J. Pearson[1], R. Divan[3], A. Hoffmann[1], Y. Nie[2] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 3. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States*

EW-10. **Spin dynamics driven by optical spin-orbit torque.** *R. Mondal*[1], A. Donges[1] and U. Nowak[1] *1. Department of Physics, Universität Konstanz, Konstanz, Germany*

EW-11. **Terahertz Spectrum in SHNO Driven by the Pure Spin Current.** *B. Jiang*[1], W. Zhang[1], H. Zhong[1], Y. Zhang[1], S. Yu[1], G. Han[1], G. Liu[1], S. Yan[1], S. Xiao[1] and S. Kang[1] *1. school of physics, Shandong university, Jinan, China*

EW-12. **Spin Wave Spectra of 1D and 2D V[TCNE]$_{x\sim2}$ Magnonic Crystals.** *K. Hu*[1] and M.E. Flatté[1,2] *1. Optical Science and Technology Center and Department of Physics, University of Iowa, Iowa city, IA, United States; 2. Pritzker School of Molecular Engineering, University of Chicago, Chicago, IL, United States*

EW-13. **Flat Bands, Indirect Gaps, and Unconventional Spin-Wave Behavior Induced by a Periodic Dayaloshinskii-Moriya Interaction.** *R. Gallardo*[1], D. Cortés[2], T. Schneider[3], A. Roldán[4], F. Ma[5], K. Lenz[3], H. Fangohr[2,6], J. Lindner[3] and P. Landeros[1] *1. Universidad Técnica Federico Santa María, Valparaiso, Chile; 2. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 3. Helmholtz-Zentrum Dresden–Rossendorf, Dresden, Germany; 4. Universidad de Aysén, Aysén, Chile; 5. Magnetoelectronic Lab, School of Physics and Technology, Nanjing, China; 6. European XFEL GmbH, Schenefeld, Germany*

EW-14. **Spin wave localization in a magnonic crystal with defects.** *C.L. Ordonez Romero*[2], Z. Lazcano-Ortiz[1], G. Pirruccio[2], M. Urbánek[3], T. Hrncir[4], N. Qureshi[5], O. Kolokoltsev[5] and G. Monsivais[2] *1. Physics, BUAP, Puebla, Mexico; 2. Instituto de Física, UNAM, Mexico City, Mexico; 3. CEITEC BUT, Brno University of Technology, Brno, Czechia; 4. TESCAN Brno s.r.o., Brno, Czechia; 5. ICAT, UNAM, Mexico City, Mexico*

EW-15. **Mesuring Spin Waves in Individual Magnetic Nanodots.** O.V. Dobrovolskiy[1], S.A. Bunyaev[2], N. Vovk[3], D. Navas[2], P. Gruszecki[4], M. Krawczyk[4], R. Sachser[1], M. Huth[1], K. Guslienko[5,6] and *G.N. Kakazei*[2] *1. Physikalisches Institut, Goethe University, Frankfurt am Main, Germany; 2. IFIMUP-IN/Department of Physics and Astronomy, University of Porto, Porto, Portugal; 3. Department of Physics, V.N. Karazin Kharkiv National University, Kharkiv, Ukraine; 4. Nanomaterials Physics Division, Adam Mickiewicz University in Poznan, Poznan, Poland; 5. Departamento de Física de Materiales, Universidad del País Vasco, San Sebastian, Spain; 6. IKERBASQUE, the Basque Foundation for Science, Bilbao, Spain*

THURSDAY AFTERNOON 1:30 | RIO PAVILION 2

Session FA
HYBRIDIZED MAGNONS
Axel Hoffmann, Chair
University of Illinois at Urbana-Champaign, Urbana, IL, United States

1:30

FA-01. **Hybrid Magnon Modes: Strong Coupling with Phonons and Photons.** ***(Invited)*** *G. Bauer*[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan*

2:06

FA-02. **Strongly coupled magnon hybrid systems with permalloy thin films.** ***(Invited)*** *Y. Li*[1,2], T. Polakovic[3,4], Y. Wang[1,5], J. Xu[1,6], S. Lendinez[1], Z. Zhang[1,7], J. Ding[1], T. Khaire[1], H. Saglam[1], R. Divan[8], J. Pearson[1], W. Kwok[1], Z. Xiao[1,6], W. Cao[9], V. Amin[10,11], J. Gibbons[1,12], P. Haney[10], M.D. Stiles[10], W. Bailey[9], W. Zhang[2,1], A. Hoffmann[1] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Physics, Oakland University, Rochester, MI, United States; 3. Physics Division, Argonne National Laboratory, Lemont, IL, United States; 4. Physics, Drexel University, Philadelphia, PA, United States; 5. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 6. Physics, North Illinois University, Dekalb, IL, United States; 7. Huazhong University of Science and Technology, School of Optical and Electronic Information, Wuhan, China; 8. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States; 9. Applied Physics and Applied Mathematics, Columbia University, New York, NY, United States; 10. Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD, United States; 11. Maryland NanoCenter, University of Maryland, College Park, MD, United States; 12. Physics, UCSD, San Diego, CA, United States*

2:42

FA-03. **Strong Coupling between Microwave Photons and Nanomagnet Magnons.** ***(Invited)*** J.T. Hou[1] and *L. Liu*[1] *1. MIT, Cambridge, MA, United States*

3:18

FA-04. **Cavity Optomagnonics: Lessons from Quantum Optics for Magnons.** ***(Invited)*** *S. Viola Kusminskiy*[1,2] *1. Max Planck Institute for the Science of Light, Erlangen, Germany; 2. Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany*

3:54

FA-05. **Endowing Phonons with Spin via Coherent Coupling with Magnons.** ***(Invited)*** J. Holanda[1], D.S. Maior[1], *A. Azevedo*[1] and S. Rezende[1] *1. Department of Physics, Federal University of Pernambuco, Recife, Brazil*

THURSDAY
AFTERNOON
1:30

RIO PAVILION 6

Session FB
SPINTRONICS IN 2D, TOPOLOGICAL MATERIALS, AND HETEROSTRUCTURES

Inhee Lee, Chair
The Ohio State University, Columbus, OH, United States

1:30

FB-01. **Spin States Protected from Intrinsic Electron-Phonon-Coupling Reaching 100 ns Lifetime at Room Temperature in $MoSe_2$.** M. Ersfeld[1], F. Volmer[1], P. de Melo[2], R. de Winter[1], M. Heithoff[1], Z. Zanolli[3,4], C. Stampfer[1,5], M. Verstraete[2] and *B. Beschoten*[1] *1. 2nd Institute of Physics, RWTH Aachen University, Aachen, Germany; 2. nanomat/Q-mat/CESAM, Uniiversité de Liège, Liège, Belgium; 3. Catalan Institute of Nanoscience and Nanotechnology (ICN2), Barcelona, Spain; 4. Institute for Theoretical Solid State Physics, RWTH Aachen University, Aachen, Germany; 5. Peter Grünberg Institute (PGI-9), orschungszentrum Jülich, Jülich, Germany*

1:42

FB-02. **Synthesis and Characterization of Intrinsic Magnetic Topological Insulator $MnBi_2Se_4$.** *T. Zhu*[1], A. Bishop[1], D.J. O'Hara[2,3], A. Baker[3], M. Zhu[4,5], B. Noesges[1], S. Cheng[1], J. Freeland[6], M. Brenner[7], C. Jozwiak[8], E. Rotenberg[8], L. Brillson[7], J. Hwang[4,5] and R. Kawakami[1,2] *1. Department of Physics, The Ohio State University, Columbus, OH, United States; 2. Program in Materials Science and Engineering, University of California, Riverside, Riverside, CA, United States; 3. Materials Science Division, Lawrence Livermore National Laboratory, Livermore, CA, United States; 4. Center for Electron Microscopy and Analysis, The Ohio State University, Columbus, OH, United States; 5. Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, United States; 6. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States; 7. Department of Electrical & Computer Engineering, The Ohio State University, Columbus, OH, United States; 8. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, Berkeley, CA, United States*

1:54

FB-03. **Weak Antilocalization and Surface Quantum Oscillations in Topologically Nontrivial Half Heusler YPdBi Thin Films.** *V. Bhardwaj*[1], A. Bhattacharya[2,1], L.K. Varga[3], A.K. Nigam[4] and R. Chatterjee[1] *1. Physics, IIT Delhi, New Delhi, India; 2. Mechanical Engineering, IIT Delhi, New Delhi, India; 3. Wigner research center for Physics Hungarian Academy of Sciences, Budapest, Hungary; 4. Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai, India*

2:06

FB-04. **Dimension Transcendence and Anomalous Charge Transport in Magnets with Moving Multiple-Q Spin Textures.** *Y. Su*[1], S. Hayami[2] and S. Lin[1] *1. Los Alamos National Lab, Los Alamos, NM, United States; 2. Hokkaido University, Sapporo, Japan*

2:18

FB-05. **Interaction of 2D materials and π-electron systems with magnetic surfaces.** *N. Atodiresei*[1], V. Caciuc[1] and S. Bluegel[1] *1. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich GmbH, Jülich, Germany*

2:30

FB-06. **Temperature and Electric Field Dependence of Spin Relaxation in Graphene due to Surface Electric Dipoles on $SrTiO_3$.** *S. Chen*[1], R. Ruiter[1], V. Mathkar[1], B. van Wees[1] and T. Banerjee[1] *1. University of Groningen, Groningen, Netherlands*

2:42

FB-07. **Magnetic properties of micrometer sized YIG/FGT heterostructure revealed by local ferromagnetic resonance.** *B. Arkook*[1], M. Al ghamdi[1], V.H. Ortiz[1], J. Shi[1] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States*

2:54

FB-08. **Giant Spin Galvanic Effects in Topological Material Heterostructures.** ***(Invited)*** *S.P. Dash*[1] *1. Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg, Sweden*

3:30

FB-09. **Fabrication and investigation of graphene/full Heusler alloy heterostructure for spintronics.** *S. Li*[1], K. Larionov[2], Z. Popov[2], S. Entani[1], K. Amemiya[3], P. Avramov[4], Y. Sakuraba[5], H. Naramoto[1], P. Sorokin[2] and S. Sakai[1] *1. National Institutes for Quantum and Radiological Science and Technology, Chiba, Japan; 2. National University of Science and Technology MISiS, Moscow, Russian Federation; 3. High Energy Accelerator Research Organization, Tsukuba, Japan; 4. Kyungpook National University, Daegu, The Republic of Korea; 5. National Institute for Materials Science, Tsukuba, Japan*

3:42

FB-10. **Extrinsic Spin-Orbit Coupling Induced Interfacial Dzyaloshinskii-Moriya Interaction in MoS_2/NiFe/Ta Heterostructures.** *A. Kumar*[1], A. Chaurasiya[2], N. Chowdhury[1], A. Mondal[2], A. Barman[2] and P.K. Muduli[1] *1. Physics, Indian Institute of Technology Delhi, New Delhi, India; 2. S. N. Bose National Centre for Basic Sciences, Kolkata, India*

3:54

FB-11. **Chirality-induced Spin-Hall Magnetoresistance in 2D Chiral Hybrid Perovskites.** E. Vetter[1], Y. Liang[2], Y. Xiong[3,4], S. Zhang[5], Z. Zhang[5,6], Y. Li[3,5], H. Qu[4], V. Novosad[5], A. Hoffmann[5], W. You[2], W. Zhang[3,5] and *D. Sun*[1] *1. Department of Physics, North Carolina State University, Raleigh, NC, United States; 2. Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 3. Department of Physics, Oakland University, Rochester, MI, United States; 4. Department of Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 5. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 6. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

THURSDAY AFTERNOON 1:30 — BRASILIA 2

Session FC
MRAM THERMAL EFFECTS / SPIN CURRENTS

Xin Fan, Chair
University of Denver, Denver, CO, United States

1:30

FC-01. **Resistance-area product effects on spin torque switching in perpendicular STT-MRAM.** ***(Invited)*** *G. Mihajlovic*[1], N. Smith[1], T. Santos[1], J. Li[1], M. Tran[1], M. Carey[1], B. Terris[1] and J. Katine[1] *1. Western Digital Research Center, Western Digital Corporation, San Jose, CA, United States*

2:06

FC-02. **Importance of self-heating in perpendicular MRAM: modeling and experimental evidence.** *D. Apalkov*[1], A. Khvalkovskiy[1,2], V. Voznyuk[1] and V. Nikitin[1] *1. New Memory Technology, Samsung Semiconductor Inc., San Jose, CA, United States; 2. Crocus Nanoelectronics LLC, Moscow, Russian Federation*

2:18

FC-03. **Enhancement of Thermal Spin Transfer Torque via Superlattice Design.** *P. Priyadarshi*[1] and B. Muralidharan[1] *1. Electrical Engineering, Indian Institute of Technology Bombaay, Mumbai, India*

2:30

FC-04. **The magneto-optical Kerr effect for efficient characterization of thermal stability in dense arrays of pMTJs.** *S. Van Beek*[1], R. Carpenter[1], S. Kundu[1], S. Couet[1], J. Swerts[1], S. Rao[1], W. Kim[1], Y. Wu[2,1], S.H. Sharifi[1], F. Yasin[1], B.F. Vermeulen[2,1] and G.S. Kar[1] *1. imec, Leuven, Belgium; 2. KU Leuven, Leuven, Belgium*

2:42

FC-05. **Giant Spin-Torque induced by Heat-Controlled Magnetic Anisotropy.** ***(Invited)*** *M. Goto*[1,2], Y. Wakatake[1], U.K. Oji[1], S. Miwa[1,2], N. Strelkov[3,4], B. Dieny[3], H. Kubota[5], K. Yakushiji[5], A. Fukushima[5] and Y. Suzuki[1,2] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network (CSRN), Osaka University, Toyonaka, Japan; 3. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-SPINTEC, Grenoble, France; 4. Department of Physics, Moscow Lomonosov State University, Moscow, Russian Federation; 5. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

3:18

FC-06. **Magneto-Optical Control of Heat Current.** *K. Uchida*[1], J. Wang[1] and Y. Takahashi[1] *1. National Institute for Materials Science, Tsukuba, Japan*

3:30

FC-07. **Effect of cap material on thermal tolerance in a structure with MgO/CoFeB-based free layer/MgO/cap layer.** *H. Honjo*[1], M. Yasuhira[1], S. Ikeda[1,3], H. Sato[1,4] and T. Endoh[1,2] *1. Center for Inovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

3:42

FC-08. **Independence between spin and momentum relaxation characteristic times in Pt, revealed by spin pumping measurements.** *C.A. Gonzalez-Fuentes*[1], R.K. Dumas[2], B. Bozzo[3], A. Pomar[3], M. Abellan[1] and C. Garcia[1] *1. Physics, UTFSM, Valparaiso, Chile; 2. Quantum Design, San Diego, CA, United States; 3. ICMAB, Bellaterra, Spain*

3:54

FC-09. **Measurement of the Spin Relaxation Anisotropy in 3d Ferromagnets.** *M. Cosset-Chéneau*[1,2], L. Vila[1], D. Gusakova[1], X. Waintal[1], A. Marty[1] and J. Attané[1] *1. Univ. Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 2. Département de Physique, Ecole Normale Supérieure de Lyon, Lyon, France*

4:06

FC-10. **Spin transport and conflicting values of spin diffusion length in FM/HM systems.** *C. Swindells*[1], A. Hindmarch[1], A. Gallant[2] and D. Atkinson[1] *1. Department of Physics, Durham University, Durham, United Kingdom; 2. Department of Engineering, Durham University, Durham, United Kingdom*

4:18

FC-11. **Reversible tuning of Cu spin relaxation length by ionic gating at room temperature.** *X. Shen*[1], Y. Cai[1], Y. Wu[2] and Y. Ji[1] *1. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 2. Department of Physics, State Key Laboratory of Surface Physics, Fudan University, Shanghai, China*

THURSDAY
AFTERNOON
1:30

BRASILIA 1

Session FD

MAGNETO-CALORIC AND MAGNETO-ELASTIC MATERIALS II

R Gopalan, Chair

International Advanced Research centre for Powder Metallurgy and Materials, Chennai, India

1:30

FD-01. **Exploiting Hysteresis in a Multicaloric Cooling Cycle. *(Invited)*** *T. Gottschall*[1], A. Gràcia-Condal[2], A. Taubel[3], M. Fries[3], L. Pfeuffer[3], L. Mañosa[2], A. Planes[2], K. Skokov[3] and O. Gutfleisch[3] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. University of Barcelona, Barcelona, Spain; 3. TU Darmstadt, Darmstadt, Germany*

2:06

FD-02. **Tunable first order transition in La(Fe,Cr,Si)$_{13}$ compounds: retaining magnetocaloric response despite a magnetic moment reduction.** L.M. Moreno-Ramirez[1], C. Romero-Muñiz[2], J. Law[1], *V. Franco*[1], A. Conde[1], I.A. Radulov[3], F. Maccari[3], K. Skokov[3] and O. Gutfleisch[3] *1. Sevilla University, Sevilla, Spain; 2. Autonomous University of Madrid, Madrid, Spain; 3. TU Darmstadt, Darmstadt, Germany*

2:18

FD-03. **Effect of martensite modulation on magnetocaloric properties of Ni-Mn-In, Ni-Mn-Sn and Ni-Fe-Ga melt-spun ribbons.** *G. R*[1] and K. Srikanti[1] *1. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Chennai, India*

2:30

FD-04. **Magneto-transport and magnetocaloric properties of bulk and rapidly solidified nanostructured Ni-Co-Mn-Ti based shape memory alloys.** *A.K. Pathak*[1], X. Liu[1], H. Bez[1], Y. Mudryk[1] and V.K. Pecharsky[1] *1. Materials Science and Enginering, Ames Laboratory, Ames, IA, United States*

2:42

FD-05. **Impact of atomic disorder on the thermodynamic properties of ferromagnetic Fe_2MnSi – a computational study.** H.G. Trigo[1], J.N. Gonçalves[1], B.M. Pimentel[2], D.L. Rocco[2], M.S. Reis[2] and *J.S. Amaral*[1] *1. Physics and CICECO, Universidade de Aveiro, Aveiro, Portugal; 2. Instituto de Física, Universidade Federal Fluminense, Rio de Janeiro, Brazil*

2:54

FD-06. **Tuning disorder in a first-order magnetoelastic transition.** *M. Trassinelli*[1], S. Cervera[1], M. LoBue[2], E. Fontana[1,3], M. Eddrief[1], V.H. Etgens[2], E. Lamour[1], A. Lévy[1], S. Macé[1], M. Marangolo[1], S. Steydli[1] and D. Vernhet[1] *1. Institut des NanoSciences de Paris, CNRS, Sorbonne Université, Paris, France; 2. SATIE, CNRS, ENS Paris-Saclay, Université Paris-Saclay, Cachan, France; 3. Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy*

3:06

FD-07. **Magnetofunctional response of FeRh nanoparticles obtained by novel processing routes.** V. Sharmar[1], S. Gupta[2], A. Biswas[2], H. Fu[3], R.L. Hadimani[1], V.K. Pecharsky[2] and *R. Barua*[1] *1. Department of Mechanical & Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Division of Materials Sciences and Engineering, Ames Laboratory, Ames, IA, United States; 3. School of Physics, University of Electronic Science and Technology, Chengdu, China*

3:18

FD-08. **Investigation of the Magnetic Anisotropy in Sputtered Ga-rich Fe-Ga Thin Films.** A. Muñoz-Noval[1], E. Salas-Colera[3,4], S. Fin[2], A. Begué[5], I. Hontecillas[1], D. Bisero[2], M. Ciria[5] and *R. Ranchal*[1] *1. Complutense University, Madrid, Spain; 2. Ferrara University, Ferrara, Italy; 3. BM25-Spline, ESRF., Grenoble, France; 4. Instituto de Ciencia de Materiales de Madrid-CSIC, Madrid, Spain; 5. ICMA-Universidad de Zaragoza, CSIC, Zaragoza, Spain*

3:30

FD-09. **Interplay between structure and magnetism in high temperature ferromagnetic shape memory alloys studied with neutron and x-ray scattering techniques.** *J. Porro Azpiazu*[1,2], A. Pérez-Checa[1], P. Lázpita[3], J. Feuchtwanger[3], A. Stunault[4], J. Barandiaran[1,3], T. Nakamura[5], A. Sozinov[6], K. Ullakko[6] and V.A. Chernenko[1,2] *1. BCMaterials, Leioa, Spain; 2. Ikerbasque, the Basque Foundation for Science, Bilbao, Spain; 3. Electricity and Electronics Department, University of the Basque Country, Leioa, Spain; 4. Diffraction Group, Institut Laue-Langevin, Grenoble, France; 5. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 6. Material Physics Department, Lappeenranta University of Technology, Savonlinna, Finland*

3:42

FD-10. **Magnetization Reversal of Ultra-soft PDMS-based Magnetorheological Elastomers.** *A.T. Clark*[1], J. Li[2,1], T. Dang[1], E.A. Corbin[3,4], D.A. Gilbert[5], K. Buchanan[6], X. Jin[2] and X. Cheng[1] *1. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 2. Department of Physics, Fudan University, Shanghai, China; 3. Department of Materials Science and Engineering, University of Delaware, Newark, DE, United States; 4. Department of Biomedical Engineering, University of Delaware, Newark, DE, United States; 5. Department of Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States; 6. Department of Physics, Colorado State University, Fort Collins, CO, United States*

3:54

FD-11. **Frequency Dependence of Magnetic and Magnetoelastic Properties of Magnetostrictive Materials for Multiferroic Antennae.** *P. Finkel*[1], M. Staruch[1] and N.J. Jones[2] *1. Naval Research Laboratory, Washington, DC, United States; 2. NSWC, Bethesda, MD, United States*

4:06

FD-12. **Nonreciprocal Surface-Acoustic-Wave Phase Shifter Based on Magnetoelastic Coupling.** *R.V. Verba*[1], V. Tiberkevich[2] and A.N. Slavin[2] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Oakland University, Rochester, MI, United States*

4:18

FD-13. **Magnetic and Magnetostrictive Performance of $Fe_{1-x}Co_x$ Additively Manufactured Pillars.** *N.J. Jones*[1], G. Petculescu[2], P.K. Lambert[1], J.M. Healy[1], R.T. Ott[3] and E. Simsek[3] *1. Physical Metallurgy and Fire Performance Branch, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, United States; 2. Physics Department, University of Louisiana, Lafayette, LA, United States; 3. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA, United States*

Session FE
QUANTUM MAGNETIC PHASES
Denis Candido, Chair
University of Iowa, Chicago, IL, United States

1:30

FE-01. **Quantum Criticality among Entangled Spin Chains.** ***(Invited)*** *A.P. Ramirez*[2], T. Siegrist[1], M. Mourigal[3], L. Balents[4], J. Trinh[2], L. Dong[4], A. Aczel[5] and X. Bai[3] *1. Florida State University, Tallahassee, FL, United States; 2. UCSC, Santa Cruz, CA, United States; 3. Georgia Tech, Atlanta, GA, United States; 4. UCSB, Santa Barbara, CA, United States; 5. ORNL, Oak Ridge, TN, United States*

2:06

FE-02. **Quantum spin liquid in 1T-TaS_2.** *D. Arcon*[2,1], M. Klanjšek[1], N. Jansa[1], I. Benedicic[1], D. Mihailovic[1] and P. Prelovsek[1] *1. Jozef Stefan Institute, Ljubljana, Slovenia; 2. University of Ljubljana, Faculty of Mathematics and Physics, Ljubljana, Slovenia*

2:18

FE-03. **Reestablishment of Spin-Density-Wave Magnetic Order in Epitaxial Chromium Films Following Photoexcitation.** *S.K. Patel*[1,2], A. Singer[2], M. Chollet[3], J.M. Glownia[3], O.G. Shpyrko[2] and E. Fullerton[1] *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 2. Physics Department, University of California, San Diego, La Jolla, CA, United States; 3. Linac Coherent Light Source, SLAC National Accelerator Laboratory, Stanford, CA, United States*

2:30

FE-04. **Optical evidence of an electronic nematic phase in FeSe driven by spin fluctuations.** *L. Degiorgi*[1] *1. Physics, ETHZ, Zurich, Switzerland*

2:42

FE-05. **Dynamic, disordered ground state in the fluorite, $Dy_2Zr_2O_7$.** *J.S. Gardner*[1], C. Wang[3], J. Ramon[2], L. Ishida[2], P.L. Bernardo[2], M.M. Leite[4], F.M. Vichi[4] and R.S. Freitas[2] *1. Songshan Lake Materials Laboratory, Dongguang, China; 2. Physics, Universidade de São Paulo, São Paulo, Brazil; 3. Neutron Group, National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 4. Instituto de Química, Universidade de São Paulo, São Paulo, Brazil*

2:54

FE-06. **Probing the Antiferromagnetic-Ferromagnetic Transition in Artificial Spin Ice.** *M. Massouras*[1], D. Lacour[1], M. Hehn[1] and F. Montaigne[1] *1. Institut Jean Lamour, Nancy, France*

3:06

FE-07. **Tunable Frustration in Antiferromagnetic Artificial Kagome Spin Ice.** *Y. Li*[1], F.P. Barrows[2,1], A. Petford-Long[1,3] and C.M. Phatak[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Northwestern University, Evanston, IL, United States; 3. Materials Science and Engineering, Northwestern University, Avanston, IL, United States*

3:18

FE-08. **Characterization of noncollinear spin textures in spin ice materials using capacitive torque magnetometry.** ***(Invited)*** *C. Beekman*[1,2] *1. Physics, Florida State University, Tallahassee, FL, United States; 2. National High Magnetic Field Laboratory, Tallahassee, FL, United States*

3:54

FE-09. **Emergent magnetic monopole dynamics in macroscopically degenerate artificial spin ice.** A. Farhan[1,5], *M.D. Saccone*[2], C.F. Petersen[3], S. Dhuey[4], R.V. Chopdekar[5], A. Scholl[5] and S. van Dijken[1] *1. Department of Applied Physics, Aalto University, Espoo, Finland; 2. UC Santa Cruz, Santa Cruz, CA, United States; 3. University of Innsbruck, Innsbruck, Austria; 4. Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

4:06

FE-10. **Experimental and theoretical investigation of emergent excitations in artificial spin ice system with a magnetization reversal process.** F. Martins[1], R. Gonçalves[1,2], T. Paiva[1], J. Rodrigues[2], L. Mól[2], A. Pereira[1] and *C.I. Levartoski de Araujo*[1] *1. Physics, Universidade Federal de Viçosa, Viçosa, Brazil; 2. Universidade de Federal de Minas Gerais, Belo Horizonte, Brazil*

4:18

FE-11. **Domain Wall Propagation in Magnetic Galton Board.** *M. Massouras*[1], D. Lacour[1], M. Hehn[1] and F. Montaigne[1] *1. Institut Jean Lamour, Nancy, France*

THURSDAY AFTERNOON 1:30

RIO PAVILION 1

Session FF

BIOMAGNETISM, BIOMEDICAL, AND MAGNETIC FLUIDS II

Akihiro Kuwahata, Chair
University of Tokyo, Bunkyo-ku, Japan

1:30

FF-01. **Magnetism, Hidden Order and Emergent Collective Behavior in a Bacterial Suspension.** ***(Invited)*** *R. Sooryakumar*[1] *1. Department of Physics, The Ohio State University, Columbus, OH, United States*

2:06

FF-02. **Mechanical resonator to measure magnetic susceptibility of structurally intact bone samples.** L.R. Moore[1], M. Midura[1], R. Royer III[1], C. Androjna[1], E.I. Waldorff[2], N. Zhang[2], J.T. Ryaby[2], R.J. Midura[1] and *M. Zborowski*[1] *1. Cleveland Clinic, Cleveland, OH, United States; 2. Orthofix Inc., Lewisville, TX, United States*

