



# IEEE Magnetics Society NEWSLETTER

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**Martha Pardavi-Horvath, Editor**

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## NEWS FROM THE PRESIDENT OF THE MAGNETICS SOCIETY

### President's report to the membership

At this time I am pleased to report that all matters associated with the Magnetics Society seem to be on an even keel. Many of us are currently getting ready to attend **Intermag** in San Diego. The conference is anticipated to be highly successful in all respects because the conference received an all time record number of digests for a US based Intermag. I think this is indicative of the excellent choice of venue as well as the health and buoyancy of research in technological magnetism world wide. However no conference is ever successful without top quality organisers and I am sure the Society would wish me to place on record our thanks to Mel Gomez and all his team who have organised the meeting so effectively.



There have been some comments from individuals concerning not only the level of the conference fee for the San Diego meeting but also the large differential between member and non member fees. This is a manifestation in part of an IEEE directive requiring societies to provide clear and distinct member benefits. The directive indicates that the conference fee differential should be approximately equivalent to the cost of membership. This means conference fee differentials for members against non members will typically be in the range \$100 - \$150 for all our meetings in future. This requirement is placed on us because for the IEEE to maintain its tax free status in the United States its activities must primarily be to provide benefits for members and members should in no way be subsidising non members. I anticipate that this level of differential will increase as time goes by which is excellent news for the membership and will I hope provide a significant incentive to regular participants of our meetings to join the Society and hopefully to participate in its life.

The success of our conferences makes a significant contribution to the overall financial health of our Society. In fact, it is the only activity where we are in a position to influence our income. Most of the income for the Society comes from the publication activities. This is an area where a number of very dedicated people work extremely hard behind the scenes to ensure a smooth publication process for the regular issues of the Transactions and, in particular, the very large issues associated with the Intermag conference. Most members are not aware of the vast amount of work undertaken and again I would wish to place on record my appreciation for the dedication of our Publications chairman, Ron Goldfarb from NIST in Boulder, Colorado and David Jiles of Cardiff University in the UK, who together with a team of editors undertake this work most diligently. Over the last few years there has been a dramatic increase in the use of electronic downloads from IEEE publications as the number of corporations and universities maintaining libraries decreases. Obviously, this affects our income from paper copies of the journal but the growth in electronic downloads exceeds the decrease in paper subscriptions dramatically. It is almost this factor alone which has restored the IEEE and all the societies to a buoyant financial position following the effects of the 2001 stock market crash. Hence I am delighted to be able to inform the membership that the Magnetic Society's finances have in my time of association with the Society never had a better outlook. In consequence, we are looking in the future to utilise these resources to provide further benefits to members, such as increased conference fee discounts and expanded programmes in

areas such as student travel, Distinguished Lecturer programmes and Chapter activities. If any member feels there is an area where the Society should expand its activities or dedicate more resources either in terms of manpower or finance please do not hesitate to contact me or any other Society officer. All suggestions will be taken seriously. In particular, due to the fact that our membership is now more than 50% based outside the US we would welcome suggestions for initiatives to support and develop activities in applied magnetism around the world.

Due to the balance of membership I believe the Magnetics Society is now a truly international organisation. Over the last few years we have been increasing the involvement of people from countries outside of North America and we have our regular programme where the Intermag conference visits Europe and Asia alternatively on a 3-year cycle. Plans are in place for the 2008 European Intermag to be held in Madrid, Spain, during early May when the weather should be absolutely beautiful. Spain is one of the most historic and beautiful countries of Europe and I would encourage members from all parts of the world to consider attending. An excellent team has been put in place under the leadership of Manuel Vazquez of the CSIC in Madrid who are well advanced in the preparation of the conference. We are also making arrangements for the next Asia Intermag and again I am grateful to Prof Muraoka of Tohoku University for his leadership of the site selection committee. We currently have three bids from Perth, Singapore and Taipei (in alphabetical order). A decision regarding the preferred venue and the organisers will be made following site visits in January.

A major component of the internationalisation of the Society is our increased Chapter activities. The Society remains particularly keen to see the formation of new Chapters in countries where we have members with no local organisation. Only 20 members are required to form a Chapter and I would urge people from countries where no Chapter exists to contact our Chapter chair, Richard Dee ([r.dee@ieee.org](mailto:r.dee@ieee.org)) if they would like to set up and form a Chapter. Financial support will be provided for new Chapters to enable them to commence to organise a programme of meetings and support is ongoing for many years thereafter. I am aware that only about one third of our members attend Intermag and clearly having resources for the organisation of local meetings is the best way for us to provide benefits to our members. It always surprises me that the Chapters budget is underspent year on year. Hence please do not be bashful in seeking to set up Chapters or if you are involved with a Chapter to ask for more money to improve your programmes. Given the financial health of the Society we are also in a position to support and enhance activities in technological magnetism around the world.

One area where we are able to provide this support and would wish to increase our activity is in the sponsorship of other conferences. I know that many conferences around the world struggle to provide financial underwriting. The Magnetics Society is very willing to listen sympathetically to people trying to organise conferences in our field of interest with a view to coming to an arrangement whereby we would provide the necessary financial guarantees. We do have a set of requirements which have to be fulfilled in terms of financial planning, conference fee discount for IEEE members and the like but in terms of the conference organisation, the publication of its proceedings and its format we in no way seek to influence or control how people would wish to organise their own events. Anyone seeking to organise such meetings and interested in receiving sponsorship from the Magnetics Society should in the first instance contact either myself or our Conference Executive Committee chair, Doug Lavers ([doug.lavers@utoronto.ca](mailto:doug.lavers@utoronto.ca)).