2:18

FF-03. **Reconfigurable ferromagnetic liquid droplet.** *X. Liu*[1], N. Kent[3], A. Ceballos[2], R. Streubel[3], Y. Jiang[2], Y. Chai[3], P. Kim[3], J. Forth[3], F. Hellman[2], S. Shi[1], D. Wang[1], B. Helms[3], P. Ashby[3], P. Fischer[3] and T. Russell[4] *1. Beijing University of Chemical Technology, Beijing, China; 2. University of California, Berkeley, Berkeley, CA, United States; 3. Lawrence Berkeley National Lab, Berkeley, CA, United States; 4. University of Massachusetts, Amherst, Amherst, MA, United States*

2:30

FF-04. **Magnetism as an Efficient Tool for Malaria Detection.** Y. Kumar[1], *A. Rathi*[1], A. Singh[1], G. Sumana[1], B. Gahtori[1], R. Pant[1] and G. Basheed[1] *1. AcSIR, CSIR-National Physical Laboratory (NPL) campus, New Delhi, India*

2:42

FF-05. **Interaction of Two Magnetic Micro-Chains in Rotating Field.** *J. Cheng*[1], C. Lin[1] and C. Chen[1] *1. Mechanical Engineering, National Chiao Tung University, Hsinchu City, Taiwan*

2:54

FF-06. **Auditory Evoked Fields (AEFs) Measurements via Peak to Peak Voltage Detector Type MI Gradiometer.** *J. Ma*[1] and T. Uchiyama[1] *1. Department of Electrical Engineering, Graduate School of Engineering, Nagoya University, Nagoya, Japan*

3:06

FF-07. **Green Synthesis of Magnetic Nanoferrites (Fe, Co, Ni) from Aloe Vera Extract and Its Biomedical Potential.** *G.C. Hermosa*[1], H. Wu[1], C. Liao[1], S. Wang[2], Y. Chen[1,3] and A. Sun[1] *1. Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan; 2. Department of Materials and Mineral Resources Engineering, National Taipei of Technology, Taipei, Taiwan; 3. Surgery, Far Eastern Memorial Hospital, New Taipei, Taiwan*

3:18

FF-08. **Magnetic Characteristics of Magnetic Markers for Localized Tumor Excision with a Handheld Magnetic Probe.** *Y. Xiao*[1], O. Bhowmik Debnath[1], S. Chikaki[1], A. Kuwahata[1], M. Peek[1], I. Saito[2], S. Maeda[3], M. Kusakabe[4,1] and M. Sekino[1] *1. University of Tokyo, Tokyo, Japan; 2. iMed Japan Inc, Tokyo, Japan; 3. Kyoshin Co,. Ltd, Nasu Shiobara, Japan; 4. Matrix Cell Research Institute Inc., Ushiku, Japan*

3:30

FF-09. Development of magnetometer with nitrogen-vacancy center in a bulk diamond for detecting magnetic nanoparticles in biomedical applications. *T. Kitaizumi*[1], A. Kuwahata[1], K. Saichi[1], T. Sato[1], R. Igarashi[2], T. Ohshima[2], Y. Masuyama[2,3], T. Iwasaki[3], M. Hatano[3], F. Jelezko[4], M. Kusakabe[1,5], T. Yatsui[1] and M. Sekino[1] *1. Graduate School of Engineering, The University of Tokyo, Tokyo, Japan; 2. National Institutes for Quantum and Radiological Science and Technology (QST), Chiba, Japan; 3. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan; 4. Institute of Quantum Optics, Ulm University, Ulm, Germany; 5. Matrix Cell Research Institute Inc., Ibaraki, Japan*

3:42

FF-10. Development of an automatic magnetic immunostaining system for rapid diagnosis of cancer metastasis. *M. Sekino*[1], A. Kuwahata[1], A. Yoshibe[1], K. Imai[1], M. Kaneko[1], S. Chikaki[1], I. Saito[1], A. Tsuruma[2], S. Sakamoto[2], H. Handa[3], S. Matsuda[4] and M. Kusakabe[5] *1. The University of Tokyo, Tokyo, Japan; 2. Tokyo Institute of Technology, Tokyo, Japan; 3. Tokyo Medical University, Tokyo, Japan; 4. Keio University School of Medicine, Tokyo, Japan; 5. Matrix Cell Research Institute Inc., Tokyo, Japan*

3:54

FF-11. Development of an optimized dome-shaped magnet in magnetically-promoted rapid immunofluorescence staining for cancer diagnoses. *M. Sekino*[1], A. Kuwahata[1], S. Fujita[1], S. Matsuda[2], M. Kaneko[1], S. Chikaki[1], S. Sakamoto[3], I. Saito[4], H. Handa[5] and M. Kusakabe[6] *1. The University of Tokyo, Tokyo, Japan; 2. Keio University School of Medicine, Tokyo, Japan; 3. Tokyo Institute of Technology, Tokyo, Japan; 4. iMed Japan Inc., Tokyo, Japan; 5. Tokyo Medical University, Tokyo, Japan; 6. Matrix Cell Research Institute Inc., Ibaraki, Japan*

4:06

FF-12. Capillary Hysteresis Effects in Magnetic Hyperthermia Cancer Treatment. *M. Pavel*[1], R. Tanasa[2], D. Constantinescu[1], C. Cianga[1], P. Cianga[1] and A. Stancu[1,2] *1. Department of Immunology, "Grigore T. Popa" University of Medicine and Pharmacy of Iasi, Iasi, Romania; 2. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

THURSDAY AFTERNOON 1:30 — RIO PAVILION 3

Session FG
THIN FILMS: EXCHANGE BIAS AND CHIRALITY
Jun Okabayashi, Chair
The University of Tokyo, Tokyo, Japan

1:30

FG-01. The origin of the athermal training effect in exchange bias multilayers. *S. Jenkins*[1], R.W. Chantrell[1] and R.F. Evans[1] *1. Physics, University of York, York, United Kingdom*

1:42

FG-02. **Observation of a Chirality Created Exchange Bias Effect.** *D. Lott*[3], K. Chen[1], A. Philippi-Kobs[2] and V. Lauter[4] *1. Helmholtz-Zentrum Berlin, Berlin, Germany; 2. Deutsches Elektronen-Synchrotron, Hamburg, Germany; 3. WPD, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany; 4. Neutron Scattering Directorate, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

1:54

FG-03. **Achiral in-plane Néel walls in interfacial Dzyaloshinskii-Moriya interaction systems.** C.J. Agostino[1], *M. Robertson*[2], G. Chen[2], S. Kang[3], A. Mascaraque[4], E.G. Michel[5], C. Won[3], Y. Wu[6], A.K. Schmid[1] and K. Liu[2,7] *1. MSD, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Department of Physics, University of California, Davis, Davis, CA, United States; 3. Department of Physics, Kyung Hee University, Seoul, The Republic of Korea; 4. Dpto. de Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 5. Department of Condensed Matter Physics, Universidad Autonoma de Madrid, Madrid, Spain; 6. Department of Physics, Fudan University, Shanghai, China; 7. Department of Physics, Georgetown University, Washington, DC, United States*

2:06

FG-04. **Modulation vector dependence of a second helical phase pocket in FeGe.** *D. Burn*[1], S. Zhang[2,3], S. Wang[4], H. Du[4], G. van der Laan[1] and T. Hesjedal[2] *1. Diamond Light Source, Oxford, United Kingdom; 2. Department of Physics, University of Oxford, Oxford, United Kingdom; 3. School of Physical Science and Technology, ShanghaiTech University, Shanghai, China; 4. High Magnetic Field Laboratory, Chinese Academy of Sciences, Hefei, China*

2:18

FG-05. **Interlayer exchange coupling in Fe/MgO/$Co_xFe_{3-x}O_4$(001) trilayers.** *H. Koizumi*[1], M. Hagihara[1], S. Kobayashi[1] and H. Yanagihara[1,2] *1. Department of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. Tsukuba Research Center for Energy Materials Science, Tsukuba, Japan*

2:30

FG-06. **Ab initio calculation of interlayer exchange coupling in synthetic antiferromagnetic pinned layer.** *R. Takashima*[1], T. Tsukagoshi[1], T. Ishihara[1] and T. Kai[1] *1. Institute of Memory Technology Research & Development, Toshiba Memory Corporation, Kawasaki, Japan*

2:42

FG-07. **Enhanced Exchange Interaction between Fe and FeO in Fe/FeO/CoO(NiO) due to the Antiferromagnetic Proximity Effect.** *A. Koziol-Rachwal*[1], M. Slezak[1], P. Drozdz[1], W. Janus[1], K. Matlak[1], M. Szpytma[1], J. Korecki[1,2] and T. Slezak[1] *1. Solid State Physics, AGH University of Science and Technology, Krakow, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Science, Krakow, Poland*

2:54

FG-08. Fabrication and characterization of IrMn/PtMn/PtCr/PtMn antiferromagnets in terms of the role of each layer. *M. Saito*[1] and F. Koike[1] *1. Alps-Engineering Headquarters, Alps Alpine Co., Ltd., Nagaoka, Japan*

3:06

FG-09. Unidirectional and uniaxial anisotropies in the MnN/CoFeB exchange bias system. *A. Rai*[1,2], M. Dunz[3], A. Sapkota[1,2], P. Zilske[3], J.B. Mohammadi[4], M. Meinert[3], C.K. Mewes[1,2] and T. Mewes[1,2] *1. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States; 2. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, United States; 3. Center for Spinelectronic Materials and Devices, Department of Physics, Bielefeld University, Bielefeld, Germany; 4. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States*

3:18

FG-10. Interface Engineering towards Enhanced Exchange Interaction between Fe and FeO in Fe/MgO/FeO Epitaxial Heterostructures. *A. Koziol-Rachwal*[1], W. Janus[1], M. Szpytma[1], P. Drozdz[1], M. Slezak[1], K. Matlak[1], T. Slezak[1] and J. Korecki[1,2] *1. Solid State Physics, AGH University of Science and Technology, Krakow, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Science, Krakow, Poland*

3:30

FG-11. Magnetic Properties of Multilayers That Include GdFeCo Thin Films. *J. Bello*[1], M. Hehn[1] and S. Mangin[1] *1. Spintronics and Nanomagnetism group, Institut Jean Lamour, Nancy, France*

3:42

FG-12. Broad Tunability of Interfacial Magnetic Anisotropy by Rashba Spin-orbit Coupling in Metal/Ferrimagnetic-Insulator Bilayers. *A.J. Lee*[1], A.S. Ahmed[1], B. McCullian[1], S. Guo[1], M. Zhu[2], S. Yu[1], P. Balachandran[3], J. Hwang[2], P.C. Hammel[1] and F. Yang[1] *1. Physics, The Ohio State University, Columbus, OH, United States; 2. Center for Electron Microscopy and Analysis, The Ohio State University, Columbus, OH, United States; 3. Materials Science and Engineering, University of Virginia, Charlottesville, VA, United States*

3:54

FG-13. Epitaxial Ferrimagnetic Mn_4N Grown on MgO and GaN: A Comparative Study. *Z. Zhang*[1], J. Singhal[1], Y. Cho[1], P. Dang[1], H. Lee[1], Y. Tang[1], D. Ralph[1], H.G. Xing[1] and D. Jena[1] *1. Cornell University, Ithaca, NY, United States*

4:06

FG-14. Impact of magnetic moment and anisotropy of $Co_{1-x}Fe_x$ thin films on the magnetic proximity effect of Pt. *T. Kuschel*[1] *1. Bielefeld University, Bielefeld, Germany*

4:18

FG-15. **Large Perpendicular Magnetic Anisotropy in Single Crystalline Fe/MgO Heterostructures via Optimized Rf-Sputtering Processes.** *Y. Iida*[1,2], J. Okabayashi[3], H. Sukegawa[2] and S. Mitani[2,1] *1. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 3. Research Center for Spectrochemistry, The University of Tokyo, Bunkyo, Japan*

THURSDAY AFTERNOON 1:30 MIRANDA 7

Session FH
RARE-EARTH PERMANENT MAGNETS
Ralph Skomski, Chair
University of Nebraska-Lincoln, Lincoln, NE, United States

1:30

FH-01. **Microscopic magnetic properties of Nd-Fe alloys.** V.P. Menushenkov[1], A.P. Menushenkov[2], F. Wilhelm[3], I.V. Shchetinin[1], I.A. Rudnev[2], A.A. Ivanov[2], D.G. Zhukov[1], A.G. Savchenko[1] and *A. Rogalev*[3] *1. National University of Science and Technology "MISIS", Moscow, Russian Federation; 2. National Research Nuclear University MEPhI, Grenoble, Russian Federation; 3. ESRF, Grenoble, France*

1:42

FH-02. **Unconventional Spin Textures and Domain Wall Pinning in Sm-Co Magnets.** *L. Pierobon*[1], A. Kovacs[2], R.E. Schäublin[1,3], S.S. Gerstl[1,3], U. Wyss[4], J. Caron[2], R.E. Dunin-Borkowski[2], J.F. Löffler[1] and M. Charilaou[1,5] *1. Laboratory of Metal Physics and Technology, ETH Zurich, Zurich, Switzerland; 2. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich, Jülich, Germany; 3. Scientific Center of Optical and Electron Microscopy, ETH Zurich, Zurich, Switzerland; 4. Arnold Magnetic Technologies, Lupfig, Switzerland; 5. Department of Phyiscs, University of Louisiana at Lafayette, Lafayette, Switzerland*

1:54

FH-03. **The Effect of Zr in Progress toward the Development of High-Performance $SmFe_{12}$-based Magnet.** *P. Tozman*[1], S. Hossein[1], Y. Takahashi[1], D. Ogawa[1], S. Hirosawa[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan*

2:06

FH-04. **Achievement of both high coercivity and maximum energy product for 2:17-type Sm-Co sintered magnets via microstructural adjustment.** S. Wang[1], *Y. Fang*[1], K. Song[1], X. Zhu[1], L. Wang[1], W. Sun[2], W. Pan[1], M. Zhu[1,2] and W. Li[1,2] *1. Central Iron and Steel Research Institute, Beijing, China; 2. National Engineering Research Center for Magnetic Materials, Beijing, China*

2:18

FH-05. **High Temperature Properties Improvement and Microstructure Regulation of Sm_2Co_{17}-based Permanent Magnet.** *C. Wang*[1], M. Zhu[1], Y. Fang[1], S. Wang[1] and W. Li[1] *1. Central Iron and Steel Research Institute, Beijing, China*

2:30

FH-06. **Theoretical study on the electronic states and finite temperature magnetic properties of $Sm_2Fe_{17}N_x$.** *S. Yamashita*[1], D. Suzuki[1], T. Yoshioka[1,2], H. Tsuchiura[1,2] and P. Novak[3] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Institute of Physics of ASCR, Prague, Czechia*

2:42

FH-07. **Magnetic properties and microstructures of high heat-resistance Sm-Co magnets with high Fe and low Zr content.** *H. Machida*[1], T. Fujiwara[1], C. Fujimoto[1], Y. Kanamori[1], K. Sakakura[2] and M. Takezawa[2] *1. TOKIN Corporation, Sendai, Japan; 2. Kyushu Institute of Technology, Kitakyushu, Japan*

2:54

FH-08. **Magnetic properties of $Sm(Fe,Ti,V)_{12}$ magnets.** *T. Saito*[1], F. Watanabe[1] and D. Nishio-Hamane[2] *1. Chiba Institute of Technology, Narashino, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

3:06

FH-09. **Nanoparticle-based synthesis and magnetic properties of $Sm(Fe_{1-x}Co_x)_{11}Ti$ ($0 \le x \le 0.3$) particle.** *J. Kim*[1], T. Trinh[1], R. Sato[1] and T. Teranishi[1] *1. Advanced Inorganic Synthesis, Division of Synthetic Chemistry, Institute for Chemical Research Kyoto University, Uji-shi, Japan*

3:18

FH-10. **Evolution of microstructure and magnetic properties in annealed high energy ball milled $Sm(Fe, Co, Ti)_{12}$ compounds doped with Zr.** *M. Gjoka*[1,2], C. Sarafidis[3], D. Niarchos[1] and G.C. Hadjipanayis[2] *1. Department of Materials Science, INN, NCSR Demokritos, Athens, Greece; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 3. Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece*

3:30

FH-11. **Effect of Ingot Cooling Rate on Cu Distribution and Magnetic Properties of $Sm(Co_{bal}Fe_{0.28}Cu_{0.07}Zr_{0.03})_{7.6}$ Magnet.** *Z. Shang*[1], D. Zhang[1], Y. Li[1], Z. Ma[1], X. Xu[1], H. Zhang[1], W. Liu[1], Q. Lu[1], Q. Wu[1] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

3:42

FH-12. **Strain-Induced Magnetic Properties in RCo_5 (R=rare earth) Magnets.** *R. Choudhary*[1] and D. Paudyal[1] *1. U.S. Department of Energy, ISU, Ames Laboratory, Ames, IA, United States*

3:54

FH-13. **Torque Magnetometry Study of Magnetocrystalline Anisotropy in the Permanent Magnet $NdCo_5$.** *S. Kumar*[1], C.E. Patrick[1], R.S. Edwards[1], G. Balakrishnan[1], M.R. Lees[1] and J.B. Staunton[1] *1. Department of Physics, University of Warwick, Coventry, United Kingdom*

4:06

FH-14. **Magnetization Enhancement and Phase Stability of Mn Doped $SmCo_5$ System.** *B. Song*[1], H. Zhang[1], Q. Lu[1], W. Liu[1], Y. Li[1], Z. Altounian[2] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Center for the Physics of Materials, Department of Physics, McGill University, Montreal, QC, Canada*

4:18

FH-15. **Optimizing the microtructure and magnetic properties of $SmCo_5$/α-Fe nanocomposite magnets by adjusting the morphology of Fe.** *X. Xu*[1], Y. Li[1], Z. Shang[1], M. Yue[1], D. Zhang[1], Q. Lu[1], H. Zhang[1], W. Liu[1], Q. Wu[1] and Z. Altounian[2] *1. Beijing University of Technology, Beijing, China; 2. McGill University, Montreal, QC, Canada*

THURSDAY AFTERNOON 1:30 — MIRANDA 5

Session FI
MICROMAGNETICS AND HYSTERESIS MODELING II
Riccardo Tomasello, Chair
Foundation for Research and Technology - Hellas, Heraklion, Greece

1:30

FI-01. **Learning Magnetization Dynamics.** *T. Schrefl*[1], A. Kovacs[1], J. Fischbacher[1], H. Oezelt[1] and M. Gusenbauer[1] *1. Danube University Krems, Wiener Neustadt, Austria*

1:42

FI-02. **Stochastic thermodynamics of noise-driven Landau-Lifshitz equation.** C. Serpico[1], *M. LoBue*[2], M. Hoang-Ngoc[2], M. d'Aquino[3] and I. Mayergoyz[4] *1. University of Napoli "Federico II", Napoli, Italy; 2. SATIE, CNRS, ENS Paris-Saclay, Universit é Paris-Saclay, Paris, France; 3. University of Napoli "Parthenope", Napoli, Italy; 4. University of Maryland, College Park, College Park, MD, United States*

1:54

FI-03. **Models of Advanced Recording Systems (MARS) - a multi-timescale micromagnetic code for granular film simulations.** *S.E. Rannala*[1], A. Meo[2], S. Ruta[1], R.W. Chantrell[1], P. Chureemart[2] and J. Chureemart[2] *1. Physics, University of York, York, United Kingdom; 2. Physics, Mahasrakham University, Mahasarakham, Thailand*

2:06

FI-04. **Macroscopic effects due to atomistic colored noise in magnetization dynamics.** *O. Chubykalo-Fesenko*[1] and U. Atxitia[2] *1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Freie Universitat Berlin, Berlin, Germany*

2:18

FI-05. **Thermal fluctiations in the Landau-Lifshitz-Bloch equation.** *M. Menarini*[1] and V. Lomakin[1] *1. Electrical and Computer Engineering, University of California San Diego, La Jolla, CA, United States*

2:30

FI-06. **Pseudospectral method for the solution of the Fokker-Planck equation associated to stochastic magnetization dynamics.** *V. Scalera*[1], M. d'Aquino[2], S. Perna[1], M. Hoang-Ngoc[3] and C. Serpico[1] *1. Department of Electrical Engineering and ICT, University of Naples Federico II, Naples, Italy; 2. Engineering Department, University of Naples "Parthenope", Naples, Italy; 3. Physics, Université Paris-Saclay, Orsay, France*

2:42

FI-07. **Large-scale computation of magnetization eigenmodes in complex micromagnetic systems.** *M. d'Aquino*[1], S. Perna[2] and C. Serpico[2] *1. Department of Engineering, University of Naples "Parthenope", Naples, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy*

2:54

FI-08. **Computing resonant modes and excitation states in micromagnetic systems with finite element based solvers.** *Z. Lin*[1,2] and V. Lomakin[1] *1. Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA, United States; 2. Materials Science and Engineering, University of California, San Diego, La Jolla, CA, United States*

3:06

FI-09. **Implementation of high-performance effective-field-calculation algorithm for ultra-large-scale micromagnetic simulation on multi-GPUs.** *H. Tsukahara*[1] and K. Ono[1] *1. High Energy Accelerator Research Organization, Tsukuba, Japan*

3:18

FI-10. **Advancement in high-performance FEM-based micromagnetic codes on GPUs.** X. Wang[1], S. Fu[1], R. Chang[1], M. Kuteifan[1], I. Volvach[1] and *V. Lomakin*[1] *1. CMRR, University of California, San Diego, La Jolla, CA, United States*

3:30

FI-11. **A fast algorithm to reconstruct 3D object in CXDI based on massively parallel processing.** *F. Ai*[1], A. Shabalin[3], O.G. Shpyrko[3] and V. Lomakin[1,2] *1. ECE, UCSD, La Jolla, CA, United States; 2. CMRR, UCSD, La Jolla, CA, United States; 3. Physics, UCSD, La Jolla, CA, United States*

3:42

FI-12. **Atomistic spin model simulations of magnetic properties of ferromagnetic (Ga,Mn)N.** *D. Sztenkiel*[1], K. Gas[1,2], N. Gonzalez Szwacki[3], T. Dietl[4,5] and M. Sawicki[1] *1. Polish Academy of Sciences, Institute of Physics, Warszawa, Poland; 2. Institute of Experimental Physics, University of Wroclaw, Wroclaw, Poland; 3. Institute of Theoretical Physics, University of Warsaw, Warszawa, Poland; 4. International Research Centre MagTop, Polish Academy of Sciences, Warszawa, Poland; 5. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

3:54

FI-13. **Modelling of heating efficiency in magnetic hyperthermia: effect of non-harmonic driving field.** *P. Tiberto*[1], P. Allia[2,1] and G. Barrera[1] *1. Advanced materials and life sciences, INRIM, Torino, Italy; 2. DISAT, Politecnico di Torino, Torino, Italy*

4:06

FI-14. **Model for xyFORC vectorial characterization technique of multi-phase magnetic systems.** *A. Stancu*[1] and L. Stoleriu[1] *1. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

4:18

FI-15. **A Vector Hysteresis Model of Silicon Steel Based on Rotational Magnetization.** *C. Zhang*[1,2], Y. Chen[1], Z. Zhang[2], Y. Li[1] and Q. Yang[3,1] *1. Hebei university of technology, Tianjin, China; 2. Ohio state university, Columbus, OH, United States; 3. Tianjin university of technology, Tianjin, China*

THURSDAY AFTERNOON 2:30

RIO PAVILION 8-11

Session FP

MAGNETICS FOR KINETIC MANIPULATION AND TRANSPORTATION (Poster Session)

Hellen Jiang, Chair
PNNL, Richland, WA, United States

FP-01. **Optical Control of Diamagnetically Levitated Pyrolytic Graphite.** *J. Young*[1], S. Yee[1] and H. ElBidweihy[1] *1. Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD, United States*

FP-02. **Magnetic Levitation of a Ferrofluid Droplet in Mid-Air.** T. Ohji[1], *S. Yamaguchi*[1], K. Amei[1] and K. Kiyota[1] *1. University of Toyama, Toyama, Japan*

FP-03. **The Interaction between Two Permanent Magnets with Significantly Different Permeance Coefficients.** *H. Meng*[1], Q. Wei[1], G. Tang[2], L. Cheng[3], G. Mizzell[4] and C.H. Chen[5] *1. Hangzhou Foresee Group Holding Co., LTD., Hangzhou, China; 2. Hangzhou Quadrant Technology Co. LTD, Hangzhou, China; 3. Hangzhou Magmax Technology Co., LTD., Hangzhou, China; 4. SuperMagnetMan, Pelham, AL, United States; 5. Quadrant Solutions, Louisville, KY, United States*

FP-04. **Reprogrammable Nanomagnets for Shape-morphing Micromachines.** *J. Cui*[1,3], T. Huang[2], Z. Luo[1,3], P. Testa[1,3], H. Gu[2], X. Chen[2], B. Nelson[2] and L. Heyderman[1,3] *1. Laboratory for Mesoscopic Systems, ETH Zurich, Zurich, Switzerland; 2. Institute of Robotics and Intelligent Systems, ETH Zurich, Zurich, Switzerland; 3. Laboratory for Multiscale Materials Experiments, Paul Scherrer Institute, Villigen, Switzerland*

FP-05. **Magnetic Control of Flexible Thermoelectric Devices Based on Macroscopic 3D Interconnected Nanowire Networks.** *N. Marchal*[1], T. da Câmara Santa Clara Gomes[1], F. Abreu Araujo[1] and L. Piraux[1] *1. IMCN, Université catholique de Louvain, Louvain-la-Neuve, Belgium*

FP-06. **Magnetic navigation system with a triangularly positioned triple coil set for the 2D manipulation of biomedical magnetic robots.** *H. Lee*[1] and S. Jeon[1] *1. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*

FP-07. **Separation of Diamagnetic and Weak Paramagnetic Solid Particles Realized by a Small Nd-Fe-B Magnetic Circuit.** *C. Ueda*[1] *1. Science, Earth and Space Science, Osaka, Japan*

FP-08. **Optimal Design and Experimental Verification of a Linear Magnetic Gear.** *S. Seo*[1], K. Shin[1], G. Jang[1], S. Kim[1] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

FP-09. **A Novel Five-Degree-of-Freedom AC-DC Hybrid Magnetic Bearing.** *W. Zhu*[1] and Q. Le[1] *1. Huaiyin Institute of Technology, Huai'an, China*

FP-10. **Eddy Current Braking Force Analysis of an Ironless Linear Synchronous Motor with Cooling System.** *L. Zhang*[1] *1. Harbin Institute of Technology, Harbin, China*

FP-11. **A New HTS Traveling Magnetic Electromagnetic Halbach Array for Electromagnetic Launch System.** *W. Qin*[1] *1. School of Electrical Engineering, Beijing Jiaotong University, Beijing, China*

FP-12. **A study on design feasibility through optimal design and performance test of All-In-One system using NSDLIM(Non-Symmetry Double-sided Linear Induction Motor).** *K. Seo*[1], C. Park[1], J. Lee[1], T. Kim[2], H. Oh[1], J. Lim[1], W. Ji[3] and H. Lee[1] *1. Korea National University of Transportation (KNUT), Uiwang-si, The Republic of Korea; 2. University of Michigan-Dearborn, Dearborn, MI, United States; 3. Hanyang University, Seoul, The Republic of Korea*

FP-13. **Feasibility Study on Combined Piezoelectric (Solid) and Ferrofluid (Liquid) Vibration Energy Harvester.** *N. Anand*[1] and R. Gould[1] *1. Mechanical & Aerospace Engineering, North Carolina State University, Raleigh, NC, United States*

FP-14. **Research on Multi-objective Task Scheduling Algorithm for Electromagnetic Cloud Computing.** *L. Jin*[1], J. Wang[1], X. Liu[1] and W. Feng[1] *1. Tianjin Polytechnic University, Tianjin, Tianjin, China*

FP-15. **Application of Grain-Oriented Electrical Steel Used in Super-High Speed Electric Machines.** *R. Pei*[1] and L. Zeng[1] *1. InnMag New Energy Ltd., Suzhou, China*

THURSDAY
AFTERNOON
2:30

RIO PAVILION 8-11

Session FQ

MAGNETOCALORIC MATERIALS II (Poster Session)

Martino LoBue, Co-Chair
SATIE - CNRS, Cachan, France
Durga Paudyal, Co-Chair
Ames Laboratory, US DOE, Iowa State University, Ames, IA, United States

FQ-01. **Differential Effect of Magnetic Alignment on Magnetocaloric Effect during Additive Manufacturing of Magnetocaloric Particles.** K. Al Milaji[1], S. Gupta[2], V.K. Pecharsky[2,3], H. Zhao[1], R. Barua[1] and *R.L. Hadimani*[1,4] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Materials Science and Engineering, Ames Laboratory, Ames, IA, United States; 3. Materials Science and Engineering, Iowa State University, Ames, IA, United States; 4. Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States*

FQ-02. **Magnetocaloric effect in rare-earth based oxynitrides.** Y. Jin[1], *A. Biswas*[1], A.K. Pathak[1], Y. Mudryk[1], S. Gupta[1] and V.K. Pecharsky[1] *1. Division of Materials Science and enigineerig, Ames Laboratory, Ames, IA, United States*

FQ-03. **3D checker board pattern formation of martensite/austenite domains in NiCoMnAl magnetic shape memory alloys.** *A. Becker*[1], D. Ramerman[1], M. Gottschalk[1], I. Ennen[1], T. Matalla-Wagner[1], G. Reiss[1] and A. Hütten[1] *1. Physics, Bielefeld University, Bielefeld, Germany*

FQ-04. **Controllable magnetic transitions and magnetocaloric effect of $Ho_{1-x}Tm_xNi$ ($0 \leq x \leq 0.8$) compounds.** *J. Xu*[1], X. Zheng[1], S. Shao[1], S. Yang[1], J. Zhang[1], S. Wang[1], J. Liu[2], Y. Zhang[2], Y. Liu[2], Z. Xu[3], L. Wang[4] and B. Shen[2] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China; 2. State key laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences & University of Chinese Academy of Sciences, Beijing, China; 3. National Institute of Metrology, Beijing, China; 4. Department of Physics, Capital Normal University, Beijing, China*

FQ-05. **The Use of Magnetically Hard Materials in Thermomagnetic Power Generation Cycles.** *A.N. Tantillo*[1,2], N. Dempsey[3], L. Ranno[3] and K.G. Sandeman[2,1] *1. Physics, CUNY Graduate Center, Brooklyn, NY, United States; 2. Physics, Brooklyn College, Brooklyn, NY, United States; 3. Universite Grenoble Alpes, CNRS, Institut Neel, Grenoble, France*

FQ-06. **Magnetocaloric Gadolinium thick films for energy harvesting applications.** *D. Nguyen Ba*[1,2], L. Becerra[2], N. Casaretto[2], J. Duvauchelle[2], M. Marangolo[2] and M. LoBue[1] *1. SATIE, CNRS, ENS Paris-Saclay, Université Paris-Saclay, Cachan, France; 2. Sorbonne Université, CNRS, Institut des NanoSciences de Paris, UMR7588, Paris, France*

FQ-07. **Enhanced Magnetocaloric Effect via Halide Substitution in the Tunable Molecular Magnet, $Cu_9Br_2(cpa)_6$.** *S.F. Skinner*[1] and L.W. Ter Haar[1] *1. Chemistry, University of West Florida, Pensacola, FL, United States*

FQ-08. **The first-order magnetoelastic transition in Eu_2In: A ^{151}Eu Mössbauer study.** *D. Ryan*[1], D. Paudyal[2], F. Guillou[2], A.K. Pathak[2], Y. Mudryk[2] and V.K. Pecharsky[2] *1. Physics, McGill University, Montreal, QC, Canada; 2. Ames Laboratory, Ames, IA, United States*

FQ-09. **Magnetic field dependence of the martensitic transition and magnetocaloric effects in $Ni_{49}BiMn_{35}In_{15}$.** *A. Aryal*[1], I. Dubenko[1], S. Talapatra[1], S. Stadler[2] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL, United States; 2. Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States*

FQ-10. **Coupled Phase Transitions and Associated Magnetocaloric Effects in $Ni_2Mn_{0.70}Cu_{0.30}Ga$.** *S.A. Agbo*[1], S. Bhatt[1] and M. Khan[1] *1. Physics, Miami University, Oxford, OH, United States*

FQ-11. **An investigation of the dependence of the magnetocaloric properties of $AlFe_2B_2$ on compositional parameters using total scattering and PDF analysis.** *S. Vallone*[1], B.A. Frandsen[2], R. Barua[3,4], B. Lejeune[4], L. Lewis[4,5] and K.G. Sandeman[1,6] *1. Physics, The Graduate Center at the City University of New York, New York, NY, United States; 2. Physics and Astronomy, Brigham Young University, Provo, UT, United States; 3. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Chemical Engineering, Northeastern University, Boston, MA, United States; 5. Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 6. Physics, Brooklyn College, Brooklyn, NY, United States*

FQ-12. **Magnetocaloric effect in a cluster-glass system $Ho_5Pd_{2-x}Ag_x$ for hydrogen liquefaction.** *H. Kitazawa*[1], S. Toyoizumi[2], K. Kujirai[2], H. Mamiya[3], R. Tamura[4], K. Morita[5] and A. Tamaki[2] *1. Center for Green Research on Energy and Environmental Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Graduate School of Advanced Science and Technology, Tokyo Denki University, Adachi-ku, Japan; 3. Research Center for Advanced Measurement and Characterization, National Institute for Materials Science (NIMS), Tsukuba, Japan; 4. International Center for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS), Tsukuba, Japan; 5. School of Engineering, Tokyo Denki University, Adachi-ku, Japan*

FQ-13. **Interstitial effects on the magnetic phase transition and magnetocaloric effects in (Hf, Ta)Fe_2 kagome phase.** S. Li[1], T. Chen[2], *J. Chen*[3], X. Zhou[1], P. Jia[1], W. Cui[1,2] and Q. Wang[1] *1. Northeastern Unversity, Shenyang, China; 2. Lanzhou University of Technology, Lanzhou, China; 3. Institute Of Electronics, CAS, Beijing, China*

FQ-14. **Electric field controlled magnetocaloric effect in FeRh/PMN-PT heterostructure.** *K. Qiao*[1], J. Li[1], C. Zhang[1], F. Hu[1], J. Wang[1], J. Sun[1] and B. Shen[1] *1. Institute of Physics, Chinese Academy of Scienes, Beijing, China*

FQ-15. **Influence of a magnetic field in $[Fe(pzt)_6](PF_6)_2$ (pzt=1-propyltetrazole), a spin-crossover material.** *B.D. Alho*[1], P.D. Alho[1], R.M. Ribas[1], V.R. de Sousa[1], E.P. Nóbrega[1] and P. von Ranke[1] *1. Rio de Janeiro State University, Rio de Janeiro, Brazil*

FQ-16. **Computational Discovery of Novel Iron-Based Amorphous Magnetocaloric Alloys.** *A.M. Krajewski*[1,2], B. Dong[1], P. Wang[1] and M.A. Willard[1] *1. Department of Materials Science and Engineering, Case Western Reserve Univeristy, Cleveland, OH, United States; 2. Department of Materials Science and Engineering, The Pennsylvania State University, University Park, PA, United States*

FQ-17. **Structural and Magnetic Phase Transition Coupling in Magnetocaloric LaFeCoSi Thin Films.** *D. Read*[1], A. Evans[1], C. Kinane[2], A. Caruana[2], M. Pendharkar[3], S. Chatterjee[3], M. Gao[4] and C. Palmstrøm[3] *1. Physics & Astronomy, Cardiff University, Cardiff, United Kingdom; 2. ISIS Neutron and Muon Source, Didcot, United Kingdom; 3. Electrical & Computer Engineering, University of California Santa Barbara, Santa Barbara, CA, United States; 4. Engineering, Cardiff University, Cardiff, United Kingdom*

FQ-18. **Synthesis and Magnetic Performance of Gadolinium Powder Produced with Rotating Disk Atomization.** *S. Wolf*[2,1], T.M. Riedemann[2], J. Barclay[3], J. Holladay[4], I.E. Anderson[2,1] and J. Cui[2,1] *1. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States; 2. Materials Science and Engineering Division, Ames Laboratory, Ames, IA, United States; 3. Emerald Energy NW, Bothell, WA, United States; 4. Energy and Environment Directorate, Pacific Northwest National Laboratory, Richland, WA, United States*

FQ-19. **Enlarging the magnetocaloric operating window of the Dy_2NiMnO_6 double perovskite.** *M. Balli*[1,2], S. Mansouri[2], P. Fournier[2,5], S. Jandl[2], K. Truong[2], P. de Rango[3], D. Fruchart[3] and A. Lebouc[4] *1. International University of Rabat, Rabat, Morocco; 2. Institut Quantique, University of Sherbrooke, Sherbrooke, QC, Canada; 3. Néel Institute, CNRS, Grenoble, France; 4. G2Elab, Grenoble Institute Of Technology, Grenoble, France; 5. Canadian Institute for Advanced Research, Toronto, ON, Canada*

Session FR
POWER MAGNETICS - MOTORS AND ACTUATORS (Poster Session)

Marco Trapanese, Chair
Palermo University, Palermo, Italy

FR-01. **Influence of Current Harmonics and Rotor Structure on Electromagnetic Losses of High Speed Permanent Magnet Synchronous Motor.** *K. Shin*[1], J. Lee[1], G. Jang[1] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

FR-02. **Magnet Selection in Permanent Magnet Synchronous Traction Motor for Electric Vehicles.** *H. Won*[1], Y. Hong[1] and M. Choi[1] *1. Department of Electrical and Computer Engineering and Center for Advanced Vehicle Technologies, The University of Alabama, Tuscaloosa, AL, United States*

FR-03. **Sensorless PMSM Drive Based on Modified MRAS Parameter Estimation with GWO Algorithm.** J. Cao[1], *X. Sun*[1], G. Lei[2], J. Zhu[3] and Y. Guo[2] *1. Automotive Engineering Research Institute, Jiangsu University, Zhenjiang, China; 2. School of Electrical, Mechanical, and Mechatronic Systems, University of Technology Sydney, Sydney, NSW, Australia; 3. School of Electrical and Information Engineering, University of Sydney, Sydney, NSW, Australia*

FR-04. **Dynamic Characteristic Analysis and Experimental Verification of IPMSM according to Operating Range.** *G. Jang*[1], C. Kim[1], H. Lee[1], H. Shin[1], J. Gu[1] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

FR-05. **A Study of the Number of Axial Segments of Permanent Magnet in SPMSM for Ultra-High Speed Applications.** *H. Lee*[1] *1. Electrical Engineering, Busan Institute of Science & Technology, Busan, The Republic of Korea*

FR-06. **Hybrid membrane computing and evolutionary algorithm for permanent magnet synchronous motor parameter design.** X. Liu[1] and *W. Fu*[2] *1. Chongqing University, Chongqing, China; 2. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

FR-07. **Study on the Process for Improving the Design Precision of Working Bar of Double Cage Induction Motor.** *D. Kim*[1], K. Kim[2], I. Yang[1], S. Song[1], S. Lee[1] and W. Kim[1] *1. Energy IT, Gachon University, Seungnam-si, The Republic of Korea; 2. Mechatronics Engineering, Halla University, Wonju-Si, The Republic of Korea*

FR-08. **Analyzing Position Detection by the Frozen Permeability of a Single-Phase BLDC Motor for Cordless Vacuum Applications.** *H. Hwang*[1], Y. Choo[1], J. Cho[1], C. Kim[1], J. Choi[2], S. Hwang[3] and C. Lee[1] *1. Pusan National University, Busan, The Republic of Korea; 2. Kyungsung University, Busan, The Republic of Korea; 3. Kyungnam University, Changwon, The Republic of Korea*

FR-09. **Analytical and Experimental Verification for Electromagnetic Performances of Permanent Magnet Linear Synchronous Machines with Horizontally Magnetized Permanent Magnets.** *K. Shin*[1], S. Seo[1], J. Woo[1] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

FR-10. **Performance Verification of DR-PMSM for Traction System according to Permanent Magnet Shape.** *C. Park*[1], H. Lee[1], G. Jeong[2], I. Jo[1], J. Lee[1] and T. Kim[3] *1. Korea National University of Transportation, Uiwang-si, The Republic of Korea; 2. Hanyang University, Seoul, The Republic of Korea; 3. University of Michigan-Dearbon, Dearbon, MI, United States*

FR-11. **A Study on Position Control of Electro-mechanical Fin Actuator Using a New Position/Velocity Measurement Method Based Linear Type Hall-effect Sensor of BLDC Motor.** J. Gu[2,1], *C. Kim*[1] and J. Choi[1] *1. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Agency for Defense Development, Daejeion, The Republic of Korea*

THURSDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session FS
EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM (Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

FS-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

FS-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

FS-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

FS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

THURSDAY
AFTERNOON
2:30

RIO PAVILION 8-11

Session FT
PATTERNED FILMS, PERPENDICULAR ANISOTROPY, AND DMI (Poster Session)

Hideto Yanagihara, Chair
University of Tsukuba, Tsukuba, Japan

FT-01. **The Co thickness dependence of the Dzyaloshinskii-Moriya interaction and magnetic anisotropy in Pt/Co/W trilayers.** *Y. Park*[1,2], J. Kim[1], Y. Nam[1], S. Jeon[1], J. Park[1], K. Kim[2], H. Lee[3], B. Min[2] and S. Choe[1] *1. Seoul National University, Seoul, The Republic of Korea; 2. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Pohang University of Science and Technology, Pohang, The Republic of Korea*

FT-02. **The influence of MoC top layer on magnetic and microstructure of FePt(Ag, C) granular film.** *J. Tsai*[1], C. Dai[1], J. Chen[1] and T. Hsu[1] *1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan*

FT-03. **Determination of Dzyaloshinskii-Moriya Interaction in Ultrathin Films and Multilayer Structures Using First Principles.** *A. Pokhrel*[1], M. Weber[2], A. Sapkota[1], A. Rai[1], D.K. Lau[3], V. Sokalski[3], T. Mewes[1] and C.K. Mewes[1] *1. Physics and Astronomy, University of Alabama, Tuscaloosa, AL, United States; 2. Physics and Astronomy, University of Kaiserslautern, Kaiserlautern, Germany; 3. Material Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

FT-04. **Field Cooling Direction Dependent Asymmetric Magnetization Reversal in Perpendicular Exchange Biased CoPt/FeMn Bilayers.** *C. Pan*[1,3], T. Gao[2], T. Harumoto[3], Z. Zhang[1], Y. Nakamura[3] and J. Shi[3] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Department of Applied Physics and Physico-Informatics, Keio University, Yokohama, Japan; 3. School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo, Japan*

FT-05. **A comparative study: Role of Ta and Pt spacer layer on the domain structures in perpendicular exchange-biased CoPt/ spacer layer/FeMn heterostructures.** *C. Pan*[1,2], T. Gao[3], T. Harumoto[2], Z. Zhang[1], Y. Nakamura[2] and J. Shi[2] *1. School of Materials science and Engineering, Tsinghua University, Beijing, China; 2. School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo, Japan; 3. Department of Applied Physics and Physico-Informatics, Keio University, Yokohama, Japan*

FT-06. **XPS Analysis on $ZnFe_2O_4$ Thin Films Growth and its Influence in the Magnetic Behavior.** *J. Gil Monsalve*[1], C. Ostos[1], J. Ramírez[2], E. Ramos[2], J. Uribe[1], J.A. Osorio[1] and O.L. Arnache[1] *1. Universidad de Antioquia, Medellín, Colombia; 2. Universidad de los Andes, Bogotá, Colombia*

FT-07. **Effect of Co on the Magnetic Properties and Magnetic Domain Structure for FePt/ (Fe, FeCo) Nano-composites.** *T. Sato*[1], K. Ohwada[1], F. Nakagawa[1], M. Doi[1] and T. Shima[1] *1. Graduate school of Engineering, Tohoku Gakuin University, Tagajo, Japan*

FT-08. **Toward fabrication of $L1_0$-FeCo thin films assisted by the nitrogen surfactant effect.** *Y. Takahashi*[1,2], T. Miyamachi[2], T. Iimori[2], T. Hattori[2], T. Koitaya[3], K. Yamamoto[3], T. Yokoyama[3], F. Komori[2] and M. Kotsugi[1] *1. Tokyo University of science, Katsushika, Japan; 2. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Institute for Molecular Science, Myodaiji, Japan*

FT-09. **Magnetic properties of CoPt/TiN films tuned by nitrogen.** *H. An*[1], C. Pan[2] and J. Shi[3] *1. College of New Materials and New Energies, Shenzhen Technology University, Shenzhen, China; 2. School of Materials science and Engineering, Tsinghua University, Beijing, China; 3. School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo, Japan*

FT-10. **Magnetic Anisotropy of CoV_2O_4 Thin Films Investigated through Torque Magnetometry.** *C.J. Thompson*[1,2] and C. Beekman[1,3] *1. National High Magnetic Field Lab, Tallahassee, FL, United States; 2. Materials Science and Engineering, Florida State University, Tallahassee, FL, United States; 3. Physics, Florida State University, Tallahassee, FL, United States*

FT-11. **Controlling the angle between magnetic moments of adjacent magnetic layers.** Z. Nunn[1] and *E. Girt*[1] *1. Physics, Simon Fraser University, Burnaby, BC, Canada*

FT-12. **Seed- and buffer layer control in the perpendicular magnetic anisotropy of sputter-deposited $L1_0$ FePd thin films.** *X. Wang*[1,2], D. Zhang[1], J. Wang[1] and D.B. Gopman[2] *1. University of Minnesota, Twin Cities, MN, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States*

FT-13. **Pinning of Ferromagnetic Domains in Interconnected Pentagonal Spin Ice Lattices.** E. Saavedra[1], J. Escrig[1,2] and *J.L. Palma*[3,2] *1. Fisica, Universidad de Santiago, Santiago, Chile; 2. Center for the Development of Nanoscience and Nanotechnology CEDENNA, Santiago, Chile; 3. Basic Science - Eng. School, Universidad Central de Chile, Santiago, Chile*

FT-14. **Control of an Asymmetric Bloch Wall in a Ferromagnetic Rectangular Disk.** *S. Lee*[1], H. Han[1], M. Kang[1], H. Ok[1], M. Im[2] and K. Lee[1] *1. School of Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea; 2. Center for X-ray Optics, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

FT-15. **Gettering templates for nanoscale patterning of magnetic materials.** W. Qiu[1], L.V. Chang[1] and *D. Litvinov*[1] *1. University of Houston, Houston, TX, United States*

FT-16. **Sputtered high perpendicular magnetic anisotropy CoPt thin film on flexible substrate at low temperature.** *A. Sun*[1] and G.C. Hermosa[1] *1. Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan*

THURSDAY AFTERNOON 2:30 — RIO PAVILION 8-11

Session FU
MULTIFERROIC MATERIALS AND PHENOMENA (Poster Session)

Dirk Fuchs, Chair
Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

FU-01. **First-principles Prediction of Switchable Metallic Ferroelectricity in Multiferroic Tunnel Junctions.** L. Jiang[1], W. Chen[1], B. Yang[1], X. Zhang[2], Y. Wang[3] and *X. Han*[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Physics and the Quantum Theory Project, University of Florida, Gainesville, FL, United States; 3. Department of Physics and Astronomy, Vanderbilt University, Nashville, TN, United States*

FU-02. **The Magnetic Properties of Multiferroic $Sr_3Fe_2F_{12}$.** *Y. Yu*[1], W. Mi[1], L. Sun[2], S. Zhou[3], Q. Li[1], J. Du[2] and Q. Xu[1] *1. School of Physics, Southeast University, Nanjing, China; 2. School of Physics, Nanjing University, Nanjing, China; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

FU-03. **Structural and Multiferroic Properties of Fe/Ni Co-doped $Bi_{3.15}Nd_{0.85}Ti_3O_{12}$ Ceramics.** *S. Bhardwaj*[1], R.K. Mahajan[1] and S. Kumar[2] *1. Department of Materials and Metallurgical Engineering, Punjab Engineering College (Deemed to be University), Chandigarh, Chandigarh, India; 2. Department of Applied Sciences, Punjab Engineering College (Deemed to be University), Chandigarh, Chandigarh, India*

FU-04. **Analysis of Phase Segregation Using Rietveld Refinementand and Magnetic Properties of Mn Doped BCT Solid Solutions.** *A. Chawla*[1], M. Singh[1] and A. Singh[1] *1. Physics, Guru Nanak Dev University, Amritsar, India*

FU-05. **Enhancement of multiferroic properties in (1-x)$GaFeO_3$-(x) $CoFe_2O_4$ nanocomposites.** *T. Han*[1], Y. Wang[1] and B. Chen[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

FU-06. **Multiferroic properties of $Bi_{1-x}R_xFeO_3$ polycrystalline films on the glass substrates (R = La, Pr, Nd, Sm and Ho; x = 0.05-0.15).** T. Lin[1], *H.W. Chang*[2], C.R. Wang[3], D. Wei[1] and C. Tu[4] *1. Institute of Manufacturing Technology and Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan; 2. Department of Physics, National Chung Cheng University, ChiaYi, Taiwan; 3. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 4. Department of Physics, Fu Jen Catholic University, Taipei, Taiwan*

FU-07. **A comparative study of spin-glass transition in $Ca(Fe_{1/2}Nb_{1/2})O_3$ and $Ba(Fe_{1/2}Nb_{1/2})O_3$.** *A. Kumar*[1], A. Chaudhary[1] and D. Pandey[1] *1. School of Materials Science and Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi, India*

FU-08. **Strain modulated structure distortion and magnetic properties of orthorhombic $LuMnO_3$ thin films.** H. Cao[1], *A. Zhang*[1], Y. Tang[1], J. Cui[1], L. Yang[2] and X. Wu[2] *1. Hohai University, Nanjing, China; 2. Nanjing University, Nanjing, China*

FU-09. **Electric field induced magnetic anisotropy in [Co/Ni]/ PMN-PT multiferroic heterostructures.** *S. Ishikawa*[1] and T. Taniyama[1] *1. Department of Physics, Nagoya University, Nagoya, Japan*

FU-10. **Magnetization reversal of [Co/Pd] perpendicular magnetic film fabricated onto (Bi,La)(Fe,Co)O_3 multiferroic film by applying electric field to multiferroic / magnetic laminated film.** *S. Yoshimura*[1], N. Oshita[1] and M. Kuppan[1] *1. Graduate School of Engineering Science, Akita University, Akita, Japan*

FU-11. **Studies of Fe^{3+} Doped Barium Zirconate Titanate Nano Films for Energy Storage Applications.** *M.K. Bhattarai*[1], S. Dugu[1], K.K. Mishra[1], A. Instan[1] and R. Katiyar[1] *1. Physics, University of Puerto Rico, Rio Piedras, San Juan, PR, United States*

FU-12. **Voltage Control of Magnetism in $Fe_{75}Al_{25}$/PMN-32 PT Multiferroic Heterostructures.** *V. Sireus*[1], E. Menéndez[1], A. Quintana[1,2], I. Fina[3], B. Casals[3], R. Cichelero[3], M. Kataja[3], M. Stengel[3,4], G. Herranz[3], G. Catalan[4,5], D. Baró[1], S. Suriñach[1] and J. Sort[1,4] *1. Physics, Universitat Autonoma de Barcelona, Cerdanyola del Valles, Spain; 2. Department of Physics, Georgetown University, Washington, WA, United States; 3. Institut de Ciencia de Materials de Barcelona,ICMAB-CSIC, Cerdanyola del Valles, Spain; 4. Institucio Catalana de Recerca i Estudis Avancats, ICREA, Barcelona, Spain; 5. Catalan Institute of Nanoscience and Nanotechnology, ICN2, CSIC and The Barcelona Institute of Science and Technology, Cerdanyola del Valles, Spain*

FU-13. **Room Temperature Multiferroicity in Fe and Mn-enriched Gallium Ferrite Thin Films.** *S. Dugu*[1], S. Kumari[2], M.K. Bhattarai[1], A. Instan[1], D.K. Pradhan[3] and R. Katiyar[1] *1. Department of Physics, University of Puerto-Rico, San Juan, PR, United States; 2. Department of Physics, Pennsylvania State University, University Park, PA, United States; 3. Geophysical Laboratory, Carnegie Institute for Science, Washington, DC, United States*

FU-14. **Room temperature lead-iron-tungsten/lead-zirconate-titanate nanoscale multiferroic thin films.** *K.K. Mishra*[1], M.K. Bhattarai[1] and R. Katiyar[1] *1. physics, University of Puerto Rico, San Juan, PR, United States*

FU-15. **Multiferroic behavior in double-perovskite Yb_2CoMnO_6.** *J. Kim*[1], Y. Choi[1] and N. Lee[1] *1. Physics, Yonsei university, Seoul, The Republic of Korea*

FU-16. **Experimental and Computational Studies of Changes in Phonon Frequencies with Fe Concentration in $CuAl_{1-x}Fe_xO_2$ Delafossites.** *M. Aziziha*[1], S. Akbarshahi[1], S. Ghosh[2], P. Pramanik[2], G. Panapitiya[1], J.P. Lewis[1], S. Thota[2], A. Romero[1], M.S. Seehra[1] and M.B. Johnson[1] *1. Physics and Astronomy, West Virginia University, Morgantown, WV, United States; 2. Physics, Indian Institute of Technology, Guwahati, India*

FU-17. **Large Porosity-Dependent Magnetoelectric Coupling in Mesoporous BFO-in-CFO Composites.** *C.T. Karaba*[1], J. Chang[2], S.K. Patel[1], A. Acosta[2], K. Fitzell[2], J.P. Chang[2] and S. Tolbert[1] *1. Chemistry and Biochemistry, UCLA, Los Angeles, CA, United States; 2. Chemical Engineering, UCLA, Los Angeles, CA, United States*

FU-18. **Theory of electro active magnetic excitation in frustrated Heisenberg models.** *S. Miyahara*[1] *1. Fukuoka University, Fukuoka, Japan*

FU-19. **Non collinear magnetic textures at strained interfaces of $La_{0.67}Sr_{0.33}MnO_3$ on $LaAlO_3$.** *A. Burema*[1], J. van Rijn[1] and T. Banerjee[1] *1. University of Groningen, Groningen, Netherlands*

FU-20. **Electrically detected magnetic resonances in CMR oxides revealed by broadband magnetotransport.** *R. Mahendiran*[1] *1. Physics Department, National University of Singapore, Singapore, Singapore*

Session FV

SPIN CURRENTS AND RESULTING SPIN TORQUES II (Poster Session)

Takashi Kimura, Chair
Kyushu University, Fukuoka, Japan

FV-01. **Magnon Valves Based on YIG/NiO/YIG All-Insulating Magnon Junctions.** C. Guo[1], C. Wan[1] and *X. Han*[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

FV-02. **Spin Transport in Disordered Semiconductors Probed via the Spin Hall Effect.** *S.M. Bleser*[1], D.J. Wesenberg[1], R.K. Bennet[1], M. Roos[1] and B.L. Zink[1] *1. Physics & Astronomy, University of Denver, Denver, CO, United States*

FV-03. **Ferromagnetic Resonance and Inverse Spin Hall Effect in Permalloy/Pt bilayers.** S. Martin-Rio[1], A. Pomar[1], L. Balcells[1], C. Frontera[1] and *B. Martinez*[1] *1. Magnetic Materials and Complex Oxides, ICMAB-CSIC, Bellaterra, Spain*

FV-04. **Probing Phase Transition and Anisotropy Using the Spin Hall Magnetoresistance in EuO_{1-x} and La_2NiMnO_6.** *K. Mallick*[1], A.A. Wagh[1], A. Ionescu[2], C.H. Barnes[2] and A.P. Kumar[1] *1. Physics, Indian Institute of Science, Bangalore, India; 2. Physics, University of Cambridge, Cambridge, United Kingdom*

FV-05. **Optimized 3d/5d heavy metals interfaces: Spin-Hall effect and THz emission.** *H. Dang*[1], J. Hawecker[3], Q. Barbedienne[1], J. George[1], S. Collin[1], P. Bortolotti[2], J. Tignon[3], S. Dhillon[3] and H. Jaffres[1] *1. Unité Mixte de Physique CNRS-Thales, Palaiseau, France; 2. Thales Research and Technology, Palaiseau, France; 3. LPA, ENS, Paris, France*

FV-06. **Direct optical detection of charge to spin conversion in heavy metals using modulation.** *O. Van't Erve*[1], C.H. Li[1] and B. Jonker[1] *1. Naval Research Laboratorium, Washington, DC, United States*

FV-07. **Spin-transport properties of $IrMn_3$.** J. Holanda[1], H. Saglam[1,2], V. Karakas[3], *M. Vogel*[1], J. Gibbons[1], S. Siddiqui[1], Z. Zhang[1,5], Y. Li[4], R. Divan[4], B. Fisher[4], Y. Liu[4], V. Novosad[1], O. Ozatay[3], J. Pearson[1] and A. Hoffmann[1] *1. MDS, Argonne National Laboratory, Lemont, IL, United States; 2. Illinois Institute of Technology, Chicago, IL, United States; 3. Physics Department, Bogazici University, Istanul, Turkey; 4. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States; 5. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

FV-08. **Two spin-channel model for spin Hall effect in 3D micromagnetic simulations.** *X. Wang*[1], A. Goncharov[2], P. Van Der Heijden[2] and V. Lomakin[1] *1. Electrical Computer Engineering, University of California, San Diego, La Jolla, CA, United States; 2. Western Digital, San Jose, CA, United States*

FV-09. **Spin currents in all-oxide heterostructures.** S. T S[1], S. Kanikrishnan[1] and *M. Rao*[1] *1. Physics, IIT Madras, Chennai, India*

FV-10. **Cross-shaped nanostructures for the study of spin to charge inter-conversion using spinorbit coupling in non-magnetic materials.** V. Pham[1], *S. Ghosh*[1], L. Vila[1], G. Zahnd[2], M. Cosset-Cheneau[1], P. Noel[1], A. Brenac[1], A. Marty[1] and J. Attané[1] *1. University of Grenoble Alpes, CEA, CNRS, INP-G, IRIG-Spintec, Grenoble, France; 2. Hprobe, 4 Rue Irène Joliot-Curie, Eybens, France*

FV-11. **Ferromagnet Structural Tuning of Interfacial Symmetry Breaking and Spin Hall Angle in Ferromagnet/Heavy Metal Bilayers.** *M. Tang*[1], R. Ramaswamy[2], H. Yang[2], H. Yang[1], W. Fan[1], Z. Shi[1], S. Zhou[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China; 2. Department of Electrical and Computer Engineering, National University of Singapore, Sigapore, Singapore*

FV-12. **Spin Hall Angle and Spin Diffusion Length of Permalloy.** *Y. Huang*[1,2], Y. Weng[1,3], C. Liang[2,3] and J.G. Lin[1,4] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan; 3. Graduate Institute of Applied Physics, National Taiwan University, Taipei, Taiwan; 4. Center for Atomic Initials for New Materials, National Taiwan University, Taipei, Taiwan*

FV-13. **Composition dependent spintronic THz emission of rare earth transition metal alloys combined with Pt.** *M. Fix*[1], R. Schneider[2], R. Heming[2], S. Michaelis de Vasconcellos[2], R. Bratschitsch[2] and M. Albrecht[1] *1. Institute of Physics, University of Augsburg, Augsburg, Germany; 2. Institute of Physics and Center for Nanotechnology, University of Münster, Münster, Germany*

FV-14. **Extrinsic Spin Hall Effect in Inhomogeneous Systems.** *T. Funato*[1] and H. Kohno[1] *1. Science, Nagoya University, Nagoya, Japan*

FV-15. **Spin pumping and large field-like torque at room temperature in sputtered amorphous W_xTe_{2-x} film.** *Y. Fan*[1], H. Li[3], D. Mahendra[2], J. Held[3], A. Mkhoyan[3] and J. Wang[1] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Physics, University of Minnesota, Minneapolis, MN, United States; 3. Materials Science & Engineering, University of Minnesota, Minneapolis, MN, United States*

Session FW
SPIN MATERIALS AND DEVICES (Poster Session)
Chi Zhang, Chair
Cornell University, Ithaca, NY, United States

FW-01. **Nonlinear Dynamics of Two Spin-Transfer-Torque Nano-Oscillators Coupled via Magnetostatic Fields.** *D. Mancilla*[1], A.O. Leon[2], R. Arias[3], S. Allende[1] and D. Altbir[1] *1. Universidad de Santiago de Chile, Santiago, Chile; 2. Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile; 3. Universidad de Chile, Santiago, Chile*

FW-02. **Investigation of Electrical Spin Injection into GaAs Using $Co_2Fe_{0.4}Mn_{0.6}Si$ Heusler Alloy.** *J. Wang*[1], T. Koike[1], M. Oogane[1], M. Tsunoda[2] and Y. Ando[1] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, Tohoku University, Sendai, Japan*

FW-03. **Room-temperature spin-dependent transport through Sb-doped Ge in vertical spin-valve devices.** *T. Shiihara*[1], M. Yamada[1], M. Honda[1], S. Yamada[1,2] and K. Hamaya[1,2] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

FW-04. **Experimental demonstration of spin xor logical operation in Si spin device.** *R. Ishihara*[1], S. Lee[1], Y. Ando[1], R. Ohshima[1], Y. Suzuki[2], H. Koike[3] and M. Shiraishi[1] *1. Department of Electronic Science and Engineering, Kyoto Univ., Kyoto, Japan; 2. Graduate School of Engineering Science, Osaka Univ., Toyonaka, Japan; 3. Advance Products Development Center, TDK, Ichikawa, Japan*

FW-05. **Non linear spin dynamics induced in magnetically coupled CoFeB/Pt/NiFe trilayer.** *M. Yafuso*[1] and T. Kimura[1,2] *1. Department of Physics, Kyusyu University, Fukuoka, Japan; 2. Research Center for Quantum Nano-Spin SCiences, Fukuoka, Japan*

FW-06. **SMR based spin Hall measurement technique for in-plane magnetization.** D. Kim[1], *J. Kim*[2], C. Yun[2], S. Joo[1], B. Lee[3] and K. Rhie[2] *1. Center for Nanometrology, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 2. Department of Display and Semiconductor Physics, Korea University, Sejong, The Republic of Korea; 3. Department of Physics, Inha University, Incheon, The Republic of Korea*

FW-07. **Multi-State Magnetic Tunnel Junction with Inhomogeneous Magnetic Anisotropy for Neuromorphic Computing.** *Z. Zhang*[1,2], G. Xu[1], Y. Zhang[1], K. Zhang[1], J. Nan[1], Z. Zheng[1], J. Wang[1], G. Wang[1], Y. Zhang[1,2] and W. Zhao[1] *1. Fert Beijing Research Institute, BDBC, School of Microelectronics, Beihang University, Beijing, China; 2. School of Electronics and Information Engineering, Beihang University, Beijing, China*

FW-08. **Field-Free Control of Exchange Bias by Spin Polarized Currents.** *H. Kim*[1], S. Je[2], D. Jung[3], K. Lee[3] and J. Hong[1] *1. Department of Emerging Materials Science, DGIST, Daegu, The Republic of Korea; 2. Center for X-ray Optics, LBNL, Berkeley, CA, United States; 3. School of Materials Science and Engineering, UNIST, Ulsan, The Republic of Korea*

FW-09. **Shape Anisotropy Effects on Spin-Torque Oscillators.** X. Chao[1], M. Jamali[1], *B.R. Zink*[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

FRIDAY MORNING 8:30 — RIO PAVILION 2

Session GA
MAGNETIC CONTROL AND SENSING IN BIOMEDICINE

Gary Zabow, Chair
National Institute of Standards and Technology (NIST), Boulder, CO, United States

8:30

GA-01. **Biomedical Applications of Magnetic Nanoparticles: Remote Control of Cells.** ***(Invited)*** *J. Dobson*[1] *1. Biomedical Engineering, University of Florida, Gainesville, FL, United States*

9:06

GA-02. **GMR Biosensing – A Versatile Biosensor Platform for Noninvasive Cancer Diagnostics.** ***(Invited)*** *S. Wang*[1,2] *1. Materials Science and Engineering, Stanford University, Stanford, CA, United States; 2. Electrical Engineering, Stanford University, Stanford, CA, United States*

9:42

GA-03. **Magnetic Particle Imaging and Guided Magnetic Hyperthermia.** ***(Invited)*** *P. Goodwill*[1], D. Hensley[1], Z. Tay[2], E. Yu[1], B. Kettlewell[1], R. Orendorff[1], M. Weber[1], K. Fields[1] and S. Conolly[2] *1. Magnetic Insight, Inc., Alameda, CA, United States; 2. Bioengineering, University of California, Berkeley, Berkeley, CA, United States*

10:18

GA-04. **Wireless Stress Sensor Based on Magnetoelastic Microwires for Biomedical Applications.** ***(Invited)*** *P. Marin*[1], D. Archilla[1], E. Navarro[1], J. López[1] and M. Vélez[2] *1. Instituto de Magnetismo Aplicado, Universidad Complutense de Madrid, Madrid, Spain; 2. Instituto de Catálisis, Consejo Superior de Investigaciones Científicas, Madrid, Spain*

10:54

GA-05. **Rotating magnetic fields in particle manipulation: Applications in attacking microbes, transport through tissues, and drug delivery.** ***(Invited)*** *L. Mair*[1] and I. Weinberg[1] *1. Weinberg Medical Physics, Inc, North Bethesda, MD, United States*

FRIDAY MORNING 8:30 | RIO PAVILION 6

Session GB

GENERATING AND ENHANCING SPIN CURRENTS

Ken-ichi Uchida, Chair
National Institute for Materials Science, Tsukuba, Japan

8:30

GB-01. **Spin Coherence Length in Ferrimagnetic CoGd.** *Y. Lim*[1], B. Khodadadi[1], J. Li[2], D. Viehland[2] and S. Emori[1] *1. Physics, Virginia Tech, Blacksburg, VA, United States; 2. Materials Science and Engineering, Virginia Tech, Blacksburg, VA, United States*

8:42

GB-02. **Coherent AC spin current transmission through antiferromagnetic CoO probed by X-ray ferromagnetic resonance.** Q. Li[1], M. Yang[1], *C. Klewe*[2], P. Shafer[2], A.T. N'Diaye[2], D. Hou[3], T. Wang[1], N. Gao[1], E. Saitoh[3], C. Hwang[4], R. Hicken[5], J. Li[6], E. Arenholz[2,7] and Z.Q. Qiu[1] *1. Department of Physics, University of California, Berkeley, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 4. Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 5. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 6. International Center for Quantum Materials, Peking University, Beijing, China; 7. Cornell High Energy Synchrotron Source, Cornell University, Ithaca, NY, United States*

8:54

GB-03. **Spin Polarization Characterization by Spin Hall Magnetoresistance in Ferrimagnetic Pt/$Co_{1-x}Tb_x$ bilayers.** Y. Xu[1,2], J. Zhao[1,2] and *D. Wei*[1,2] *1. State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China; 2. Center of Materials Science and Optoelectronics Engineering, University of Academy of Science, Beijing, China*

9:06

GB-04. The ferroelectric Rashba semiconductor GeTe for spin-orbit logic. ***(Invited)*** S. Varotto[1], L. Nessi[1], S. Cecchi[2], P. Noel[3], S. Petrò[1], I. Vobornik[4], G. Panaccione[4], R.J. Cava[5], R. Calarco[2], M. Cantoni[1], L. Vila[3], R. Bertacco[1] and *C. Rinaldi*[1] *1. Physics, Politecnico di Milano, Milano, Italy; 2. Epitaxy, Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; 3. Univ. Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 4. Istituto Officina dei Materiali CNR Laboratorio TASC, Basovizza, Italy; 5. Department of Chemistry, Princeton University, Princeton, NJ, United States*

9:42

GB-05. Effects of a Molecular C_{60} Interface on the Spin-dependent scattering of YIG/Pt. *S. Alotibi*[1], M. Ali[1], B. Hickey[1] and O. Céspedes[1] *1. University of Leeds, Leeds, United Kingdom*

9:54

GB-06. Large Anomalous Hall Effect in Amorphous $Fe_{1-y}Co_ySi$ Thin Films. *J. Karel*[1,2], D. Bouma[3,4], S. Bennett[1], A. Nguyen[1] and F. Hellman[3,4] *1. Materials Science and Engineering, Monash University, Melbourne, VIC, Australia; 2. ARC Centre of Excellence in Future Low-Energy Electronics Technologies, Monash University, Melbourne, VIC, Australia; 3. Materials Science Division, Lawrence Berkeley National Lab, Berkeley, CA, United States; 4. Physics Department, University of California Berkeley, Berkeley, CA, United States*

10:06

GB-07. A first-principles study on the spin anomalous Hall effect of $L1_0$-type alloys. *Y. Miura*[1], K. Nawa[1] and K. Masuda[1] *1. Research Center for Magnetic and Spintronic Materials(CMSM), National Institute for Materials Science(NIMS), Tsukuba, Japan*

10:18

GB-08. Nonlinear planar Hall effect. P. He[1], *S. Zhang*[2], D. Zhu[1], S. Shi[1], O. Heinonen[2], G. Vignale[3] and H. Yang[1] *1. Department of Electrical and Computer Engineering, and NUSNNI, National University of Singapore, Singapore, Singapore; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States*

10:30

GB-09. Interface Magnetic Property Impact on Spin Injection and Pumping in YIG/Ultrathin Magnetic layer/Pt Systems. *H. Yuasa*[1], T. Niimura[1], Y. Kurokawa[1], R. Weber[2] and A. Berger[2] *1. Kyushu University, Fukuoka, Japan; 2. nanoGUNE, San Sebastian, Spain*

10:42

GB-10. **Spin transport in a magnetic insulator with charge current induced zero effective damping.** *M. Althammer*[1,2], T. Wimmer[1,2], L. Liensberger[1,2], S. Geprägs[1], M. Weiler[1,2], R. Gross[1,2] and H. Huebl[1,2] *1. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany; 2. Physik-Department, Technische Universität München, Garching, Germany*

10:54

GB-11. **Mutual spin-pumping in the antiferromagnetically exchange coupled Py/Ru/Py trilayers - dependence on the external magnetic field.** *S. Sorokin*[1,2], R. Gallardo[3], K. Lenz[1], C. Fowley[1], G. Atcheson[4], J. Fassbender[1], J. Lindner[1] and A.M. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute for Physics of Solids, Technische Universität Dresden, Dresden, Germany; 3. Universidad Tecnica Federico Santa Maria, Valparaíso, Chile; 4. School of Physics, Trinity College Dublin, Dublin, Ireland*

11:06

GB-12. **Effect of Interface Roughness Spin Scattering on Spin-current Transport in YIG/NiO/Pt Heterostructures.** *L. Jin*[1], H. Zhang[1], Z. Zhong[1] and K. Jia[1] *1. University of Electronic Science and Technology of China, Chengdu, China*

11:18

GB-13. **Anisotropic Enhancement of Spin current in Epitaxial Co based Co/Pt/Co trilayer.** *J. Ryu*[1], R. Thompson[2], J. Park[1], M. Kohda[2,3], J. Yuk[1], J. Nitta[2,3] and B. Park[1] *1. Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 2. Materials Science, Tohoku University, Sendai, Japan; 3. Spintronics Research Network, Tohoku University, Sendai, Japan*

FRIDAY
MORNING
8:30

BRASILIA 2

Session GC
MRAM AND RELATED DEVICES

Damien Querlioz, Chair
Centre de Nanosciences et de Nanotechnologies, Palaiseau, France

8:30

GC-01. **High Speed and Low Energy Spin-Transfer Switching of Perpendicular Magnetic Tunnel Junction Nanopillars at Low Temperature.** *L. Rehm*[1], G. Wolf[2], B. Kardasz[2], M. Pinarbasi[2] and A.D. Kent[1] *1. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States; 2. Spin Memory Inc., Fremont, CA, United States*

8:42

GC-02. Low Tc, low Ms CoFeBX alloy free layers for perpendicular STT-MRAM. *S. Couet*[1], S. Rao[1], J. Swerts[1], S. Van Beek[1], K. Sankaran[1], R. Carpenter[1], S. Mertens[1], W. Kim[1] and G.S. Kar[1] *1. IMEC, Leuven, Belgium*

8:54

GC-03. Superlattice MTJ for Energy Efficient STT-MRAM. A. Sharma[1], A. Tulapurkar[1] and *B. Muralidharan*[1] *1. Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India*

9:06

GC-04. Perpendicular Magnetic Tunnel Junctions with Low M_s Free Layer for Reduction of STT Switching Current. *K. Nakamura*[1], H. Maehara[2,3], H. Tomita[1,3], K. Nagasaka[1,3], S. Bosu[1,3], Y. Tanaka[1], A. Gomi[1] and N. Watanabe[1] *1. Tokyo Electron Technology Solutions Limited, Nirasaki, Japan; 2. Tokyo Electron Limited, Akasaka, Japan; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

9:18

GC-05. How to tilt magnetic moments in STT-MRAM devices. *Z. Nunn*[1] and E. Girt[1] *1. Simon Fraser University, Burnaby, BC, Canada*

9:30

GC-06. Ultrathin Perpendicular Free Layers for Lowering the Switching Current in STT-MRAM. *T. Santos*[1], N. Smith[1], G. Mihajlovic[1], J. Li[1], M. Carey[1], J. Katine[1] and B. Terris[1] *1. NVM Research, Western Digital, San Jose, CA, United States*

9:42

GC-07. Spin-transfer torque MRAM with reliable 5 ns writing. *(Invited)* *G. Hu*[1], J. Nowak[1], M. Gottwald[1], J. Sun[1], D. Houssameddine[1], J. Bak[1], S. Brown[1], P. Hashemi[1], Q. He[1], J. Kim[1], C. Kothandaraman[1], G. Lauer[1], H. Lee[1], T. Suwannasiri[1], P. Trouilloud[1] and D. Worledge[1] *1. IBM T J Watson Research Center, Yorktown Heights, NY, United States*

10:18

GC-08. Reference layer engineering for back-hopping control in scaled perpendicular magnetic tunnel junctions (MTJs). *S. Rao*[1], S. Couet[1], R. Carpenter[1], W. Kim[1], K. Garello[1] and G.S. Kar[1] *1. IMEC, Leuven, Belgium*

10:30

GC-09. Asymmetric Reliability Performance of Mg-inserted MTJ. *K. Chen*[1], C. Cheng[1], J. Wei[2], Y. Wu[3] and Y. Tseng[1] *1. National Chiao Tung University, Hsinchu, Taiwan; 2. Industrial Technology Research Institute, Hsinchu, Taiwan; 3. Taiwan Semiconductor Research Institute, Hsinchu, Taiwan*

10:42

GC-10. **Electric-Field Control of Interlayer Exchange Coupling for Efficient Magnetization Switching.** *S. Sayed*[1], N. Roschewsky[2], C. Hsu[1] and S. Salahuddin[1] *1. EECS, University of California, Berkeley, CA, United States; 2. Physics, University of California, Berkeley, CA, United States*

10:54

GC-11. **Integration of Tb/Co Multilayers within Ultrafast Optically Switchable p-MTJ.** *L. Avilés Félix*[1], C. Davies[2,3], G. Li[3], L. Álvaro Gómez[1], M. Rubio-Roy[1], S. Aufftet[1], A. Kirilyuk[2,3], T. Rasing[3], L. Buda-Prejbeanu[1], B. Dieny[1], R. Sousa[1] and I. Prejbeanu[1] *1. Université Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-SPINTEC, Grenoble, France; 2. FELIX Laboratory, Radboud University, Nijmegen, Netherlands; 3. Radboud University Nijmegen, Institute for Molecules and Materials, Nijmegen, Netherlands*

11:06

GC-12. **Reduced Exchange Interactions in Perpendicular Magnetic Tunnel Junction Free Layers with Insertion Layers.** *J. Beik Mohammadi*[1], Y. Chen[1], B. Kardasz[2], G. Wolf[2], M. Pinarbasi[2] and A.D. Kent[1] *1. Center for Quantum Phenomena, Physics, New York University, New York, NY, United States; 2. Spin Memory Inc, Fremont, CA, United States*

11:18

GC-13. **Resonant surface acoustic wave (r-SAW) assisted spin-transfer-torque switching of a perpendicular magnetic tunnel junction (p-MTJ).** *A.R. Roe*[1], D. Bhattacharya[1] and J. Atulasimha[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*

FRIDAY MORNING 8:30 — BRASILIA 1

Session GD
SPIN ORBIT COUPLING AND TOPOLOGY
Rolando Valdes Aguilar, Chair
The Ohio State University, Columbus, OH, United States

8:30

GD-01. **A Family of Intrinsic Magnetic Topological Insulators $(MnBi_2Te_4)(Bi_2Te_3)_n$, n = 0, 1, 2. *(Invited)*** *A. Isaeva*[1,2], A. Zeugner[1], A. Wolter[2], J. Facio[2] and H. Bentmann[3] *1. Technische Universität Dresden, Dresden, Germany; 2. Leibniz IFW Dresden, Dresden, Germany; 3. University of Würzburg, Würzburg, Germany*

9:06

GD-02. **Incommensurate Magnetic Order from 1-D Correlated Topological Bulk States.** *J.L. Lussier*[1] *1. Physics, Kent State University, Kent, OH, United States*

9:18

GD-03. **RIXS With In-Situ Magnetic Field: Towards Understanding The Complex Magnetism Of Li_2IrO_3.** *A. Ruiz*[1], A. Allen[1], V. Nagarajan[2], N. Breznay[3], J. Analytis[2] and A. Frano[1] *1. University of California San Diego, La Jolla, CA, United States; 2. University of California, Berkeley, CA, United States; 3. Harvey Mudd College, Claremont, CA, United States*

9:30

GD-04. **Topological Classification of Magnetic Plateaux and Haldane Phases in Quantum Spin Chains.** *I. Maruyama*[1] and S. Miyahara[2] *1. Department of Information and Systems Engineering, Fukuoka Institute of Technology, Fukuoka, Japan; 2. Department of Applied Physics, Fukuoka University, Fukuoka, Japan*

9:42

GD-05. **Magnon excitations in the three dimensional Kitaev spin liquid candidate β-Li_2IrO_3.** *Y. Wang*[1], A. Ruiz[2], J. Analytis[2] and K. Burch[1] *1. Physics, Boston College, Boston, MA, United States; 2. Physics, UC Berkeley, Berkeley, CA, United States*

9:54

GD-06. **Magneto-Raman study of the proximate quantum spin liquid α-$RuCl_3$.** *T.T. Mai*[1], A. McCreary[1], J.R. Simpson[2,1], P. Lampen-Kelley[5], N. Butch[7,8], S. Nagler[4], D. Mandrus[5,6], R. Valdes Aguilar[3] and A.R. Hight Walker[1] *1. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Physics, Astronomy, and Geosciences, Towson University, Towson, MD, United States; 3. Physics, Ohio State University, Columbus, OH, United States; 4. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 6. Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States; 7. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 8. Physics, University of Maryland, College Park, MD, United States*

10:06

GD-07. **Impact of spin-canting in the electrodynamic response of Dirac material $Ca_{1-x}Na_xMnBi_2$.** *M. Chinotti*[1] *1. Physics, ETHZ, Zurich, Switzerland*

10:18

GD-08. **Interlayer Dzyaloshinskii-Moriya Interactions.** ***(Invited)*** *E.Y. Vedmedenko*[1] *1. Physics, University of Hamburg, Hamburg, Germany*

10:54

GD-09. **Majorana States in Atomic-Scale Magnet-Superconductor Hybrid Systems.** H. Kim[1], A. Palacio-Morales[1] and *R. Wiesendanger*[1] *1. Dept. of Physics, University of Hamburg, Hamburg, Germany*

11:06

GD-10. **Spin-orbit coupling-driven superconducting spintronics.** *N. Banerjee*[1], M. Blamire[2], J. Linder[3] and A.T. N'Diaye[4] *1. Physics, Loughborough University, Loughborough, United Kingdom; 2. University of Cambridge, Cambridge, United Kingdom; 3. Physics, Norwegian University of Science and Technology, Trondheim, Norway; 4. Lawrence Berkeley National Laboratories, Berkeley, CA, United States*

11:18

GD-11. **Superchiral spin waves.** *F. Torres*[1,2] *1. Departamento de Física, Universidad de Chile, Santiago, Chile; 2. Centro para el desarrollo de la Nanociencia y Nanotecnología Cedenna, Santiago, Chile*

FRIDAY MORNING 8:30 | BRASILIA 3

Session GE
SPIN WAVES: PROPAGATION & DETECTION
Satoshi Iihama, Chair
Tohoku University, Sendai, Japan

8:30

GE-01. **Generation of Propagating Spin Waves by YIG-based Spin-Orbit Torque Oscillators.** *V.E. Demidov*[1], M. Evelt[1], L. Soumah[2], S.O. Demokritov[1], V. Cros[2], J. Ben-Youssef[3], G. de Loubens[4], O. Klein[5], P. Bortolotti[2] and A. Anane[2] *1. University of Muenster, Muenster, Germany; 2. Université Paris-Sud, Palaiseau, France; 3. Université de Bretagne Occidentale, Brest, France; 4. CEA-Saclay, Gif-sur-Yvette, France; 5. Université Grenoble Alpes, Grenoble, France*

8:42

GE-02. **Anisotropic transport of spontaneously accumulated magneto-elastic bosons in Yttrium Iron Garnet films.** *P. Frey*[1], D.A. Bozhko[1,2], V. Vasyuchka[1], A.A. Serga[1] and B. Hillebrands[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. School of Engineering, University of Glasgow, Glasgow, United Kingdom*

8:54

GE-03. **Spin Wave Propagation in Individual Nano-Sized Yttrium Iron Garnet Magnonic Conduits.** B. Heinz[1], T. Brächer[1], M. Schneider[1], Q. Wang[1], P. Pirro[1], B. Lägel[1], D. Breitbach[1], A.M. Friedel[1], C. Dubs[3] and *A. Chumak*[2,1] *1. University of Kaiserslautern, Kaiserslautern, Germany; 2. Nanomagnetism and Magnonics, University of Vienna, Vienna, Austria; 3. INNOVENT e.V. Technologieentwicklung, Jena, Germany*

9:06

GE-04. **Reconfigurable Magnonic Crystals Based on YIG thin films and Co/Pt Bar-Magnets with Perpendicular Magnetic Anisotropy.** *M. Kiechle*[1], A. Papp[1,2], M. Golibrzuch[1], S. Mendisch[1], V. Ahrens[1] and M. Becherer[1] *1. Department of Electrical and Computer Engineering, Technical University of Munich, Munich, Germany; 2. Pazmany Peter Catholic University, Budapest, Hungary*

9:18

GE-05. **Withdrawn**

9:30

GE-06. **Experimental Demonstration of a Spin-Wave-Based Spectrum Analyzer Using FIB Patterning of YIG.** A. Papp[1,2], *M. Kiechle*[1], S. Mendisch[1], V. Ahrens[1], G. Csaba[2], W. Porod[3] and M. Becherer[1] *1. TU Munich, München, Germany; 2. Pazmany Peter Catholic University, Budapest, Hungary; 3. University of Notre Dame, Notre Dame, IN, United States*

9:42

GE-07. **Brillouin Light Scattering (BLS) Measurements of Spin Waves Excited by Surface Acoustic Waves (SAWs).** *K.E. Nygren*[1], J.D. Schneider[2], Q. Wang[2], D. Labanowski[3], S. Salahuddin[3], G. Carman[2] and K. Buchanan[1] *1. Department of Physics, Colorado State University, Fort Collins, CO, United States; 2. Department of Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, CA, United States; 3. Deparment of Electrical Engineering and Computer Science, University of California Berkeley, Berkeley, CA, United States*

9:54

GE-08. **Real Space Observation of Scattering on Magnonic Space-Time Crystals.** *N. Träger*[3], P. Gruszecki[1], F. Lisiecki[2], J. Förster[3], F. Gross[3], M. Weigand[3,4], P. Kuswik[2,5], J. Dubowik[2], G. Schütz[3], M. Krawczyk[1] and J. Gräfe[3] *1. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 2. Institute of Molecular Physics, Polish Academy of Science, Poznan, Poland; 3. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 4. Helmholtz-Zentrum, Berlin, Germany; 5. Centre for Advanced Technology, Adam Mickiewicz University, Poznan, Poland*

10:06

GE-09. **Direct observation of short-wave magnons emitted from periodic and aperiodic grating couplers.** *K. Baumgaertl*[1], J. Gräfe[2], P. Che[1], A. Mucchietto[1], J. Förster[2], N. Träger[2], M. Bechtel[2], M. Weigand[2,3], G. Schütz[2] and D. Grundler[1,4] *1. Laboratory of Nanoscale Magnetic Materials and Magnonics, Institute of Materials, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2. Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 3. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 4. Institute of Microengineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*

10:18

GE-10. **Wavelength-Selective Optical Detection of Spin Waves Beyond the Diffraction Limit.** *M. Peeters*[1], J. Lucassen[1], C. Schippers[1], R. Duine[1,2], H. Swagten[1], B. Koopmans[1] and R. Lavrijsen[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Institute for Theoretical Physics, Utrecht University, Utrecht, Netherlands*

10:30

GE-11. **Exploration of modified density of states and multi-directional emission of spin-waves in artificial magnetic quasicrystals.** *S. Watanabe*[1], V.S. Bhat[1], K. Baumgaertl[1] and D. Grundler[1,2] *1. Institute of Materials, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland; 2. Institute of Microengineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*

10:42

GE-12. **Magnons in a Quasicrystal: Propagation, Extinction and Localization of Spin Waves in Fibonacci Structures.** F. Lisiecki[3], J. Rychly[2], P. Kuswik[2], H. Glowinski[3], J. Klos[2], F. Gross[1], N. Träger[1], I. Bykova[1], M. Weigand[5], M. Zelent[2], E. Goering[1], G. Schütz[1], G. Gubbiotti[4], M. Krawczyk[2], F. Stobiecki[3], J. Dubowik[3] and *J. Gräfe*[1] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Adam Mickiewicz University, Poznan, Poland; 3. Institute of Physics, Polish Academy of Sciences, Poznan, Poland; 4. Istituto Officina dei Materiali del Consiglio Nazionale delle Ricerche, Perugia, Italy; 5. Helmholtz-Zentrum Berlin, Berlin, Germany*

10:54

GE-13. **Long range coupling of magnetic bilayers by coherent phonons.** *K. An*[1], A. Litvinenko[1], A. Fuad[1], V. Naletov[1,2], L. Vila[1], U. Ebels[1], G. de Loubens[3], H. Hurdequint[3], N. Beaulieu[4], J. Ben-Youssef[4], N. Vukadinovic[5], G. Bauer[6], A.N. Slavin[7], V. Tiberkevich[7] and O. Klein[1] *1. Univ. Grenoble Alpes, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 2. Institute of Physics, Kazan Federal University, Kazan, Russian Federation; 3. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, Gif-sur-Yvette, France; 4. LabSTICC, CNRS, Université de Bretagne Occidentale, Brest, France; 5. Dassault Aviation, Saint-Cloud, France; 6. Institute for Materials Research and WPI-AIMR and CSRN, Tohoku University, Sendai, Japan; 7. Department of Physics, Oakland University, Rochester, MI, United States*

11:06

GE-14. **Coupling between acoustic and optic magnons in synthetic antiferromagnets.** *Y. Shiota*[1], T. Taniguchi[2], M. Ishibashi[1], T. Moriyama[1] and T. Ono[1] *1. Institute for Chemical Research, Kyoto University, Uji, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

11:18

GE-15. **Nonlinear magnon scattering mechanism for microwave pumping in magnetic films.** *T. Qu*[1,2], A. Venugopal[1], J.M. Etheridge[2], W. Peria[2], P.A. Crowell[2] and R. Victora[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States*

FRIDAY
MORNING
8:30

RIO PAVILION 1

Session GF
SKYRMIONS IN B20 MATERIALS AND SKYRMION DEVICES

Hans Nembach, Chair
NIST, Boulder, CO, United States

8:30

GF-01. **Increased Lifetime of Metastable Skyrmions by Controlled Doping.** *M.T. Birch*[1,2], R. Takagi[3], S. Seki[3,4], M. Wilson[1], F. Kagawa[3], A. Štefančič[5], G. Balakrishnan[5], R. Fan[2], P. Steadman[2], C. Ottley[1], M. Crisanti[5,6], R. Cubitt[6], T. Lancaster[1], Y. Tokura[3,4] and P.D. Hatton[1] *1. Durham University, Durham, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom; 3. RIKEN Centre for Emergent Matter Science, Wako, Japan; 4. University of Tokyo, Tokyo, Japan; 5. University of Warwick, Coventry, United Kingdom; 6. Institut Laue-Langevin, Grenoble, France*

8:42

GF-02. **Room temperature skyrmions in B20 Fe-rich $Fe_{1.2}Ge$ films.** *T. Liu*[1], R. Bennett[1], S. Cheng[1], A. Ahmed[1] and R. Kawakami[1] *1. Department of Physics, The Ohio State University, Columbus, OH, United States*

8:54

GF-03. **Quantum Phase Transition and Room-Temperature Skyrmions in B20-Ordered Co-Si.** *B. Balasubramanian*[1,2], P. Manchanda[3], R. Pahari[1,2], Z. Chen[4], W. Zhang[1,2], S. R. Valloppilly[1], X. Li[1], A. Sarella[1], L. Yue[1], A. Ullah[1,2], P. Dev[3], D. Muller[4], R. Skomski[1,2], G.C. Hadjipanayis[5] and D.J. Sellmyer[1] *1. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, United States; 3. Department of Physics and Astronomy, Howard University, Washington, DC, United States; 4. School of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 5. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States*

9:06

GF-04. **Novel low temperature spiral and skyrmionic states.** ***(Invited)*** *C. Pappas*[1], L.J. Bannenberg[1], F. Qian[1], H. Wilhelm[2], R. Cubitt[3], L. DeBeer-Schmitt[6], E. Lelièvre-Berna[3], A. Labh[1], M.P. Schmidt[4], A. Aqeel[5], M. Mostovoy[5] and A.O. Leonov[7] *1. Delft University of Technology, Delft, Netherlands; 2. Diamond Light Source, Didcot, United Kingdom; 3. Institut Laue- Langevin, Grenoble, France; 4. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 5. University of Groningen, Groningen, Netherlands; 6. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 7. Hiroshima University, Hiroshima, Japan*

9:42

GF-05. **Search for skyrmionic structures in nanoparticles of Cu_2OSeO_3.** *S.J. Holt*[1], A. Štefančič[1], M.R. Lees[1], J.C. Loudon[2] and G. Balakrishnan[1] *1. Department of Physics, University of Warwick, Coventry, United Kingdom; 2. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom*

9:54

GF-06. **Magnetic and Structural Properties of Cobalt-Zinc Alloy Thin Films.** *M. Dearg*[1], G. Burnell[1], S. Langridge[2] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Science and Technology Facilities Council, Rutherford Appleton Laboratory, Oxon, United Kingdom*

10:06

GF-07. **Manipulation of skyrmion motion by magnetic field gradients.** *D. Burn*[1], S. Zhang[2,3], T. Hesjedal[2] and G. van der Laan[1] *1. Diamond Light Source, Oxford, United Kingdom; 2. Department of Physics, University of Oxford, Oxford, United Kingdom; 3. School of Physical Science and Technology, Shanghai Tech University, Shanghai, China*

10:18

GF-08. **Skyrmion ratchet for single-electrode skyrmion transport.** *W. Gan*[1], C.C. Ang[1], X. Wang[2] and W. Lew[1] *1. Nanyang Technological University, Singapore, Singapore; 2. Lanzhou University of Technology, Lanzhou City, China*

10:30

GF-09. **Beyond Skyrmions - Utilizing alternative magnetic quasiparticles for spintronics devices.** *B. Göbel*[1], A.F. Schäffer[2], A. Mook[2], J. Henk[2], J. Berakdar[2], O. Tretiakov[3,4], S.S.P. Parkin[1] and I. Mertig[2,1] *1. Max Planck Institute of Microstructure Physics, Halle (Saale), Germany; 2. Martin Luther University Halle Wittenberg, Halle (Saale), Germany; 3. School of Physics, The University of New South Wales, Sydney, NSW, Australia; 4. Institute for Materials Research and Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

10:42

GF-10. **Control of The Skyrmion Hall Effect via External Magnetic Fields and its Skyrmion Multiplexer Applications.** *S. Yang*[1], D. Kim[2], K. Moon[1], S. Kim[3], B. Chun[1], C. Kim[1], J. Cho[1], J. Shin[4], J. Hong[4] and C. Hwang[1] *1. Quantum Technology Institute, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 2. Institute for Chemical Research, Kyoto University, Kyoto, Japan; 3. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States; 4. Nanoscale Semiconductor Engineering, Hanyang University, Seoul, The Republic of Korea*

10:54

GF-11. **Thermodynamic concept for current-induced skyrmion dynamics at Pt/Co interfaces.** *S. Sugimoto*[1], S. Kasai[1] and Y. Takahashi[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

11:06

GF-12. **Voltage-driven high speed skyrmion motion in Skyrmion shift device.** *N. Lei*[1] *1. Beihang University, Beijing, China*

11:18

GF-13. **Thermal skyrmion diffusion used in a reshuffler device.** J. Zázvorka[1,5], F. Jakobs[3], D. Heinze[1], N. Keil[1], S. Kromin[1], S. Jaiswal[1,6], K. Litzius[1,2], G. Jakob[1,2], P. Virnau[1], D. Pinna[1], K. Everschor-Sitte[1,2], *B. Seng*[1,2], L. Rózsa[4], A. Donges[3], U. Nowak[3] and M. Kläui[1,2] *1. Institute of Physics, Johannes Gutenberg-Universität, Mainz, Germany; 2. Graduate School of Excellence MAINZ, Mainz, Germany; 3. Fachbereich Physik, Universität Konstanz, Konstanz, Germany; 4. Fachbereich Physik, Universität Hamburg, Hamburg, Germany; 5. Institute of Physics, Charles University, Prague, Czechia; 6. Singulus Technologies AG, Kahl, Germany*

FRIDAY MORNING 8:30 — RIO PAVILION 3

Session GG
MAGNETIC INTERACTIONS AND STRUCTURES
Jean-Yves Chauleau, Chair
CEA, Gif-sur-Yvette, France

8:30

GG-01. **Engineering Magnetic Interactions in Complex Oxide Heterostructures.** ***(Invited)*** A.M. Kane[1], B. Li[1], N. Ahlm[1], J. Byers[1], R.V. Chopdekar[1,2], P. Shafer[2], A.T. N'Diaye[2], A. Scholl[2], N. Browning[3], V. Lauter[4], E. Arenholz[5,2] and *Y. Takamura*[1] *1. Materials Science and Engineering, University of California, Davis, Davis, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Imaging Centre at Liverpool, University of Liverpool, Liverpool, United Kingdom; 4. Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. Cornell High Energy Synchrotron Source, Cornell University, Ithaca, NY, United States*

9:06

GG-02. **Determining Reversal Mechanisms in Amorphous Tb-Fe Exchange Coupled to NiFe.** *M.E. Jamer*[1], T. Lee[2], A. Barra[4], K. Fitzell[5], J. Borchers[3], J.P. Chang[6] and G. Carman[7] *1. Physics, United States Naval Academy, Annapolis, MD, United States; 2. Materials Science and Engineering, University of California, Los Angeles, CA, United States; 3. NCNR, NIST, Gaithersburg, MD, United States; 4. Mechanical Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 5. Chemical & Biomolecular Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 6. Chemical & Biomolecular Engineering, University of California, Los Angeles, CA, United States; 7. Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, United States*

9:18

GG-03. **Unveiling the high temperature properties of ε-Fe_2O_3.** A. Romaguera[1], Z. Ma[1], J. Garcia-Muñoz[1], F. Fauth[2], J. Nogués[3,4] and *M. Gich*[1] *1. ICMAB-CSIC, Bellaterra, Spain; 2. ALBA Synchrotron Light Source, Cerdanyola del Vallès, Spain; 3. Catalan Institute of Nanoscience and Nanotechnology, Bellaterra, Spain; 4. The Barcelona Institute of Science and Technology, Barcelona, Spain*

9:30

GG-04. **Metamagnetism and kinetic arrest in a long-range ferromagnetically ordered multicaloric double perovskite Y_2CoMnO_6.** *R. Pokharel Madhogaria*[1], E. Clements[1], V. Kalappattil[1], N. Dang[2], R. Das[1,3], N. Bingham[4], D. Kozlenko[5], M. Phan[1] and H. Srikanth[1] *1. University of South Florida, Tampa, FL, United States; 2. Duy Tan University, Da Nang, Vietnam; 3. Phenika University, Hanoi, Vietnam; 4. Yale University, New Haven, CT, United States; 5. Joint Institute of Nuclear Research, Dubna, Russian Federation*

9:42

GG-05. **Microscopic origin of high temperature magnetism in multiferroic superlattices $(LuFeO_3)_m$:$(LuFe_2O_4)_n$. *(Invited)*** *J. Musfeldt*[2,1], S. Fan[1], K. Smith[2], H. Das[3], A. Rebola[3], J. Mundy[4], C. Brooks[5], M. Holtz[3], D. Muller[3], R. Ramesh[4], D. Schlom[5], C. Fennie[3] and S. McGill[6] *1. Physics, University of Tennessee, Knoxville, TN, United States; 2. Chemistry, University of Tennessee, Knoxville, TN, United States; 3. Physics, Cornell University, Ithaca, NY, United States; 4. Materials Science, University of California at Berkeley, Berkeley, CA, United States; 5. Materials Science, Cornell University, Ithaca, NY, United States; 6. National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States*

10:18

GG-06. **Creating Long Range Magnetic Order in a Configurationally Disordered Single Crystal Perovskite.** *T.Z. Ward*[1], Y. Sharma[1], E. Skoropata[1] and A.R. Mazza[1] *1. Oak Ridge National Laboratory, Oak Ridge, TN, United States*

10:30

GG-07. Role of rare-earth size on the structural, electronic, and magnetic properties of doubly ordered R_2NiMnO_6 perovskites. *M. Nasir*[1], M. Khan[2] and S. Sen[1] *1. Physics, IIT Indore, Indore, India; 2. Physics, Miami University, Oxford, OH, United States*

10:42

GG-08. Magnetic and thermoelectric properties of Bi, Cu double-substituted $La_{1-x}Sr_xCoO_3$ at room temperature. *D.P. Dubey*[1] and R. Chatterjee[1] *1. Physics Department, Indian Institute of Technology- Delhi, New Delhi, India*

10:54

GG-09. Spin and Dipole Ordering in Flexoelectrical Coupled Strain Gradient Garnet Ferrite Thin Films. *H. Tabata*[1] *1. School of Engineering, The University of Tokyo, Tokyo, Japan*

11:06

GG-10. Tuning the Perpendicular Magnetic Anisotropy and the Dzyaloshinskii-Moriya Interaction by Ferroelectric Polarization at BeO/Co Interfaces. *F. Ibrahim*[1], A. Hallal[1] and M. Chshiev[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, IRIG-SPINTEC, Grenoble, France*

11:18

GG-11. Correlation of Hyperfine Field Distribution and Isomer Shifts with Magnetoelectric Properties in Mo-substituted Z-type Barium Hexaferrites. *M. Przybylski*[1], J. Zukrowski[1], K. Latka[2], Z. Su[3,4], P. Kukil[3], Z. Celinski[5] and V. Harris[3] *1. Academic Centre for Materials and Nanotechnology, AGH University of Science and Technology, Kraków, Poland; 2. Department of Physics, Jagiellonian University, Kraków, Poland; 3. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 4. EE, Princeton University, New York, NY, United States; 5. Physics, University of Colorado, Colorado Springs, CO, United States*

FRIDAY MORNING 8:30 | MIRANDA 7

Session GH
SOFT MAGNETIC MATERIALS - METALLIC

Xinjun Wang, Chair
Northeastern University, Boston, MA, United States

8:30

GH-01. Synthesis and Electromagnetic Properties of Fe-based Nanocrystalline Powders with High M_s. *Y. Li*[1], C. Zhang[1] and W. Zhang[1] *1. Dalian University of Technology, Dalian, China*

8:42

GH-02. FeBNbP Nanocrystalline Alloy Powder with High Amorphous Forming Ability and High B_s for Magnetic Core. *A. Hasegawa*[1], H. Kumaoka[1], K. Yoshiki[1], M. Hosono[1], K. Yoshidome[1], S. Mori[1], K. Horino[1] and H. Matsumoto[1] *1. Material Development Center, TDK Corporation, Narita, Japan*

8:54

GH-03. Magnetic and structural properties of $(Fe,Ni)_{86}B_{14}$ nanocrystalline soft magnetic alloys prepared by ultra-rapid annealing. *Z. Li*[2], R. Parsons[2], B. Zang[2], J. Karel[2], H. Kishimoto[1], T. Shoji[1], A. Kato[1] and K. Suzuki[2] *1. Toyota Motor Corporation, Susono, Japan; 2. Material Science and Engineering, Monash University - Engineering Faculty, Melbourne, VIC, Australia*

9:06

GH-04. Iron loss characteristics of a high-temperature amorphous ring under PWM inverter excitation. *A. Yao*[1] and T. Hatakeyama[1] *1. Department of Electrical and Computer Engineering, Toyama Prefectural University, Imizu, Japan*

9:18

GH-05. Influence of Circular Magnetic Field and Combined Mechanical Stress on Spiral Domain Structures in Magnetic Microwires. *A. Chizhik*[1], J. Gonzalez[1], A. Zhukov[1,2], P. Corte-Leon[1], V. Zhukova[1], P. Gawronski[4] and A. Stupakiewicz[3] *1. Departamento de Fisica de Materiales, Universidad del Pais Vasco, UPV/EHU, San Sebastian, Spain; 2. Ikerbasque, Basque Foundation for Science, San Sebastian, Spain; 3. University of Bialystok, Bialystok, Poland; 4. AGH University of Science and Technology, Krakow, Poland*

9:30

GH-06. Prediction of Good Glass Forming Ability in Amorphous Soft Magnetic Alloys by Thermocalc Simulation and Experimental Validation. *Y. Krimer*[1], N. Aronhime[2], P. Ohodnicki[3] and M. McHenry[1] *1. Materials Science, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Research and Development, Carpenter Technologies, Reading, PA, United States; 3. National Energy Technology Laboratory, Pittsburgh, PA, United States*

9:42

GH-07. Engineering of magnetic properties and domain wall dynamics in Fe-Ni-based amorphous microwires by annealing. V. Zhukova[1,2], A. Talaat[1], P. Corte-Leon[1,2], J. Blanco[2], M. Ipatov[1,2] and *A. Zhukov*[1,3] *1. Dept. Phys. Mater., Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 2. Dpto. Física Aplicada, EIG, Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 3. Basque Foundation for Science, Ikerbasque, Bilbao, Spain*

9:54

GH-08. **Effect of latent heat during primary crystallization on nanostructural formation process in nanocrystalline soft magnetic materials.** R. Parsons[1], H. Kishimoto[2], T. Shoji[2], A. Kato[2] and *K. Suzuki*[1] *1. Monash University, Clayton, VIC, Australia; 2. Toyota Motor Corp., Mishuku, Japan*

10:06

GH-09. **Role of heavy metal interface in controlling the structural and magnetic properties of amorphous FeCoB film.** *J. Dwivedi*[1], M. Gupta[2], V. Reddy[2], D. Mishra[1], P. Pandit[3] and A. Gupta[4] *1. School of Physics, Devi Ahilya University, Indore, India; 2. UGC DAE Consortium for Scientific Research, Indore, India; 3. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 4. Amity Center for Spintronic Materials, Amity University, Noida, India*

10:18

GH-10. **Magnetic domains in Pt/Co(Fe)B/Ir multilayers grown on ferroelectric substrates.** *K.N. Alshammari*[1], L. Benito[1], R.C. Temple[1], M. Alyami[1], M. Ali[1], T.R. Forrest[2], F. Maccherozzi[2], S.S. Dhesi[2], S. Cavill[3] and T. Moore[1] *1. University of Leeds, Leeds, United Kingdom; 2. Diamond Light Source, Harwell, United Kingdom; 3. University of York, York, United Kingdom*

10:30

GH-11. **Tuning of magnetic and structural properties of Fe-rich ferromagnetic microwires.** *I. Baraban*[1], V. Kolesnikova[1], A. Bazlov[2], N. Andreev[2], S. Evstigneeva[2], A. Morchenko[2], L. Panina[2,1] and V. Rodionova[1,2] *1. Laboratory of Novel Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. National University of Science and Technology (MISIS), Moscow, Russian Federation*

10:42

GH-12. **Improvement of Soft Magnetic Properties in $Fe_{81}Sn_7B_{12}$ Nanocrystalline Alloys Upon Rapid Annealing.** *I. Skorvanek*[1], B. Kunca[1], I. Janotova[2], J. Skoviera[2], J. Marcin[1] and P. Svec[2] *1. Institute of Experimental Physics SAS, Kosice, Slovakia; 2. Institute of Physics SAS, Bratislava, Slovakia*

10:54

GH-13. **Improving the Effective Permeability by Groove Patterns on Magnetic Film Surface.** *Y. Mu*[1], Y. Wen[1] and P. Li[1] *1. Department of Instrument Science and Engineering, Shanghai Jiao tong University, Shanghai, China*

11:06

GH-14. **Nanoclusters formation and their influence on the superferromagnetic behavior of glassy Fe-Cr-Nb-B magnetic particles.** H. Chiriac[1], M. Lostun[1], M. Grigoras[1], G. Ababei[1], G. Stoian[1], T.A. Ovari[1] and *N. Lupu*[1] *1. Magnetic Materials and Devices, National Institute of Research and Development for Technical Physics, Iasi, Romania*

11:18

GH-15. **Stress- induced Magnetic Anisotropy Enabling Engineering of Magnetic Softness and GMI effect of Fe-rich Amorphous Microwires.** P. Corte-Leon[1,2], V. Zhukova[1,2], M. Ipatov[1,2], J. Blanco[2], J. Gonzalez[1] and *A. Zhukov*[1,3] *1. Dept. Phys. Mater., Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 2. Dpto. Física Aplicada, EIG, Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 3. Basque Foundation for Science, Ikerbasque, Bilbao, Spain*

FRIDAY MORNING 8:30 — MIRANDA 5

Session GI
SENSORS AND HIGH FREQUENCY DEVICES
Rair Macedo, Chair
University of Glasgow, Glasgow, United Kingdom

8:30

GI-01. **Magneto-structural characterization and micromagnetic modeling of Co nanowire arrays for microwave applications up to 30 GHz.** *M. Pasquale*[1], D. Gonzales Trabada[2], E.S. Olivetti[1], C.P. Sasso[1], M. Coisson[1], A. Magni[1], F. Garcia-Sanchez[1,3] and M. Vázquez[2] *1. INRIM, Torino, Italy; 2. Instituto de Ciencia de Materiales, CSIC, Madrid, Spain; 3. Applied Physics, Universidad de Salamanca, Salamanca, Spain*

8:42

GI-02. **Superparamagnetic, Partially-Inverted Ni-ferrite and NiZn-ferrite Thin Film: Promising Material for On-chip RF Inductor Core.** *R. Sai*[1], R. Kahmei[1], S. Arackal[1], N. Bhat[1], M. Yamaguchi[2] and S.A. Shivashankar[1] *1. Centre for Nano Science and Engineering, Indian Institute of Science, Bengaluru, India; 2. Dept. of Electrical Engineering, Tohoku University, Sendai, Japan*

8:54

GI-03. **Giant Magnetoimpedance effect at GHz frequencies in amorphous microwires.** V. Zhukova[1,2], M. Ipatov[1,2], P. Corte-Leon[1,2], J. Blanco[2] and *A. Zhukov*[1,3] *1. Dept. Phys. Mater., Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 2. Dpto. Física Aplicada, EIG, Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 3. Basque Foundation for Science, Ikerbasque, Bilbao, Spain*

9:06

GI-04. **Ferromagnetic FeCo and Co nanowired substrates based integrated tunable microwave isolator with ultra-wideband application.** *S. Aslam*[2,1], M. Khanna[2] and B.K. Kuanr[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. Department of Electronic Science, University of Delhi, New Delhi, India*

9:18

GI-05. **400MHz MEMS Antenna Based on Magnetoelectric Coupling Effect.** *H. Chen*[1], X. Liang[1], N. Sun[1], H. Lin[2], Y. Gao[2] and N.X. Sun[1,2] *1. Northeastern University, Boston, MA, United States; 2. Winchester Technologies, LLC, Burlington, MA, United States*

9:30

GI-06. **Design and Fabrication of ZnO-Based SMR Magnetoelectric Antennas for High-Gain Applications.** *X. Liang*[1], H. Chen[1], N. Sun[1], Y. Gao[2], H. Lin[2] and N. Sun[1] *1. Northeastern University, Boston, MA, United States; 2. Winchester Technologies, LLC, Burlington, MA, United States*

9:42

GI-07. **Electrically Small Multiferroic Antenna Enhanced by Energy Reelecting Components.** *J. Hu*[1,2], W. Yan[1], G. Carman[1] and A. Sepulveda[1,2] *1. Mechanical & Aerospace Engineering Department, UCLA, Los Angeles, CA, United States; 2. Vilya Nanotechnologies, Inc, Los Angeles, CA, United States*

9:54

GI-08. **Tunable Properties of Microwave Absorber and FMR Relaxation for GO Doped $MnFe_2O_4$ Nanoparticles.** *A. Mishra*[1] and B.K. Kuanr[2] *1. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India; 2. Special Center for Nanoscience, Jawaharlal Nehru University, New Delhi, India*

10:06

GI-09. **High-gain Wideband Miniature Axial-mode Helical Antenna with Multi-layer Ferrite and Dielectric Structure.** *H. Won*[1], Y. Hong[1,3], W. Lee[1,2] and M. Choi[1] *1. Department of Electrical and Computer Engineering and Center for Advanced Vehicle Technologies, The University of Alabama, Tuscaloosa, AL, United States; 2. RF Product Development Group, Samsung Electro-Mechanics, Suwon-si, The Republic of Korea; 3. Alabama Transportation Institute, Tuscaloosa, AL, United States*

10:18

GI-10. **Efficient Adjustment of Finite Graphene Scattering Properties via Magnetic-bias Control for Advanced Beam Manipulation.** S. Amanatiadis[1], T. Ohtani[2], *Y. Kanai*[3] and N. Kantartzis[1] *1. Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece; 2. 1-17-134 Omachi, Asahikawa, Japan; 3. Niigata Institute of Technology, Kashiwazaki, Japan*

10:30

GI-11. **Near-Field Probing of the Effective Electromagnetic Shielding Using CoZrTaB Thin Films.** *P. Miller*[1], Y. Wu[1] and H. Yu[1] *1. Arizona State University, Tempe, AZ, United States*

10:42

GI-12. **Tunable Band-Stop Frequency Selective Surface by Permeability Control of Ferromagnetic Material.** *J. Ge*[1] and G. Wang[1] *1. Electrical Engineering, University of South Carolina, Columbia, SC, United States*

10:54

GI-13. **Hexagonal Nano-ferrites used on a V-band Self-bias On-chip Circulator for CMOS.** *M.N. Afsar*[1], V. Koomson[1] and W. Quam[1] *1. ECE, Tufts University, Medford, MA, United States*

11:06

GI-14. **Structural and magnetic properties of La^{3+} substituted Co_2Z hexaferrites for tele-communicational antennas and EMI shielding applications.** *A. Singh*[1] and P. Sharma[1] *1. School of Physics and Materials Science, Thapar Institute of Engineering and Technology, Punjab, Patiala, India*

FRIDAY
MORNING
9:30

RIO PAVILION 8-11

Session GP
DOMAIN WALLS AND SPIN-ORBIT TORQUE (Poster Session)

Eduardo Martinez, Co-Chair
Universidad de Salamanca, Salamanca, Spain
Helmut Schultheiss, Co-Chair
Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

GP-01. **Domain wall motion-based spin synapsis-neuron functions manipulated by spin orbit torque in heavy metal / CoFeB/ MgO stacks.** *J. Shin*[1], J. Choi[2], Y. Ji[2], S. Yang[3], J. Yang[4] and J. Hong[1,2] *1. Nanoscale Semiconductor Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Physics, Hanyang University, Seoul, The Republic of Korea; 3. Kriss, Daejeon, The Republic of Korea; 4. Physics, Kunsan University, Kunsan, The Republic of Korea*

GP-02. **Ion-Beam Controlled Switching Field Distributions in the Low Coercivity Regime.** *S. Mendisch*[1], M. Kiechle[1], V. Ahrens[1], A. Papp[1] and M. Becherer[1] *1. Department of Electrical and Computer Engineering, Technical University of Munich (TUM), München, Germany*

GP-03. **Current-induced or field-induced domain wall depinning of a domain wall in a circular cross-section wire with modulated diameter.** A. De Riz[1], B. Trapp[2], J. Fernandez-Roldan[3], C. Thirion[2], J. Toussaint[2], O. Fruchart[1] and *D. Gusakova*[1] *1. Univ. Grenoble Alpes, CNRS, CEA, Grenoble INP, IRIG-Spintec, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, Institut NEEL, Grenoble, France; 3. Institute of Materials Science of Madrid, CSIC, Madrid, Spain*

GP-04. **Structure of domain walls in synthetic antiferromagnets with an inverted Dzyaloshinskii-Moriya interaction.** *N. Pandey*[1], A. Prudnikov[1], M.P. Li[1], C.K. Mewes[2], T. Mewes[2], M. De Graef[1] and V. Sokalski[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics and Astronomy, University of Alabama, Tuscaloosa, AL, United States*

GP-05. **Systematic Characterisation of DMI in Co/Pt, Co/Ir Systems.** *E. Darwin*[1], C.H. Marrows[1] and B. Hickey[1] *1. Condensed Matter, University of Leeds, Leeds, United Kingdom*

GP-06. **Analysis of self-heating effects on current-driven ferrimagnetic domain wall motion.** *G. Wang*[1], Y. Zhang[1], Z. Zhang[1,2], Z. Huang[1], J. Wang[1], K. Zhang[1], J. Nan[1], Z. Zheng[1,2], Y. Zhang[1,2] and W. Zhao[1] *1. Fert Beijing Research Institute, BDBC, School of Microelectronics, Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China*

GP-07. **Current Induced Domain Wall Motion with a Ta/Gd-Fe/Si-N Magnetic Nanowire for a Magneto-optical Light Modulator.** *K. Aoshima*[1], N. Funabashi[1], R. Higashida[1] and K. Machida[1] *1. NHK Japan Broadcasting Corp., Tokyo, Japan*

GP-08. **2D magnetic domain wall ratchet: the limit of submicrometric holes.** J. Herrero-Albillos[6], C. Castan-Guerrero[1], F. Valdes-Bango[1], J. Bartolomé[1], F. Kronast[5], A. Hierro-Rodriguez[4], L.M. Alvarez-Prado[3], J. Martín[3], M. Velez[3], J. Alameda[3], J. Sesé[2], L. Garcia[1] and *F. Bartolome*[1] *1. CSIC - Universidad de Zaragoza, Zaragoza, Spain; 2. Universidad de Zaragoza, Zaragoza, Spain; 3. CSIC - Universidad de Oviedo, Oviedo, Spain; 4. Universidade do Porto, Porto, Portugal; 5. Helmholtz - Zentrum Berlin fur Materialien und Energie, Berlin, Germany; 6. Centro Universitario de la Defensa, Academia General Militar, Zaragoza, Spain*

GP-09. **Geometrically tuned Spin-orbit torque based memristor.** *R. Singh*[1] and X. Zhang[1] *1. School of Materials Science & Engineering, Tsinghua University, Beijing, China*

GP-10. **Introducing multiple stable states in an antiferromagnet-free spin-orbit torque device.** *P. Chen*[1], C. Yang[1] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsing Chu, Taiwan*

GP-11. **Enhancement of spin Hall effects inducing damping-like torque in spin-orbit torque using partially A15-phase intermetallic compound W_3Ta film.** *B. Chun*[1], S. Yang[1], C. Kim[1], K. Moon[1] and C. Hwang[1] *1. KRISS, Daejeon, The Republic of Korea*

GP-12. **Magneto-optical Line Light Modulator Consisted of Single [Co/Tb] Magnetic Nanowire utilizing Current-driven Domain Wall Motion.** *Y. Miyamoto*[1], Y. Hori[1], M. Endo[1] and N. Ishii[1] *1. Science & Technology Research Labs., NHK (Japan Broadcasting Corp.), Setagaya, Japan*

GP-13. **Synaptic Element For Neuromorphic Computing Using Magnetic Domain Wall Device With Synthetic Pinning Sites.** *T. Jin*[1], N. Sernicola[1], W. Gan[1], F. Tan[1], W. Lew[1] and S. Piramanayagam[1] *1. Nanyang Technological University, Singapore, Singapore*

GP-14. **Unusual phenomenon in which domain walls move in the current direction by STT in thick GdFeCo wire w/o heavy metal interface.** *H. Awano*[1] *1. Graduate School, Toyota Technological Institute, Nagoya, Japan*

GP-15. **Complex Current-driven Spin-Orbit Torque Switching Behaviors In Co/Pt Multilayer-based Synthetic Antiferromagnets.** *L. Zhu*[1], X. Xu[1], K. Meng[1], Y. Wu[1], J. Miao[1] and Y. Jiang[1] *1. University of Science and Technology Beijing, School of Materials Science and Engineering, Beijing, China*

GP-16. **Orbital Anisotropic Magnetoresistance.** *H. Ko*[1], H. Park[1], G. Go[2], J. Oh[2], K. Kim[3] and K. Lee[1,2] *1. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea; 2. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 3. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea*

GP-17. **ANE and SOT effective fields in (Fe_4N, Mn_4N)/NM bilayers characterized by using harmonic Hall voltage measurements.** *S. Isogami*[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

GP-18. **Improvement of the spin-orbit torque efficiency by thermal treatment during the Pt deposition.** *W. Kwak*[1], J. Kwon[1], S. Hwang[1] and B. Cho[1] *1. School of Materials Science and Engineering (SMSE), Gwangju Institute of Science and Technology (GIST), Gwangju, The Republic of Korea*

FRIDAY
MORNING
9:30

RIO PAVILION 8-11

Session GQ

INTERFACES: SURFACE EFFECTS AND EXCHANGE BIAS (Poster Session)

H.W. Chang, Chair
National Chung Cheng University, Chiayi, Taiwan

GQ-01. **Superconducting Proximity Effects Near A Domain Wall In Magnetic Heterostructures.** R.L. Seeger[1], G. Forestier[1], M. Akthar[2], A. Haykal[2], O. Gladii[1], S. Aufftet[1], I. Joumard[1], C. Gomez[3], M. Rubio-Roy[1], D. Gusakova[1], A.I. Buzdin[5], V. Jacques[2], M. Houzet[4] and *V. Baltz*[1] *1. Univ. Grenoble Alpes / CNRS / CEA, SPINTEC, Grenoble, France; 2. Univ. Montpellier / CNRS, L2C, Montpellier, France; 3. Grenoble INP, CIME Nanotech, Grenoble, France; 4. Univ. Grenoble Alpes / CEA, Pheliqs, Grenoble, France; 5. Univ. Bordeaux / CNRS, LOMA, Bordeaux, France*

GQ-02. **Exchange Bias Effects in $Mn_2Ni_{1+x}Ga_{1-x}$ Alloys.** *S. Biswas*[1], T. Schaeffer[1] and M. Khan[1] *1. Physics, Miami University, Oxford, OH, United States*

GQ-03. **X-ray resonant magnetic reflectometry (XRMR) study of the interface between ferromagnetic transition metals and MgO.** *S.E. Ilse*[1], D.B. Boltje[1,2], G. Schütz[1] and E. Goering[1] *1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Delmic BV, Delft, Netherlands*

GQ-04. **Investigation of the interlayer thickness dependent variation of saturation magnetization in Co/RuFe/Co multilayer systems using XMCD.** *F. Schulz*[1], Z. Nunn[2], E. Girt[1] and E. Goering[2] *1. Modern Magnetic Systems, Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 2. Department of Physics, Simon Fraser University, Burnaby, BC, Canada*

GQ-05. **Comparison on phase component and exchange bias in sputtered CoFe/MnN and MnN/CoFe polycrystalline films.** *H.W. Chang*[1], Y. Chien[2], F. Yuan[3], Y. Lai[2], C.R. Wang[2], L. Horng[4] and C. Ouyang[5] *1. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 3. iSentek Inc. Advanced Sensor Laboratory, Taipei, Taiwan; 4. Department of Physics, National Changhua University of Education, Changhua, Taiwan; 5. National Tsing Hua University, Hsinchu, Taiwan*

GQ-06. **Magnetic Domain Wall Pinning at a Ferromagnet-Antiferromagnet Interface.** *R.A. Khan*[1], T.R. Forrest[2], S.S. Dhesi[2], M. Ali[1], B. Hickey[1], C.H. Marrows[1] and T. Moore[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom*

GQ-07. **The effect of x-ray illumination on magnetic domain memory in [Co/Pd] / IrMn multilayers.** *C.S. Walker*[1], M. Parkes[1], D. Keavney[2], E. Fullerton[3] and K. Chesnel[1] *1. Department of Physics & Astronomy, Brigham Young University, Provo, UT, United States; 2. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States; 3. Center for Memory and Recording Research, UCSD, San Diego, CA, United States*

GQ-08. **Influence of the magnetic properties of the Ni films through applications of electric field on the ZnO under layer.** *C. Yu*[1] and Z. Lin[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

GQ-09. **Tuning of the coercivity and Kerr Signal of NiFe films by a ZnO(0001) layer.** *C. Yu*[1] and H. Ko[1] *1. Department of Applied Physcis, National University of Kaohsiung, Kaohsiung, Taiwan*

GQ-10. **The Role of Boron on Exchange Coupling in NiFe/$Ru_{1-x}B_x$/FeCo Trilayer Structures.** *T.J. McKinnon*[1] and E. Girt[1] *1. Physics, Simon Fraser University, Burnaby, BC, Canada*

GQ-11. **New magnetic phases of thin terbium (Tb) films.** *F.H. Sales*[1], A.S. Carriço[2] and A.L. Dantas[3] *1. Department of Physics, Federal Institute of Maranhão (IFMA), São Luís, Brazil; 2. Department of Physics, Federal University of Rio Grande do Norte, Natal, Brazil; 3. Departament of Physics, University of State of Rio Grande do Norte, Natal, Brazil*

GQ-12. **Structural and Magnetic Properties of Thermally Annealed *Nd–Fe–B /Fe* Multilayer Thin Fims.** *S. Yazdani*[1], A. Mosey[1], J. Soruco[1], T. Bsaibes[1], J. G. Giuliani[2], C. Monton[2], R. Decca[1] and R. Cheng[1] *1. Physics, Indiana University Purdue University Indianapolis, Indianapolis, IN, United States; 2. Physics, University of Texas at San Antonio, San Antonio, TX, United States*

GQ-13. **Improving Exchange Bias via Oblique Incidence Deposition.** *T. Gurieva*[1], K. Schlage[1], L. Bocklage[1,2], S. Willing[1], M. Ramin Moayed[1] and R. Röhlsberger[1,2] *1. Photon Science, Deutsche Elektronen-Synchrotron (DESY), Hamburg, Germany; 2. The Hamburg Center for Ultrafast Imaging, Hamburg, Germany*

GQ-14. **Dehydration Behavior of Hydrated MgO Thin Film Barrier-MTJs.** *S. Tigunta*[1], N. Valanoor[3], D. Sando[3], Q. Zhang[3] and S. Pojprapai[2] *1. School of Materials Engineering, Suranaree Univerisy of Technology, Muang, Thailand; 2. School of Ceramics Engineering, Suranaree University of Technology, Muang, Thailand; 3. School of Materials Science and Engineering, University of New South Wales, Sydney, NSW, Australia*

GQ-15. **Magnetization reversal mechanisms of ferromagnetic layers in NiFe/IrMn/NiFe exchange bias thin film structures.** *C. Gritsenko*[1], V. Rodionova[1,2] and M. Rivas[3] *1. Institute of Physics, Mathematics and Information Technology, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. National University of Science and Technology MISIS, Moscow, Russian Federation; 3. Departamento de Fisica, Campus de Viesques, Universidad de Oviedo, Gijon, Spain*

GQ-16. **Non-collinear coupling materials and mechanism.** *Z. Nunn*[1] and E. Girt[1] *1. Simon Fraser University, Burnaby, BC, Canada*

FRIDAY MORNING 9:30 — RIO PAVILION 8-11

Session GR
MAGNETIC RECORDING I (Poster Session)

Joseph Davies, Chair
NVE Corporation, Eden Prairie, MN, United States

GR-01. **Interlayer Coupling of Nano Circular *L*1_0-MnGa/ Cr/ *D*0_{22}-Mn_3Ga Tri-layered Dots Array.** *Y. Kikuchi*[1], T. Shima[1] and M. Doi[1] *1. Graduate School of Engineering, Tohoku Gakuin University, Tagajo, Japan*

GR-02. **(001)-textured MnGa ultrathin films grown on thermally oxidized Si substrate using CoGa buffer layer.** Y. Miwa[1], *D. Oshima*[2], T. Kato[1] and S. Iwata[2] *1. Department of Electronics, Nagoya University, Nagoya, Japan; 2. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan*

GR-03. **Analysis of the Relationship between Error Rate Performances and Grain Size Distributions for Recording Media in Heat Assisted Magnetic Recoding.** *H. Saito*[2], S. Uesugi[3] and F. Akagi[1] *1. School of Advanced Engineering, Kogakuin University, Tokyo, Japan; 2. School of Advanced Engineering, Kogakuin University, Tokyo, Japan; 3. Graduate School of Engineering, Kogakuin University, Tokyo, Japan*

GR-04. **A Study of Detection Scheme for MR Reading of Double Granular Recording Layer.** *Y. Nakamura*[1], M. Nishikawa[1], Y. Kanai[2], H. Osawa[1] and Y. Okamoto[1] *1. Ehime University, Matsuyama, Japan; 2. Niigata Institute of Technology, Kashiwazaki, Japan*

GR-05. **Extremely flat surface full granular media with cap layer consists of high-K_u CoPt grains and ferromagnetic oxide grain boundaries.** *K. Tham*[1,2], R. Kushibiki[1], T. Kamada[1] and S. Saito[2] *1. Tanaka Kikinzoku Kogyo, Tsukuba, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan*

GR-06. **Dual-structure microwave-assisted magnetic recording using only a STO.** *S. Greaves*[1] and W. Saito[1] *1. Tohoku University, Sendai, Japan*

GR-07. **Soft-Information Flipping Scheme Based on a Priori LLRs Summation for Ultra-High Density Magnetic Recording.** *W. Busyatras*[2] and C. Warisarn[1] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bankok, Thailand; 2. Rajamangala University of Technology Thanyaburi, Pathum Thani, Thailand*

GR-08. **Stable Oscillation of Spin-Torque Oscillator with Reduced Injected Current Density for Microwave-Assisted Magnetic Recording.** *Y. Kanai*[1], R. Itagaki[1] and S. Greaves[2] *1. Engineering Dept., Niigata Institute of Technology, Kashiwazaki, Japan; 2. RIEC, Tohoku University, Sendai, Japan*

FRIDAY MORNING 9:30 — RIO PAVILION 8-11

Session GS
EDUCATION, OUTREACH, & PUBLIC ENGAGEMENT IN MAGNETISM
(Poster Session)

Barry Zink, Co-Chair
University of Denver, Denver, CO, United States
Yukiko Takahashi, Co-Chair
NIMS, Tsukuba, Japan
Dafiné Ravelosona, Co-Chair
Center for Nanoscience and Nanotechnology, Palaiseau, France

GS-01. **Exploring magnetic resonance with a compass.** *D. Nelson*[1], E. Cookson[1], M. Anderson[1], D. McKinney[2] and I. Barsukov[1] *1. Physics and Astronomy, UC Riverside, Riverside, CA, United States; 2. Santa Rosa Academy, Menifee, CA, United States*

GS-02. **Magnetic Fields Web Series: Engaging Middle School Students in STEM.** *P. Pena Martin*[1], J. Isberg[1], E. Ertekin[1,3], V. Lorenz[1,2] and N. Mason[1,2] *1. Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 3. Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

GS-03. **In-class experiments with smart phones for teaching upper-level electricity and magnetism.** A. Davidson[1], A. Ranjan[2] and *X. Fan*[1] *1. Physics and Astronomy, University of Denver, Denver, CO, United States; 2. Cherry Creek High School, Greenwood Village, CO, United States*

GS-04. **The Use of Virtue Modules in Physics Lab Teaching.** *W. Zhang*[1], R. Bidthanapally[1], T. Sebastian[2], Y. Xiong[1,3], H. Qu[3] and J. Sklenar[4] *1. Physics Department, Oakland University, Rochester, MI, United States; 2. THATec Innovation GmbH, Mannheim, Germany; 3. Electronic and Computer Engineering, Oakland University, Rochester, MI, United States; 4. Physics Department, Wayne State University, Detroit, MI, United States*

FRIDAY
MORNING
9:30

RIO PAVILION 8-11

Session GT
ORIGINS OF MAGNETIC ORDER II (Poster Session)

Amal El-Ghazaly, Chair
Cornell University, Ithaca, NY, United States

GT-01. **Structural stability and magnetic properties of the Mn-doped WS_2 thin films in *ab initio* calculations.** *M. Kim*[1] and J. Hyun[1] *1. Sookmyung Womens University, Seoul, The Republic of Korea*

GT-02. **Electronic and Magnetic Properties of Stoichiometric $CeAuBi_2$.** M. Moda Piva[1,2], G. Silva Freitas[1], S.M. Thomas[2], J. Leao[3], *C. Adriano*[1], R.R. Urbano[1], J.W. Lynn[3], J. Thompson[2], P. Ferrari Silveira Rosa[2] and P. Pagliuso[1] *1. Instituto de Física "Gleb Wataghin" - UNICAMP, Campinas, Brazil; 2. Los Alamos National Laboratory, Los Alamos, NM, United States; 3. NIST Center for Neutron Research, Gaithersburg, MD, United States*

GT-03. **The Effect of Manganese Substituted Sodium Iron Phosphate Maricite-$NaFe_{1-x}Mn_xPO_4$.** *J. Seo*[1], H. Choi[1] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, The Republic of Korea*

GT-04. **Atomic-layer stacking dependence of the magnetocrystalline anisotropy and Dzyaloshinskii-Moriya interaction in Fe-Co multilayers on MgO.** *Y. Kato*[1], A.M. Pradipto[1], T. Akiyama[1], T. Ito[1], T. Oguchi[2], M. Weinert[3] and K. Nakamura[1] *1. Engineering, Mie University, Tsu, Japan; 2. Scientific and Industrial Research, Osaka University, Suita, Japan; 3. Physics, University of Wisconsin-Milwaukee, Milwaukee, WI, United States*

GT-05. **Effects of Simultaneous Cd and Ir Doping in Ce_2RhIn_8 Antiferromagnet.** *D.S. Christovam*[1], G. Silva Freitas[1], M.M. Piva[1], J.C. Souza[1], J. Leao[2], W.D. Ratcliff[2], J.W. Lynn[2], P. Pagliuso[1] and C. Adriano[1] *1. DEQ, Instituto de Física Gleb Wataghin - Unicamp, Campinas, Brazil; 2. NIST Center for Neutron Research, NIST, Gaithersburg, MD, United States*

GT-06. **Inelastic Neutron Scattering Studies on the $CeCuBi_{2-x}Sb_x$ Antiferromagnetic Compounds.** *G. Silva Freitas*[1], M. Moda Piva[1], J.C. Souza[1], C.B. Ramos de Jesus[2], C. Adriano[1], J. Leao[3], J.W. Lynn[3] and P. Pagliuso[1] *1. Departamento de Eletrônica Quântica, Instituto de Física "Gleb Wataghin", Campinas, Brazil; 2. Departamento de Física, Universidade Federal de Sergipe - Campus de Itabaiana, Itabaiana, Brazil; 3. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States*

GT-07. **Interconfigurational fluctuation valence in putative topological Kondo Lattice Gd^{3+}-doped SmB_6.** *J.C. Souza*[1,2], M. Carlone[3], P. Venegas[3], P. Ferrari Silveira Rosa[4], J. Sichelschmidt[2], P.E. Menegasso[1], R.R. Urbano[1], Z. Fisk[5], P. Pagliuso[1] and C. Rettori[1,6] *1. Institute of Physics Gleb Wataghin, Unicamp, Campinas, Brazil; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Faculdade de Ciências, UNESP, Bauru, Brazil; 4. Los Alamos National Laboratory, Los Alamos, NM, United States; 5. University of California Irvine, Irvine, CA, United States; 6. UFABC, Santo Andre, Brazil*

GT-08. **Electron spin resonance in the non-symmorphic antiferromagnetic $Eu_5In_2Sb_6$.** *J.C. Souza*[1], S.M. Thomas[2], E. Bauer[2], J. Thompson[2], F. Ronning[2], P. Pagliuso[1] and P. Ferrari Silveira Rosa[2] *1. Institute of Physics Gleb Wataghin, Unicamp, Campinas, Brazil; 2. Los Alamos National Laboratory, Los Alamos, NM, United States*

GT-09. **Magnetic and structural transitions in $EuAg_4As_2$ studied using ^{151}Eu Mössbauer spectroscopy.** *D. Ryan*[1], S. Bud'ko[2], N. Ni[3] and C. Hu[3] *1. Physics, McGill University, Montreal, QC, Canada; 2. Department of Physics and Astronomy, Ames Laboratory and Iowa State University, Ames, IA, United States; 3. Department of Physics and Astronomy, University of California, Los Angeles, CA, United States*

GT-10. **Electrical Transport Properties of $YBa_2Cu_3O_{7-x}$/ $Sm_{0.55}Sr_{0.45}MnO_3$ Superconductor-Ferromagnetic Thin Films.** *S. Kumari*[1,2], S. Chauhan[1], P.K. Siwach[1] and H.K. Singh[1] *1. Quantum Resistance Metrology & 2D Physics Group, CSIR-National Physical Laboratory, New Delhi, India; 2. Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India*

GT-11. **Magnetic properties, Magnetic entropy and Adiabatic temperature change in antiferromagnetic NdCuGa compounds.** *M.B. Tchoula Tchokonte*[1], M.H. Mbulunge[1], J.J. Mboukam[2], A.K. Bashir[1,4], B. Sahu[2], A.M. Strydom[3] and D. Kaczorowski[3] *1. Physics & Astronomy, University of the Western Cape, Bellville, South Africa; 2. Physics, University ofJohannesburg, Johanneburg, South Africa; 3. Magnetic, Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, Poland; 4. Materials Research Group, iThemba LABS, Fourie, South Africa*

GT-12. **Magnetic Anisotropy of Rare Earth Systems.** *M. Henderson*[1,2], B. Ensign[1], R. Choudhary[1] and D. Paudyal[1] *1. Critical Materials Institute, US DOE, Ames Laboratory, Iowa State University, Ames, IA, United States; 2. West Chester University of Pennsylvania, West Chester, PA, United States*

GT-13. **Peculiarity of a magnetic structure in a quasi-one-dimensional columbite $Co_{0.4}Ni_{0.6}Nb_2O_6$.** *P.W. Sarvezuk*[1], M.A. Gusmao[2], J.B. Marimon da Cunha[2] and O. Isnard[3] *1. Universidade Tecnológica Federal do Paraná, Campo Mourão, Brazil; 2. Universidade Federal do do Rio Grande do Sul, Porto Alegre, Brazil; 3. Institute Néel, Grenoble, France*

GT-14. **Multiple Antiferromagnetic structures in $HoCoGa_5$ studied by X-ray resonant magnetic scattering.** *C. Adriano*[1], R.M. Grossi[1], K.R. Pakuszewski[1], P. Pagliuso[1] and C. Giles[2] *1. DEQ, University of Campinas, Campinas, Brazil; 2. DFMC, University of Campinas, Campinas, Brazil*

GT-15. **Investigation of Local Magnetic Properties of CeCd as a Function of the Unit Cell Volume by means of First Principles Calculations.** L.F. Pereira[1], L.M. Scalise[1], J. Mestnik-Filho[1], W.L. Ferreira[1], V.C. Gonçalves[1] and *A.W. Carbonari*[1] *1. Research Reactor Center, Nuclear and Energy Research Institute, São Paulo, Brazil*

GT-16. **Magnetic-Field Driven Pr-Valence Change in $(Pr_{1-y}Sm_y)_{1-x}Ca_xCoO_3$.** *T. Naito*[1] *1. Iwate University, Morioka, Japan*

GT-17. **Co-site Substitution Effects on the Simultaneous Metal-Insulator and Spin-State Transition in $(Pr_{1-y}Gd_y)_{1-x}Ca_xCoO_3$.** *T. Naito*[1] *1. Iwate University, Morioka, Japan*

GT-18. **Magnetic Critical Behavior, Magneto-Caloric Response and Magneto-Transport Behavior in $Mn_{50}Ni_{41-x}Fe_xSn_9$ Alloys Heusler.** *A. Rosales-Rivera*[1], R. González-Sánchez[1], A. Velásquez-Salazar[1], J. López-Tabares[1], N.A. Salazar-Henao[1] and F.D. Saccone[2] *1. Laboratorio de Magnetismo y Materiales Avanzados, Universidad Nacional de Colombia, Sede Manizales, Manizales, Colombia; 2. Departamento de Física, Facultad de Ingeniería, Universidad de Buenos Aires, Ciudad de Buenos Aires, Argentina*

GT-19. **Comparative Study of the Magnetic Critical Behavior and Magneto-Electrical Response for $Fe_{70}Nb_{10}B_{20}$, $(Fe_{50}Co_{50})_{75}Si_5B_{20}$, and $Co_{70}Nb_{10}B_{20}$.** A. Rosales-Rivera[1], *R. González-Sánchez*[1], N.A. Salazar-Henao[1], J. López-Tabares[1], F. Arredondo-Molina[1], A. Velásquez-Salazar[1] and F.D. Saccone[2] *1. Laboratorio de Magnetismo y Materiales Avanzados, Universidad Nacional de Colombia, Sede Manizales, Manizales, Colombia; 2. Departamento de Física, Facultad de Ingeniería, Universidad de Buenos Aires, Ciudad de Buenos Aires, Argentina*

Session GU

POWER MAGNETICS - ADVANCED MACHINES (Poster Session)

Yang-Ki Hong, Chair
The University of Alabama, Tuscaloosa, AL, United States

GU-01. **Study on construction of leakage magnetic field reduction coil system for contactless power supply during EV driving.** *T. Abe*[1], S. Oba[1], T. Sawa[1], S. Miyahara[1], F. Sato[1], K. Ishikawa[1], H. Mastuki[2] and S. Sasaki[3] *1. Tohoku Gakuin University, Tagajyo, Japan; 2. Tohoku University, Sendai, Japan; 3. Hikaridenshi Co.,Ltd, Osaki, Japan*

GU-02. **Design of Stable Feeding System Using Repeater Coils for Contactless Power Transmission System During EV Driving.** *S. Oba*[1], T. Abe[1], F. Sato[1], S. Miyahara[1], T. Sawa[1], K. Ishikawa[1], S. Sasaki[2] and H. Mastuki[3] *1. Tohoku Gakuin University, Tagajo, Japan; 2. Hikaridenshi Co.,Ltd, Osaki, Japan; 3. Tohoku University, Sendai, Japan*

GU-03. **Effect of Physical Contact on the Evolution of Cube-on-Face Texture in Fe-1%Si Steel during the Phase Transformation from γ to α.** *S. Kwon*[1] *1. POSCO, Pohang, The Republic of Korea*

GU-04. **Investigation of Variable Flux Characteristics in Parallel Hybrid Permanent Magnets.** *Y. Jie*[1], H. Yang[1], X. Guo[1], J. Li[1] and M. Wang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

GU-05. **On-Load Demagnetization Effect of High-Coercive-Force PMs in Switched Flux Hybrid Magnet Memory Machine.** *H. Yang*[1], H. Lin[1], Z. Zhu[2] and S. Lyu[1] *1. Electrical Engineering, Southeast University, Nanjing, China; 2. Electrical and Electronics Engineering, The University of Sheffield, Sheffield, United Kingdom*

GU-06. **Balanced Bidirectional-Magnetization Effect of a Novel Hybrid-Magnet-Circuit Variable Flux Memory Machine.** *H. Yang*[1], H. Lin[1], Z. Zhu[2] and S. Lyu[1] *1. Electrical Engineering, Southeast University, Nanjing, China; 2. Electrical and Electronics Engineering, The University of Sheffield, Sheffield, United Kingdom*

GU-07. **Comparative Study of Hybrid-PM Variable-Flux Machines with Different Series PM Configurations.** *F. Liu*[1], L. Cheng[1], M. Wang[1], G. Qiao[1] and P. Zheng[1] *1. School of Electrical Engineering & Automation, Harbin Institute of Technology, Harbin, China*

GU-08. **Study on communication element design for communication magnetic field stabilization in implanted FES.** *Y. Hongo*[1], F. Sato[1], T. Abe[1] and S. Miyahara[1] *1. Tohoku Gakuin University, Tagajo, Japan*

GU-09. **Optimal Design of Induction Machines Based on an Improved Fast Steady-state Reaching Method and Finite Element Method.** *H. Wu*[1], S. Wang[1], Y. Zhang[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

GU-10. **Design and Simulation Mini Size Fully Passive Iron-core Compensated Pulsed Alternator.** Y. Yang[2], S. Wang[2], C.P. Chao[1], S.B. Nguyen[1] and *W. Yen*[1] *1. Institut of Electrical and Control Engineering, National Chiao Tung University, Hsinchu, Taiwan; 2. Department of Mechanical Engineering, National United University, Miaoli, Taiwan*

GU-11. **Performance Evaluation of a Tubular Flux-modulated PM Linear Generator with Sandwiched Armature.** *M. Ma*[1] *1. College of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

FRIDAY
MORNING
9:30

RIO PAVILION 8-11

Session GV
SENSORS II
(Poster Session)
Denys Makarov, Chair
HZDR, Dresden, Germany

GV-01. **Fabrication of the magnetoresistive sensor with enhanced sensitivity by the application of repetitive bending stress.** *J. Kwon*[1], W. Kwak[1], S. Hwang[1] and B. Cho[1] *1. School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea*

GV-02. **Detection of Printed Magnetic Ink Strips by High-Tc Superconductivity SQUID Magnetometer.** *S. Tanaka*[1], H. Chiba[1], K. Hayashi[1], T. Ohtani[1], A. Varfolomeev[3] and I. Volkov[2] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. Moscow Institute of Physics and Technology, Moscow, Russian Federation; 3. NRC Kurchatov Institute, Moscow, Russian Federation*

GV-03. **Ultra-high Sensitivity Magnetic Impedance Sensor by Applying GHz Pulse Current.** *F. Akagi*[1] and H. Ohta[1] *1. Kogakuin University, Tokyo, Japan*

GV-04. **Effects of parallel and meander configuration on thin-film magnetoimpedance element.** *H. Kikuchi*[1], M. Tanii[1] and T. Umezaki[1] *1. Iwate University, Morioka, Japan*

GV-05. **Localization of Rotating Magnetic Marker from the Fourier components of its Magnetic Flux Density.** *A. Chiba*[1] and T. Nara[1] *1. The University of Tokyo, Tokyo, Japan*

GV-06. **Orientation and Position of a Vector-Magnetometer Optically Referenced to an External Coordinate System.** *N. Rott*[1] *1. PTB, Braunschweig, Germany*

GV-07. **Piezoelectric strain tuned magnetic field sensor.** *Z. Wang*[1] and M. Liu[1] *1. ECE, Xi'an Jiaotong University, Xi'an, China*

GV-08. **Simulation of DC SQUID Output Voltage Characteristics in Time Domain.** *Z. Zou*[1] *1. Space Environment Simulation Research Infrastructure, Harbin Institute of Technology, Harbin, China*

GV-09. **Large-Area Granular GMR Sensors for Ultra-Sensitive Bioassays.** *D. Su*[1], K. Wu[2] and J. Wang[2] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

GV-10. **Simultaneous enhancement of spin-torque diode sensitivity and detection frequency by using voltage controlled magnetic anisotropy.** *N. Sisodia*[1] and P.K. Muduli[1] *1. Department of Physics, Indian Institute of Technology Delhi, New Delhi, India*

GV-11. **Effect of Magnetic Domain Structures on Magnetic Sensing Properties of Magnetic Tunnel Junctions.** *G. He*[1], Y. Zhang[1] and G. Xiao[1] *1. Physics, Brown University, Providence, RI, United States*

GV-12. **Ferrite Impregnated Epoxy Actuators for Composite Impact Damage.** J. Surakarnkha[1], *Z. Leong*[1], W. Holmes[1], P. Desai[2], J. Foreman[1] and N. Morley[1] *1. University of Sheffield, Sheffield, United Kingdom; 2. Perlemax Limited, Sheffield, United Kingdom*

GV-13. **Low-Frequency Noise of Full Wheatstone Bridge Based GMR Angular Sensors.** *Z. Zhou*[1], Q. An[1], S. Yan[2], W. Zhao[1,2], Q. Leng[1,3] and Z. Cao[1] *1. Beihang-Goertek Joint Microelectronics Institute, Qingdao Research Institute, Beihang University, Qingdao, China; 2. Fert Beijing Institute,BDBC,School of Electronic and Information Engineering,Beihang University, Beijing, China; 3. Goertek Inc, Weifang, China*

FRIDAY AFTERNOON 1:30 — RIO PAVILION 2

Session HA
NOVEL SPIN TEXTURES: SKYRMIONS 2.0 AND BEYOND

Peter Fischer, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

1:30

HA-01. **Emergent States in Artificial Spin Ice.** ***(Invited)*** *C. Nisoli*[2], X. Zhang[1], N.S. Bingham[1], A. Duzgun[2], J. Sklenar[3], Y. Lao[3], F. Caravelli[2] and P. Schiffer[1] *1. Physics, Yale, New Haven, CT, United States; 2. Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM, United States; 3. Physics, University of Illinois, Urbana, IL, United States*

2:06

HA-02. Propagating spin excitations along skyrmion strings. ***(Invited)*** *S. Seki*[1] *1. Department of Applied Physics and Institute of Enginnering Innovation, University of Tokyo, Tokyo, Japan*

2:42

HA-03. Magnetization textures beyond skyrmions: bobbers, quanco balls and hopfions. ***(Invited)*** *S. Bluegel*[1] *1. Peter Grünberg Institute and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, Jülich, Germany*

3:18

HA-04. Magnetic Skyrmions and Hopfions in Three-dimensional Chiral Magnets. ***(Invited)*** *J. Zang*[1] *1. Physics and Astronomy, University of New Hampshire, Durham, NH, United States*

3:54

HA-05. Antiferromagnetic Textures: Eigen Modes and Spin Current Induced Dynamics. ***(Invited)*** *O. Gomonay*[1], V. Kravchuk[2] and K. Everschor-Sitte[1] *1. Institute of Physics, JGU Mainz, Mainz, Germany; 2. IFW Dresden, Dresden, Germany*

FRIDAY AFTERNOON 1:30 — RIO PAVILION 6

Session HB

SPIN-ORBIT TORQUES IV

Roberto Lo Conte, Chair
University of California, Berkeley, CA, United States

1:30

HB-01. Nonreciprocal spin-current generation using conductance gradient in surface-oxidized copper films. ***(Invited)*** *Y. Nozaki*[1,2], G. Okano[1], M. Matsuo[3], Y. Ohnuma[3] and S. Maekawa[4,3] *1. Department of Physics, Keio University, Yokohama, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama, Japan; 3. Kavli Institute for Theoretical Sciences, University of Chinese Academy of Sciences, Beijing, China; 4. Center for Emergent Matter Science (CEMS), RIKEN, Wako, Japan*

2:06

HB-02. Spin-Orbit Torque and Dzyaloshinskii-Moriya Interaction effects in perpendicularly magnetized trilayers. *A. Gudín*[1], A. Anadón[1], R. Guerrero[1], J. Díez-Toledano[1], P. Olleros[1], F. Ajejas[1], J. Camarero[1], R. Miranda[1] and P. Perna[1] *1. Nanomagnetism, IMDEA Nanoscience, Madrid, Spain*

2:18

HB-03. **Current-Induced Domain Wall Motion in Pd-based Multilayered Structures with Different Ferromagnetic Layer Composition.** M. Kado[1], N. Umetsu[1], S. Hashimoto[1], M. Quinsat[1], S. Nakamura[1] and *T. Kondo*[1] *1. Institute of Memory Technology R&D, Toshiba Memory Corporation, Kawasaki, Japan*

2:30

HB-04. **Bulk Spin Torque Driven Perpendicular Magnetization Switching in $L1_0$ FePt.** *M. Tang*[1], K. Shen[2], S. Xu[1], H. Yang[1], S. Hu[1], W. Lü[3,4], C. Li[5], M. Li[5], Z. Yuan[2], S. Pennycook[5], K. Xia[2], A. Manchon[6], S. Zhou[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China; 2. Department of Physics, Beijing Normal University, Beijing, China; 3. Spintronics Institute, University of Jinan, Jinan, China; 4. Condensed Matter Science and Technology Institute, School of Science, Harbin Institute of Technology, Harbin, China; 5. Department of Materials Science and Engineering, National University of Singapore, Singapore, Singapore; 6. Division of Physical Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

2:42

HB-05. **Surfactant-aided Growth for Enhancement of Spin Orbit Torques in Platinum.** *C. Garg*[1], S. Yang[1], L. Thompson[1], T. Topuria[1], A. Capua[2], B. Hughes[1], T. Phung[1], P. Filippou[1] and S.S.P. Parkin[1] *1. IBM Almaden Research Center, San Jose, CA, United States; 2. The Hebrew University of Jerusalem, Jerusalem, Israel*

2:54

HB-06. **Spin orbit torque in Pt/[Co/Tb]$_2$ multilayers with non-collinear spin states.** *H. Chen*[1], R. Mishra[2], H. Yang[2], S. Zhou[1] and X. Qiu[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China; 2. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

3:06

HB-07. **Effects of spin–orbit torque on domain wall motion in a Ta/MnGa/NiAl structure.** *M. Yamanouchi*[1], N.V. Bao[2], M. Inoue[2] and T. Uemura[2] *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Division of Electronics for Informatics, Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan*

3:18

HB-08. **Spin-orbit torques in Pt/Co based structures with inserted Tb layers.** *Y. Wu*[1], K. Meng[1], J. Chen[1], Z. Li[1], J. Miao[1] and Y. Jiang[1] *1. University of Science and Technology Beijing, Beijing, China*

Session HC

MAGNETOELECTRIC PHENOMENA IN FILMS, HETEROSTRUCTURES, AND COMPOSITES

Ignasi Fina, Chair
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain

1:30

HC-01. **Interfacial magnetoelectricity at multiferroic interfaces.** ***(Invited)*** *J. Santamaria*[1] *1. Universidad Complutense, Madrid, Spain*

2:06

HC-02. **Changing the Magnetic States of a Fe/$BaTiO_3$ interface through Crystal field effects controlled by Strain.** *C. Amorim*[1], J.N. Gonçalves[1], J.S. Amaral[1] and V. Amaral[1] *1. Physics Department and CICECO, University of Aveiro, Aveiro, Portugal*

2:18

HC-03. **Electric-field controlled, exchange-coupled bilayer microstructures with tunable magnetoelastic effect.** *Z. Xiao*[1,3], R. Lo Conte[2], M. Goiriena-Goikoetxea[2], R.V. Chopdekar[3], X. Li[1], C. Lambert[2], S. Tiwari[1], A.T. N'Diaye[3], P. Shafer[3], A. Chavez[1], A. Barra[1], G. Carman[1], S. Salahuddin[2], K. Wang[1], E. Arenholz[3], J. Bokor[2] and R. Candler[1,4] *1. Electrical and Computer Engineering, University of California Los Angeles, Los Angeles, CA, United States; 2. Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States; 3. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States; 4. California NanoSystems Institute, Los Angeles, CA, United States*

2:30

HC-04. **Investigations of the magneto-strictive coupling at the interface of $SrTiO_3$ (001) /$La_{0.6}Sr_{0.4}MnO_3$/$BaTiO_3$ system.** S.G. Bhat[1] and *A.P. Kumar*[1] *1. Department of Physics, Indian Institute of Science, Bangalore, India*

2:42

HC-05. **Strain engineered multiferroic phase diagram of orthorhombic *R*MnO_3 (*R* = Gd - Lu) epitaxial thin films.** *S. Mukherjee*[2], C. Schneider[1] and C. Niedermayer[1] *1. Paul Scherrer Institute, Villigen, Switzerland; 2. University of Oxford, Oxford, United Kingdom*

2:54

HC-06. **Epitaxial Room Temperature Multiferroic Superlattices Combining Hexagonal and Cubic Ferrites.** *R. Steinhardt*[1], M. Holtz[1], P. Barrozo da Silva[2], J. Mundy[3], R. Ramesh[2] and D. Schlom[1] *1. Cornell University, Ithaca, NY, United States; 2. Berkeley University of California, Berkeley, CA, United States; 3. Harvard, Boston, MA, United States*

3:06

HC-07. **Room Temperature Strong Magnetoelectricity in Single Phase Multiferroic Materials.** *S. Kumari*[4,1], D.K. Pradhan[2], S. Liu[3], M.M. Rahaman[2], A. Kumar[5], Q. Li[1] and R.S. Katiyar[4] *1. Department of Physics, The Pennsylvania State University, University Park, PA, United States; 2. Geophysical Laboratory, Carnegie Institution for Science, Washington, DC, United States; 3. Army Research Laboratory, Adelphi, MD, United States; 4. Department of Physics and Institute for Functional Nanomaterials, University of Puerto Rico, San Juan, PR, United States; 5. CSIR-National Physical Laboratory, New Delhi, India*

3:18

HC-08. **Room temperature multiferroicity and magnetodielectric coupling in 0-3 composite thin films.** *D.K. Pradhan*[1], S. Kumari[2], P.T. Das[5], R. Vasudevan[4] and R. Katiyar[3] *1. Geophysical Laboratory, Washington, DC, United States; 2. Department of Physics, The Pennsylvania State University, University Park, PA, United States; 3. Department of Physics, University of Puerto Rico, San Juan, PR, United States; 4. Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. Department of Physics, Bar-Ilan University, Ramat-Gan, Israel*

3:30

HC-09. **Influence of the $BaTiO_3$ Crystallinity on the Electric-field Induced Switching of Perpendicular Magnetization.** *M. Goiriena-Goikoetxea*[1,2], Z. Xiao[3], A. El-Ghazaly[1], C. Stan[4,5], J. Chatterjee[1], A. Ceballos[6], A. Pattabi[1], R. Lo Conte[7], F. Hellman[6], R. Candler[3] and J. Bokor[1] *1. Department of Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, United States; 2. Department of Electricity and Electronics, University of the Basque Country, Leioa, Spain; 3. Department of Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 4. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. NIF and Photon Science, Lawrence Livermore National Laboratory, Livermore, CA, United States; 6. Department of Physics, University of California Berkeley, Berkeley, CA, United States; 7. The Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

3:42

HC-10. **Large magnetoelectric effects in nanoscale Ni-PZT composites measured by Anisotropic Magnetoresistance.** *H. Ahmad*[1], M. Kouwenhoven[2], F. Vanderveken[1], D. Tierno[3], I. Radu[4], F. Ciubotaru[1] and C. Adelmann[5] *1. Exploratory Device, IMEC, Leuven, Belgium; 2. TU Delft, Delft, Netherlands; 3. Interconnect and Packaging Reliability, IMEC, Leuven, Belgium; 4. Compute Technologies and Enablement, IMEC, Leuven, Belgium; 5. BEOL and Spintronics, IMEC, Leuven, Belgium*

3:54

HC-11. **Strain mediated magnetoelectric coupling in Ni-Mn-In/PLZT multiferroic heterostructure for MEMS device applications.** *A. Kumar*[1], S. Pawar[1] and D. Kaur[1] *1. Department of Physics, Indian Institute of Technology Roorkee, Roorkee, India*

4:06

HC-12. **Room temperature magnetoelectric response in 2-2 bilayer PNNZT/CTFO thin film deposited by pulsed laser deposition.** *A.H. Pandey*[1], K. Miriyala[1], N. Kumar[1], N. Sowmya[1], A.R. Kulkarni[1] and N. Venkataramani[1] *1. Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India*

4:18

HC-13. **Strong Magnetoelectric Coupling in Mixed Ferrimagnetic-Multiferroic Phases of a Double Perovskite.** *D. Oh*[1], M. Kim[2,3], Y. Choi[1] and N. Lee[1] *1. Department of Physics, Yonsei University, Seoul, The Republic of Korea; 2. Department of Physics, Seoul National University, Seoul, The Republic of Korea; 3. Center for Correlated Electron Systems, Institute for Basic Science, Seoul, The Republic of Korea*

FRIDAY BRASILIA 1
AFTERNOON
1:30

Session HD
MAGNETIC RECORDING II
Eric Fullerton, Chair
University of California San Diego, La Jolla, CA, United States

1:30

HD-01. **The Role of Inverse Faraday Effect and Magnetic Circular Dichroism in All Optical Switching.** R. Guedas-Garcia[1], F. Garcia-Sanchez[1], *E. Martinez*[1] and V. Raposo[1] *1. Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain*

1:42

HD-02. **Improving all-optical switching efficiency by tuning the femtosecond pulses into the infrared wavelength range.** R. John[1], *J. Walowski*[1], C. Müller[2], M. Berritta[3], D. Hintzke[4], O. Chubykalo-Fesenko[5], T. Santos[6], H. Ulrichs[7], R. Mondal[4], P.M. Oppeneer[3], U. Nowak[4], J. McCord[2] and M. Münzenberg[1] *1. Greifswald University, Greifswald, Germany; 2. Kiel University, Kiel, Germany; 3. Uppsala University, Uppsala, Sweden; 4. Konstanz University, Konstanz, Germany; 5. CSIC, Madrid, Spain; 6. Western Digital, San Jose, CA, United States; 7. Göttingen University, Göttingen, Germany*

1:54

HD-03. **Plasmonic layer-selective all-optical switching of magnetization with nanometer resolution.** *C. Davies*[1,2], D. Ignatyeva[3,4], D. Sylgacheva[3,4], A. Tsukamoto[5], H. Yoshikawa[5], P. Kapralov[4], A. Kirilyuk[2], V. Belotelov[3,4] and A. Kimel[1,6] *1. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 2. FELIX Laboratory, Radboud University, Nijmegen, Netherlands; 3. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 4. Russian Quantum Center, Moscow, Russian Federation; 5. Nihon University, Tokyo, Japan; 6. Moscow Technological University, Moscow, Russian Federation*

2:06

HD-04. **Optimisation of magnetisation reversal in granular HAMR media.** *A. Meo*[1], S.E. Rannala[2], S. Ruta[2], R.W. Chantrell[2], P. Chureemart[1] and J. Chureemart[1] *1. Department of Physics, Mahasarakham University, Mahasarakham, Thailand; 2. Department of Physics, University of York, York, United Kingdom*

2:18

HD-05. **A new method for fabricating granular FePt-$L1_0$ HAMR media with well-controlled nucleation and growth.** *B. Zhou*[3,1], C. Xu[3,1], Y. Yan[3,1], B. Varaprasad[2,1], D.E. Laughlin[3,1] and J. Zhu[2,1] *1. The Data Storage Systems Center, CMU, Pittsburgh, PA, United States; 2. Department of Electrical and Computer Engineering, CMU, Pittsburgh, PA, United States; 3. Department of Materials Science and Engineering, CMU, Pittsburgh, PA, United States*

2:30

HD-06. **Utilizing Boron-nitride and carbon as the hybrid grain boundary materials for controlling the grain size distribution in HAMR media.** *B. Zhou*[1,2], Y. Yan[1,2], C. Xu[1,2], B. Varaprasad[3,2], D.E. Laughlin[1,2] and J. Zhu[3,2] *1. Department of Materials Science and Engineering, CMU, Pittsburgh, PA, United States; 2. The Data Storage Systems Center, CMU, Pittsburgh, PA, United States; 3. Department of Electrical and Computer Engineering, CMU, Pittsburgh, PA, United States*

2:42

HD-07. **Temperature-Dependent Studies of Coupled $Fe_{55}Pt_{45}$/ $Fe_{49}Rh_{51}$ Thin Films and Patterned elements.** R.A. Griffiths[1], J.L. Warren[1], C. Barton[1,2], J.J. Miles[1], P.W. Nutter[1] and *T. Thomson*[1] *1. School of Computer Science, University of Manchester, Manchester, United Kingdom; 2. National Physical Laboratory, Teddington, United Kingdom*

2:54

HD-08. **Using magneto-structural phase transitions to enhance the coercivity of ferromagnetic films.** *R. Need*[1], J. Lauzier[2], L. Sutton[2], B.J. Kirby[1] and J. de la Venta[2] *1. NIST Center for Neutron Research, Gaithersburg, MD, United States; 2. Physics, Colorado State University, Fort Collins, CO, United States*

3:06

HD-09. **Impact of Straightened Thermal Profiles Generated by Gapped Near Field Transducers on Recording SNR.** *M. Yin*[1], C. Chow[1], Y. Qin[1], J.A. Bain[1] and J. Zhu[1] *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States*

3:18

HD-10. **Magnetic in-plane components of FePt nanogranular film on polycrystalline MgO underlayer for heat-assisted magnetic recording media.** *Y. Takahashi*[2], J. Wang[1,2], S. Hossein[2], T. Ohkubo[2] and K. Hono[2] *1. International Center for Young Scientists (ICYS), National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan*

3:30

HD-11. **Effect of melting point of grain boundary material on nanostructure and magnetic properties for $L1_0$ typed FePt granular media.** *T. Saito*[1], K. Tham[2], R. Kushibiki[2] and S. Saito[1] *1. Department of Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Tanaka Kikinzoku Kogyo KK, Tsukuba, Japan*

3:42

HD-12. **Observation of Out-of-Plane Precession in All-in-Plane Spin-Torque Oscillator for Microwave-Assisted Magnetic Recording.** W. Zhou[1], S. Hossein[1], T. Taniguchi[2], S. Tamaru[2], *Y. Sakuraba*[1], S. Kasai[1], H. Kubota[2] and K. Hono[1] *1. National Insititute for Materials Science (NIMS), Tsukuba, Japan; 2. National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

3:54

HD-13. **Asymmetric Far Track Erasure by Domain Walls in Recording Heads.** *A. Goncharov*[1], A. Bashir[1] and P. Van Der Heijden[1] *1. Western Digital, San Jose, CA, United States*

4:06

HD-14. **Analytical estimation of transition jitter using switching probability calculations.** *N.A. Natekar*[1] and R. Victora[1] *1. Electrical Engineering, University of Minnesota, Twin Cities, Minneapolis, MN, United States*

4:18

HD-15. **Deep Neural Network: Data Detection Channel for Hard Disk Drives with High Degrees of Freedom.** *Y. Qin*[1] and J. Zhu[1] *1. Data Storage Systems Center, Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

Session HE

MOLECULAR AND NANOPARTICLE MAGNETISM

Ezekiel Johnston-Halperin, Chair
The Ohio State University, Columbus, OH, United States

1:30

HE-01. **Creating Chemical Qubits.** ***(Invited)*** J. Zadrozny[2,1], M. Graham[1], M. Fataftah[1] and *D. Freedman*[1] *1. Northwestern University, Evanston, IL, United States; 2. Colorado State University, Ft Collins, CO, United States*

2:06

HE-02. **Control of Spin Relaxation Times via The Spin Bath and its Edge.** C. Jackson[1], I. Moseley[1], C. Lin[1], S. Johnson[1] and *J. Zadrozny*[1] *1. Chemistry, Colorado State University, Fort Collins, CO, United States*

2:18

HE-03. **Giant Barocaloric Effect at the Spin Crossover Transition of a Molecular Crystal.** *S. Vallone*[1,2], A.N. Tantillo[1,2], A.M. dos Santos[3], J.J. Molaison[3], R. Kulmaczewski[4], A. Chapoy[5], P. Ahmadi[5], M.A. Halcrow[4] and K.G. Sandeman[1,2] *1. Department of Physics, Brooklyn College, City University of New York, Brooklyn, NY, United States; 2. Physics Program, The Graduate Center, City University of New York, New York, NY, United States; 3. Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 4. School of Chemistry, University of Leeds, Leeds, United Kingdom; 5. Institute of Petroleum Engineering, Heriot-Watt University, Edinburgh, United Kingdom*

2:30

HE-04. **Magnetism of a Cr_{10} molecular wheel with unexpected ground-state.** *F. Bartolome*[1], A. Arauzo[1], E. Bartolomé[2], F. Sedona[3], J. Rubin[4], L. Ferrari[3], J. Herrero-Albillos[5], M. Panighel[6], A. Mugarza[6,7], M. Rancan[3], M. Sambi[3] and J. Bartolomé[1] *1. Instituto de Ciencia de Materiales de Aragn and Dept. de Fisica de la Materia Condensada, CSIC - Universidad de Zaragoza, Zaragoza, Spain; 2. Escola Universitaria Salesiana de Sarria, Barcelona, Spain; 3. Dipartimento di Scienze Chimiche, Universita di Padova, Padova, Italy; 4. Instituto de Ciencia de Materiales de Aragon and Dept. de Ciencia y Tecnologia de Materiales y Fluidos, CSIC - Universidad de Zaragoza, Zaragoza, Spain; 5. Centro Universitario de la Defensa, Academia General Militar, Zaragoza, Spain; 6. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and Barcelona Institute of Science and Technology, Barcelona, Spain; 7. Institucio Catalana de Recerca i Estudis Avancats, Barcelona, Spain*

2:42

HE-05. **Donor Bound Magnetic Polaron in Semimagnetic Quantum Ring.** *P. Kalpana*[1] and K. Jayakumar[1] *1. Nanostructure Lab, Department of Physics, The Gandhigram Rural Institute - Deemed to be University, Gandhigram, India*

2:54

HE-06. **Tuning the Magnetic Moment of high density FePc/Ag(110) phases by oxygen dosing.** E. Bartolomé[1], J. Bartolomé[2], F. Sedona[3], J. Herrero-Albillos[4], J. Lobo[2], M. Piantek[5], L. Garcia[2], M. Panighel[6], A. Mugarza[6,7], M. Sambi[3] and *F. Bartolome*[2] *1. Escola Universitaria Salesiana de Sarria (EUSS), Barcelona, Spain; 2. Instituto de Ciencia de Materiales de Aragon, CSIC - Universidad de Zaragoza, Zaragoza, Spain; 3. Dipartimento di Scienze Chimiche, Universita di Padova, Padova, Spain; 4. Centro Universitario de la Defensa, Academia General Militar, Zaragoza, Spain; 5. Instituto de Nanociencia de Aragon, Universidad de Zaragoza, Zaragoza, Spain; 6. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and Barcelona Institute of Science and Technology, Barcelona, Spain; 7. ICREA - Institucio Catalana de Recerca i Estudis Avancats, Barcelona, Spain*

3:06

HE-07. **Strain Effects in Atomic Spin Model.** *Y. Hsiao*[1], O.G. Udalov[2], I.S. Beloborodov[2], C.S. Lynch[3] and G. Carman[1] *1. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA, United States; 2. Physics, California State University, Northridge, Northridge, CA, United States; 3. University of California, Riverside, Riverside, CA, United States*

3:18

HE-08. **Fractional Skyrmions in Ensembles of Exchange-Coupled Nanoparticles.** *R. Skomski*[1], A. Ullah[1], B. Balasubramanian[1], W. Zhang[1] and D.J. Sellmyer[1] *1. Physics and Astronomy & NCMN, University of Nebraska, Lincoln, NE, United States*

3:30

HE-09. **Slow magnetic relaxation in well crystallized, monodispersed, octahedral and spherical magnetite nanoparticles.** E. Navarro[1], Y. Luengo[2], S. Veintemillas[2], M. Morales[2], F. Palomares[1], U. Urdiroz[1], F. Cebollada[3] and *J.M. González*[1] *1. Nanostructures and Surfaces, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Energy, Environment and Health, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 3. POEMMA-CEMDATIC, Universidad Politécnica de Madrid, Madrid, Spain*

3:42

HE-10. **Probing Superparamagnetism in Fe_3O_4 Nanoparticles with Muon Spin Relaxation.** *B.A. Frandsen*[1], C. Read[1], J. Stevens[1], M. Christianson[1], C.S. Walker[1] and K. Chesnel[1] *1. Physics and Astronomy, Brigham Young University, Provo, UT, United States*

3:54

HE-11. **Unusual Antiferromagnetic-Superparamagnetic Competing Magnetic Interactions in NiO Nanoparticles.** *K. Nadeem*[1], H. Abbas[1] and H. Krenn[2] *1. Department of Physics, International Islamic University, Islamabad, Pakistan; 2. Institute of Physics, Karl-Franzens University, Graz, Austria*

4:06

HE-12. **Tuning the Properties of Colloidal Magnetic Particles for Thermometry on the Nanoscale.** *A.J. Biacchi*[1], E. De Lima Correa[1], F. Zhang[1], T. Moffat[1], W. Tew[1], M.J. Donahue[1], S. Woods[1], C. Dennis[1] and A.R. Hight Walker[1] *1. National Institute of Standards and Technology (NIST), Gaithersburg, MD, United States*

4:18

HE-13. **Structural and Magnetic Properties of Co_3V Nanoparticles.** *O. Tosun*[1], B. Balasubramanian[2,3], R. Skomski[2,3], D.J. Sellmyer[2,3] and G.C. Hadjipanayis[1] *1. Physics & Astronomy, University of Delaware, Newark, DE, United States; 2. Physics & Astronomy, University of Nebraska, Lincoln, NE, United States; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States*

FRIDAY AFTERNOON
1:30

RIO PAVILION 1

Session HF
HEUSLER ALLOYS AND MAGNETIC SEMICONDUCTORS II

Xinyu Liu, Chair
University of Notre Dame, Notre Dame, IN, United States

1:30

HF-01. **Electronic, magnetic and structural properties of epitaxial Co_2MnZ (Z=Al, Si, Ga, Ge, Sn, Sb) Heusler alloys.** *C. Guillemard*[1,2], S. Petit-Watelot[1], J. Rojas-Sanchez[1], P. Le Fevre[2], F. Bertran[2] and S. Andrieu[1] *1. Nanomagnetism and Spintronics Team, Institut Jean Lamour, Nancy, France; 2. Cassiopée Beamline, Synchrotron SOLEIL, Saint-Aubin, France*

1:42

HF-02. **Structural characterization and magneto-transport properties of magnetron co-sputtered ferromagnetic Weyl semimetal Co2TiGe.** *D. Dyck*[1], A. Becker[1], T. Matalla-Wagner[1], J. Koo[1], I. Ennen[1], K. Rott[1] and G. Reiss[1] *1. Physics Department, Center for Spinelectronic Materials & Devices, Bielefeld, Germany*

1:54

HF-03. **Large anomalous Hall angle in topological semimetal Co2MnGa thin films.** *Y. Zhang*[1,2], G. Dubuis[1,2] and S. Granville[1,2] *1. Robinson Research Institute, Victoria University of Wellington, Wellington, New Zealand; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

2:06

HF-04. **Spin-gapless Semiconducting Nature of Co-rich $Co_{1+x}Fe_{1-x}CrGa$.** *D. Rani*[1], E. Enamullah[1], L. Bainsla[2], K. Suresh[1] and A. Alam[1] *1. Physics, IIT BOMBAY, Mumbai, India; 2. WPI Advanced Institute for Materials Research, Tohuku university, Sendai, Japan*

2:18

HF-05. **Observation of positive linear magnetoresistance in epitaxial Mn_2CoAl films.** *K. Kudo*[1], S. Yamada[2,1], A.N. Hattori[3], H. Tanaka[3,2] and K. Hamaya[2,1] *1. Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 3. Institute of Scientific and Industrial Research, Osaka University, Ibaraki, Japan*

2:30

HF-06. **The atomic ordering dependence of valence electronic structure in half-metallic $Co_2Fe(Ga_{0.5}Ge_{0.5})$ Heusler alloy observed by hard X-ray photoemission spectroscopy.** *K. Goto*[1,2], Y. Sakuraba[2], Y. Miura[2], I. Kurniawan[2,1], A. Yasui[3], K.R. Loku Singgappulige[3], Z. Chen[2,1], H. Tajiri[3], A. Kimura[4] and K. Hono[2,1] *1. University of Tsukuba, Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 3. Japan Synchrotron Radiation Research Institute, Sayo, Japan; 4. Hiroshima University, Higashi-hiroshima, Japan*

2:42

HF-07. **Nanoscale Magnetic Phase Competition Across the $Ni_{50-x}Co_xMn_{40}Sn_{10}$ Phase Diagram: Insights from Small-Angle Neutron Scattering.** *S. El-Khatib*[1,2], K. Bhatti[2], V. Srivastava[3], R. James[3] and C. Leighton[2] *1. Physics, American University of Sharjah, Sharjah, United Arab Emirates; 2. Chemical Engineering and Materials Science, University of Minnesotta, Minneapolis, MN, United States; 3. Department of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, MN, United States*

2:54

HF-08. **Giant current-orientation effect of the anisotropic magnetoresistance in Co_xFe_{1-x} single crystal films.** *F. Zeng*[1], Z. Ren[2,4], Y. Li[3], J. Zeng[1], J. Miao[2], W. Zhang[3], Z. Yuan[4] and Y. Wu[1] *1. Department of Physics, Fudan University, Shanghai, China; 2. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China; 3. Department of Physics, Oakland University, Rochester, MI, United States; 4. Department of Physics, Beijing Normal University, Beijing, China*

3:06

HF-09. **Low-Symmetry Transverse Magnetoresistance in Permalloy.** *J. Gibbons*[1,2], J. Pearson[2], R. Winkler[3,2] and A. Hoffmann[2] *1. Physics, University of California, San Diego, La Jolla, CA, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Department of Physics, Northern Illinois University, DeKalb, IL, United States*

3:18

HF-10. **Origin of Perpendicular Magnetic Anisotropy of the Ferromagnetic Semiconductor (Ba,Zn)(Zn,Mn)$_2$As$_2$: Angle-dependent XMCD Study.** *S. Sakamoto*[1,2], G. Zhao[3], G. Shibata[1], Z. Deng[3], K. Zhao[3], B. Chen[3], Y. Nonaka[1], K. Ikeda[1], Z. Chi[1], Y. Wan[1], M. Suzuki[1], T. Koide[4], S. Maekawa[5], Y. Uemura[6], C. Jin[3] and A. Fujimori[1] *1. Physics, The University of Tokyo, Bunkyo-ku, Japan; 2. SIMES, SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 3. Chinese Academy of Sciences, Beijing, China; 4. KEK, Tsukuba, Japan; 5. JAEA, Tokai, Japan; 6. Columbia University, New York, NY, United States*

3:30

HF-11. **Ferromagnetism and Anisotropic Spinodal Phase Separation in (In,Fe)As.** *Y. Yuan*[1], R. Hübner[1], M. Birowska[2], M. Helm[1], M. Sawicki[3], T. Dietl[4,5] and S. Zhou[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Theoretical Physics, University of Warsaw, Warsaw, Poland; 3. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 4. International Research Centre MagTop, Institute of Physics, Warsaw, Poland; 5. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

3:42

HF-12. **<100>/<110> In Plane Cubic Anisotropy Switching in (Ga,Mn)As.** *M. Sawicki*[1], O. Proselkov[1], C. Sliwa[1], P. Aleshkevych[1], J.Z. Domagala[1], J. Sadowski[1,2] and T. Dietl[3,4] *1. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 2. Department of Physics and Electrical Engineering, Linnaeus University, Kalmar, Sweden; 3. International Research Centre MagTop, Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 4. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

3:54

HF-13. **Transition Metal Doped MoS$_2$ with Controllable Doping Concentration.** *M. Bian*[1,3], J. Wang[2], K. Yao[2], Y. Li[2,1], S. Yang[2], Y. Hou[3] and H. Zeng[1] *1. Department of Physics, University at Buffalo, SUNY, Buffalo, NY, United States; 2. Xi'an Jiaotong University, Xi'an, China; 3. Peking University, Beijing, China*

4:06

HF-14. **Magnon-contributed Unidirectional Magnetoresistance in Ferrimagnet/heavy-metal Bilayers.** *S. Lee*[1,2], J. Kang[1], J. Lee[2], J. Kim[2], S. Kim[3], N. Lee[3], K. Changsoo[5], K. Moon[5], C. Hwang[5], S. Park[4], B. Park[2] and K. Kim[1] *1. Department of Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 2. Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 3. Department of Physics, University of Ulsan, Ulsan, The Republic of Korea; 4. Division of Scientific Instrumentation, Korea Basic Science Institute (KBSI), Daejeon, The Republic of Korea; 5. Quantum Technology Institute, Korea Research Institute of Standards and Science (KRISS), Daejeon, The Republic of Korea*

4:18

HF-15. **Magnetic Field Driven Electrical Diodes using InAs Nanowire.** *J. Jeon*[1,2], T. Kim[1,2], S. Joo[3], J. Shin[4], H. Koo[1,5] and J. Hong[2] *1. Center of Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Department of Applied Physics, Korea University, Sejong, The Republic of Korea; 3. Center of Electricity and Magnetism, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 4. Department of Physics, Yeungnam University, Gyeongsan, The Republic of Korea; 5. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea*

FRIDAY
AFTERNOON
1:30

RIO PAVILION 3

Session HG
DOMAIN WALLS AND DOMAIN WALL DEVICES
Anjan Soumyanarayanan, Chair
Agency for Science, Technology & Research, Singapore, Singapore

1:30

HG-01. **Chiral Exchange Drag.** ***(Invited)*** *S. Yang*[1] *1. IBM Research - Almaden, San Jose, CA, United States*

2:06

HG-02. **Ultrafast Current-Driven Domain Wall Motion in Magnetic Insulting Garnets.** *L.M. Caretta*[1], S. Oh[2], T. Fakhrul[1], D. Lee[2], S. Kim[3], C. Ross[1], K. Lee[2,4] and G. Beach[1] *1. MIT, Cambridge, MA, United States; 2. Korea University, Seoul, The Republic of Korea; 3. University of Missouri, Columbia, MO, United States; 4. KU-KIST, Seoul, The Republic of Korea*

2:18

HG-03. **Ultrafast current induced domain wall motion in Mn_4N ferrimagnetic thin films for sustainable spintronics.** *S. Ghosh*[1], T. Gushi[2,1], M.J. Klug[3], J.P. Garcia[3], J. Attané[1], O. Fruchart[1], J. Vogel[3], T. Suemasu[2], S. Pizzini[3] and L. Vila[1] *1. University of Grenoble-Alpes, CEA, CNRS, Grenoble INP, IRIG, SPINTEC, Grenoble, France; 2. Institute of Applied Physics, Graduate School of Pure and Applied Sciences, University of Tsukuba, Ibaraki, Japan; 3. University of Grenoble Alpes, CNRS, Institut Néel, Grenoble, France*

2:30

HG-04. **Domain wall dynamics in ferrimagnetic strips explained by means of a two interacting sublattices model.** *E. Martinez*[1], V. Raposo[1] and O. Alejos[2] *1. Universidad de Salamanca, Salamanca, Spain; 2. Universidad de Valladolid, Valladolid, Spain*

2:42

HG-05. **Domain wall-based spin-Hall nano-oscillators.** N. Sato[1], K. Schultheiss[1], L. Korber[1], N. Puwenberg[2], T. Mühl[2], A.A. Awad[3], S. Arekapudi[4], O. Hellwig[1,4], J. Fassbender[1] and *H. Schultheiss*[1] *1. Institute for Ion Beam Physics and Materials Research, Helmholtz-Center Dresden-Rossendorf, Dresden, Germany; 2. Leibniz Institute for Solid State and Materials Research, Dresden, Germany; 3. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 4. Technische Universität Chemnitz, Chemnitz, Germany*

2:54

HG-06. **Tuning magnetic chirality by dipolar interactions.** *J. Lucassen*[1], M.J. Meijer[1], F. Kloodt-Twesten[2], R. Frömter[2], O. Kurnosikov[1], R. Duine[1,3], H. Swagten[1], B. Koopmans[1] and R. Lavrijsen[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Center of Hybrid Nanostructures, Universität Hamburg, Hamburg, Germany; 3. Institute for Theoretical Physics, Utrecht University, Utrecht, Netherlands*

3:06

HG-07. **Magnetic domain wall devices for artificial neural network. *(Invited)*** *S. Siddiqui*[2], S. Dutta[1], A. Tang[1], L. Liu[1], C. Ross[1] and M. Baldo[1] *1. Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Argonne National Laboratory, Lemont, IL, United States*

3:42

HG-08. **Magnetic Domain Wall Neurons with Intrinsic Leaking.** *W.H. Brigner*[1], N. Hassan[1], X. Hu[1], L. Jiang-Wei[1], D. Saha[1], C.H. Bennett[2], M.J. Marinella[2], F. Garcia-Sanchez[4,5], J.C. Incorvia[3] and J.S. Friedman[1] *1. Electrical and Computer Engineering, University of Texas at Dallas, Richardson, TX, United States; 2. Sandia National Laboratories, Albuquerque, NM, United States; 3. Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, United States; 4. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 5. Department of Applied Physics, University of Salamanca, Salamanca, Spain*

3:54

HG-09. **Fast Domain Walls Governed by Œrsted Fields in Cylindrical Magnetic Nanowires.** *M. Schöbitz*[1,2], A. De Riz[1], S. Martin[1,3], S. Bochmann[2], C. Thirion[3], J. Vogel[3], M. Foerster[4], L. Aballe[4], A. Locatelli[5], T. Mentes[5], F. Genuzio[5], L. Cagnon[3], S. Le-Denmat[3], J. Toussaint[3], D. Gusakova[1], J. Bachmann[2,6] and O. Fruchart[1] *1. Univ. Grenoble Alpes / CNRS / CEA, SPINTEC, Grenoble, France; 2. Friedrich-Alexander Univ. Erlangen-Nürnberg, CTFM, Erlangen, Germany; 3. Univ. Grenoble Alpes / CNRS, Institut Néel, Grenoble, France; 4. CELLS, Alba Synchrotron Light Facility, Barcelona, Spain; 5. Elettra-Sincrotrone Trieste, S.C.p.A., Trieste, Italy; 6. Institute of Chemistry, Saint-Petersburg State Univ., Saint-Petersburg, Russian Federation*

4:06

HG-10. **Dynamics of domain wall transport in a magnetic nanotrack shared by multiple magnetic tunnel junctions.** *E. Raymenants*[1,3], V. Nguyen[1], D. Wan[1], S. Couet[1], O. Bultynck[1,3], I. Radu[1], M. Heyns[1,3] and T. Devolder[2] *1. imec, Leuven, Belgium; 2. CNRS, C2N, Palaiseau - Paris, France; 3. KU Leuven, Leuven, Belgium*

4:18

HG-11. **Modelling of the Spin Transfer Torque Induced Domain Wall Motion in a Perpendicularly Magnetized Thin Disk.** *P. Bouquin*[1,2], T. Devolder[1], S. Rao[2], G.S. Kar[2] and J. Kim[1] *1. Centre de Nanosciences et Nanotechnologies, Palaiseau, France; 2. IMEC, Leuven, Belgium*

FRIDAY MIRANDA 7
AFTERNOON
1:30

Session HH
FERRITES AND SOFT MAGNETIC ALLOYS

Guohan Hu, Co-Chair
IBM TJ Watson Research Center, Yorktown Heights, NY, United States
Zhongqiang Hu, Co-Chair
Xi'an Jiaotong University, Xi'an, China

1:30

HH-01. **Dysprosium Iron Garnet Films on Si with Large Grains and Perpendicular Magnetic Anisotropy.** *J. Bauer*[1], E.R. Rosenberg[1] and C. Ross[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

1:42

HH-02. **Sol-Gel Synthesized YIG Nanoparticles with Low Magnon Damping.** *J. Silva*[1], R. Vilarinho[1], S.A. Bunyaev[1], J.A. Moreira[1], G.N. Kakazei[1] and A.M. Pereira[1] *1. IFIMUP, Porto, Portugal*

1:54

HH-03. **In vivo doping and morphology modification of magnetosomes synthesized by *M. gryphiswaldense*.** *L. Marcano*[1,2], L. Gandarias[3], D. Gandia[4], I. Orue[5], A. García Prieto[6,4], S. Valencia[1], R. Abrudan[1], A. Serrano[7,8], A. Muela[3,4] and M. Fdez-Gubieda[2,4] *1. Helmholtz-Zentrum Berlin für Materialen und Energie, Berlin, Germany; 2. Electricidad y Electrónica, Universidad del País Vasco, Leioa, Spain; 3. Inmunología, Microbiología y Parasitología, Universidad del País Vasco, Leioa, Spain; 4. BCMaterials, Leioa, Spain; 5. SGIker, Leioa, Spain; 6. Física Aplicada I, Universidad del País Vasco, Leioa, Spain; 7. SpLine, ESRF, Grenoble, France; 8. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

2:06

HH-04. Separation of sublattice magnetism in $Tb_3Fe_5O_{12}$ using magneto-optical spectroscopy. *L. Beran*[1], E.R. Rosenberg[2], J. Setina[1], A.U. Quindeau[2], J. Zázvorka[1], C. Ross[2] and M. Veis[1] *1. Charles University, Prague, Czechia; 2. Massachusetts Institute of Technology, Cambridge, MA, United States*

2:18

HH-05. Improved Magnetorheological Response in $Zn_{0.2}Fe_{2.8}O_4$ nano-hollow spheres. *P. Saha*[1] and K. Mandal[1] *1. Department of Condensed Matter Physics and Material Science, S. N. Bose National Centre for Basic Sciences, Kolkata, India*

2:30

HH-06. Structural, magnetic and electrochemical activity of $Ti_{0.5}Ni_{0.5}Fe_2O_4$ nanoparticles synthesized by high energy ball milling. *N.S. Osman*[1,2], N. Thapliyal[3], T. Moyo[2] and R. Karpoormath[3] *1. Medical and Biological Applications, Institute of Laser, Sudan University of Science and Technology, Khartoum, Sudan; 2. School of Chemistry and Physics, University of KwaZulu-Natal, Durban, South Africa; 3. Department of Pharmaceutical Chemistry, Discipline of Pharmaceutical Sciences, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa*

2:42

HH-07. Mössbauer and Magnetometry Studies of Ferrite Particles for Magnetic Resonance Imaging Thermometry. *M. Przybylski*[1], J. Zukrowski[1], N. Alghamdi[2], J. Stroud[2], J.H. Hankiewicz[2,3] and Z. Celinski[2,3] *1. Academic Centre for Materials and Nanotechnology, AGH University of Science and Technology, Kraków, Poland; 2. BioFrontiers, University of Colorado BioFrontiers (BioFrontiers - UCCS), Colorado Springs, CO, United States; 3. MRX Analytics, PBC, Colorado Springs, CO, United States*

2:54

HH-08. Crystallographic inversion-mediated superparamagnetic relaxation in Zn ferrite and Mn-Zn ferrite nanocrystals. *R. Sai*[1], R. Kahmei[1], S. Arackal[1], N. Bhat[1], M. Yamaguchi[2] and S.A. Shivashankar[1] *1. Centre for Nano Science and Engineering, Indian Institute of Science, Bengaluru, India; 2. Dept. of Electrical Engineering, Tohoku University, Sendai, Japan*

3:06

HH-09. Soft Magnetic and Structural Properties of $(Fe_{75}Co_{25})_{75}(Al_{50}Si_{50})_{25}$ Alloy Thin Films. *T. Nakano*[1,2], B. Nepal[2], Y. Tanaka[1], S. Wu[2], K. Abe[1,2], G.J. Mankey[2], T. Mewes[2], C.K. Mewes[2] and T. Suzuki[2] *1. Materials Development Center, TDK Corporation, Narita, Japan; 2. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, United States*

3:18

HH-10. **Microstructure of novel Fe-Mn soft magnetic powders produced by hydrogen reduction of nanoferrites.** *N. Imaoka*[1], Y. Kawakami[1] and K. Ozaki[1] *1. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan*

3:30

HH-11. **Magnetic properties of FeCoMnCrSi multi-principal element alloy.** *R. Jangid*[1], K. Ainslie[1] and R. Kukreja[1] *1. Materials Science and Engineering, University of California, Davis, CA, United States*

3:42

HH-12. **Impact of Post-Annealing Temperatures and Durations on the Composition of Iron Nitride.** *L. Jiang*[1] and Y. Jiang[2] *1. Chemical Engineering, UC Berkeley, Berkeley, CA, United States; 2. Jiangnan University, Wuxi, China*

3:54

HH-13. **$M_xFe_{3-x}O_4$ (M = Li, Zn, Al, Zr, Ce or Hf) nanoparticles: possible *in-vivo* switch during magnetic hyperthermia.** *N.K. Prasad*[1], M. Srivastava[1], S.K. Alla[1,2], A. Gangwar[1], S.K. Shaw[1], S. Singh Meena[3] and R.K. Mandal[1] *1. Metallurgical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi, India; 2. Basic Science and Humanities, Vignan's Institute of Information Technology, VishakhaPatnam, India; 3. Solid State Division, Bhabha Atomic Research Center, Mumbai, India*

4:06

HH-14. **Withdrawn**

4:18

HH-15. **Bi and Ce-substituted Terbium Iron Garnet thin films for integrated photonics.** *T. Fakhrul*[2], S. Tazlaru[1], L. Beran[1], E. Tsotsos[2], E.R. Rosenberg[2], M. Veis[1] and C. Ross[2] *1. Charles University, Prague, Czechia; 2. Materials Science and Engineering, MIT, Cambridge, MA, United States*

FRIDAY AFTERNOON 1:30 — MIRANDA 5

Session HI
SENSORS AND MAGNETIC RECORDING

Stéphane Mangin, Chair
Université de Lorraine, Vandoeuvre-lès-Nancy, France

1:30

HI-01. **Tape in the Cloud — Technology Developments and Roadmaps Supporting 80 TB Cartridge Capacities.** ***(Invited)*** *R. Fontana*[1], R. Biskeborn[1], M. Lantz[2] and G. Decad[1] *1. Systems, IBM, San Jose, CA, United States; 2. Research, IBM, Zurich, Switzerland*

2:06

HI-02. **Pico-Tesla Sensitive Magnetoelectric Magnetometer Based on Delta-E Effect.** *C. Dong*[1], Y. He[1] and N. Sun[1]
1. Northeastern University, Boston, MA, United States

2:18

HI-03. **Four-level Dual-track Readback Scheme for Synchronized Interlaced Magnetic Recording.** S. Yoon[1] and *E. Hwang*[1]
1. Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea

2:30

HI-04. **Statistical Analysis of Read-back Signals in Magnetic Recording on Granular Media.** *F. Slanovc*[1], C. Vogler[1], O. Muthsam[1] and D. Suess[1] *1. Faculty of Physics, University of Vienna, Vienna, Austria*

2:42

HI-05. **Development of High Resolution Programable Oversampling MI Sensor System with 32-bit ADC for Multi-Channel Bio-Magnetic Measurements.** *J. Ma*[1] and T. Uchiyama[1] *1. Department of Electrical Engineering, Graduate School of Engineering, Nagoya University, Nagoya, Japan*

2:54

HI-06. **Radio-frequency magnetic noise of magnetic vortex states in magnetic tunnel junctions.** *R. Okuno*[1], M. Goto[1,2], S. Tsunegi[3], K. Yakushiji[3], H. Kubota[3], A. Fukushima[3], S. Yuasa[3], H. Nomura[1,2] and Y. Suzuki[1,2] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

3:06

HI-07. **Optimization of thin film magnetoimpedance structures for low field sensing applications.** *E. Fernandez-Martin*[2], N. Lete-Segura[1], J. Beato[3], C. Gomez-Polo[3] and A. Garcia-Arribas[1,2]
1. Electricidad y Electronica, Universidad del Pais Vasco (UPV/EHU), Leioa, Spain; 2. BCMaterials, Basque Center on Materials, Applications and Nanostructures, Leioa, Spain; 3. Departamento de Ciencias, Universidad Publica de Navarra, Pamplona, Spain

3:18

HI-08. **Detection of Strain Direction Using a Flexible Exchange-Biased Spin Valve.** *H. Matsumoto*[1,2], S. Ota[1,2], A. Ando[3] and D. Chiba[2,4] *1. Department of Applied Physics, The University of Tokyo, Bunkyo, Tokyo, Japan; 2. Institute of Scientific and Industrial Research, Osaka University, Ibaraki, Osaka, Japan; 3. Murata Manufacturing Co., Ltd., Nagaokakyo, Kyoto, Japan; 4. Center for Spintronics Research Network, Osaka University, Toyonaka, Osaka, Japan*

3:30

HI-09. **Flexible magnetoelectronics for interactive wearables.** G. Canon Bermudez[1] and *D. Makarov*[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

3:42

HI-10. **Variable Temperature Study of Noise and Field Detectability in Magnetic Tunnel Junctions with Superparamagnetic Free Layers.** *Y. Zhang*[1], G. He[1], X. Zhang[2] and G. Xiao[1] *1. Department of Physics, Brown University, Providence, RI, United States; 2. Division of Physical Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

3:54

HI-11. **MTJ Based Magnetic Sensor for Current Measurement in Grid.** *K. Gao*[1], X. Yin[3], Y. Yang[2], D. Ewing[4], P.J. De Rego[5] and S. Liou[2] *1. Research and Development, International Business and Technology Service Corporation, North Oaks, MN, United States; 2. University of Nebraska, Lincoln, Lincoln, NE, United States; 3. Western Digital Corporation, Fremont, CA, United States; 4. Department of Energy's Kansas City National Security Campus, Kansas City, KS, United States; 5. New Mexico Operations, Department of Energy's Kansas City National Security Campus, Albuquerque, NM, United States*

4:06

HI-12. **Noise Optimization in Magnetic Tunnel Junctions.** *J.E. Davies*[1], J. Watts[1], J. Novotny[1], D. Huang[1] and P.G. Eames[1] *1. Advanced Technology, NVE Corporation, Eden Prairie, MN, United States*

4:18

HI-13. **A Full Sample-Type MI Magnetometer with Programable Circuit for High Compatibility.** *K. Shi*[1] and T. Uchiyama[1] *1. Graduate School of Engineering, Nagoya University, Nagoya, Japan*

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