Finally I look forward to seeing many of you in San Diego and I would encourage you to attend the Awards ceremony which takes place on Tuesday afternoon in the plenary session. Of particular note this year is the presentation of a lifetime achievement award to Prof. H. Neal Bertram, formerly of Ampex Corporation and UCSD, who has partially retired and is one of the best known and

respected individuals in micromagnetic modelling of magnetic recording media and general theoretical aspects of technological magnetism. I am sure you would want me on behalf of the membership to pass on our congratulations to Neal for an award that is very richly deserved.

My best wishes to you all

*Kevin O'Grady*

*IEEE Magnetics Society President*

*April 2006*

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# IEEE MAGNETICS SOCIETY OFFICERS

## 2005-2006

### OFFICERS

<b>First Name</b>	<b>Last Name</b>	<b>Position</b>	<b>Company / Institution</b>
Kevin	O'Grady	President	The University of York
Carl	Patton	Vice President	Colorado State University
Randall	Victoria	Secretary/Treasurer	University of Minnesota
Ron	Indeck	Past-President	Washington University

### APPOINTED CHAIRS

<b>First Name</b>	<b>Last Name</b>	<b>Position</b>	<b>Company / Institution</b>
Richard	Dee	Chapters	Sun Microsystems
Ron	Goldfarb	Publications	NIST
Mel	Gomez	Technical Committee	University of Maryland
Doug	Lavers	Conference exec. Comm.	University of Toronto
Bruce	Gurney	Awards	Hitachi Global Storage Technologies,
J.W.	Harrell	Education	The University of Alabama
Can	Korman	Publicity	The George Washington University
Laura	Lewis	Finance	Brookhaven National Laboratory
Bob	McMichael	Standards	NIST
Phil	Wigen	Nominations	Ohio State University

### NON-VOTING MEMBERS

<b>First Name</b>	<b>Last Name</b>	<b>Position</b>	<b>Company / Institution</b>
Roy	Chantrell	Distinguished Lecturers Coordinator	The University of York
David	Jiles	Editor in Chief of the Transactions	Cardiff University
Diane	Melton	Executive Director	Courtesy Associates
Martha	Pardavi-Horvath	Newsletter Editor	The George Washington U.

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## Chapters Corner

### Chapter Chair Meeting in San Diego

There will be a meeting of chapter chairs at the upcoming INTERMAG Conference in San Diego. We'll let you know what happens in the next newsletter issue.

### News from the Romanian Chapter (ROMSC)

*From: Alexandru Stancu*

The Romanian chapter has increased significantly the number of members (it practically doubled this year!). In the next period they plan to activate other centers in the country to make that sustainable.

The Student Branch is active to and they have already initiatives which are supported as much as possible. New members this year and were helped with a discount fee. It is felt that a student with some experience in IEEE will try to maintain this status as a member in his future scientific life.

They have already developed a web page [http://stoner.phys.uaic.ro/IEEE\\_student/?cat=1](http://stoner.phys.uaic.ro/IEEE_student/?cat=1) where you can find pictures from their meeting before Christmas and their planned activities.

The main scientific event of the Chapter this year will be the Joint Mmde and IEEE ROMSC Conference which will be held in Bucharest between 15th and 17th of June. It is already the third edition of the IEEE ROMSC conference!

### News from the Pittsburgh Chapter

*From: Gangping Ju*

Last year, Pittsburgh saw all three Distinguished Lectures and all three of them are kind enough to give two talks, one at Seagate and one at CMU. They were well attended.

For this year, I have contacted all three lecturers, and we've managed to schedule Mason William's talk for April 27-28th, and yet to schedule the talk with Prof. Indeck. Besides all the DLs, we plan to have 1-2 extra seminars, details yet to be determined.

We have also focused a bit energy in recruiting the new members, and I have convinced a few (2-4) colleagues to join.

Submitted by

***Dr. Richard H. Dee,***

Magnetics Society Chapters and Membership Chair

# THE DISTINGUISHED LECTURER PROGRAM OF THE MAGNETICS SOCIETY

The Distinguished Lecturer (DL) program of the IEEE Magnetics Society has been in existence for a number of years. On an annual basis, three DLs are nominated and funded by the Magnetics Society to deliver a lecture by invitation of individual institutions or chapters. At the recent AdCom meeting an outline of the formal aims of the program were discussed and approved.

It is hoped that the adoption and pursuance of these aims will enhance the already significant contribution of the DL program to the vitality of the Magnetics Society and the field of magnetics overall.

## 1. The aims of the DL Programme

- To celebrate achievements in magnetics and honour the finest researchers and communicators in the field.
- To provide outreach to the wider community and promote the trans-national aims of the Magnetic Society.
- To support Chapter activities by providing high profile speakers for local meetings.
- To inspire and enthuse, especially young researchers entering a career in magnetics.
- To advertise and promote the IEEE Magnetics Society as the society of choice for magnetics professionals.
- To act as an engine to recruit new members to the Magnetics Society.

## 2. Criteria for Selection

Given the aims of the DL programme there are two principal criteria, based on awarding DL's to dynamic individuals with a strong presence in their field. However, the outreach aims of the programme also suggest further secondary criteria.

### *Principal Criteria*

- Excellence in some field of magnetics. This is not limited to excellence in research, but should also recognise the important contributions of individuals in developing the applied/technical aspects of magnetics.
- Excellent communication skills.

### *Secondary Criteria*

- Diversity
  - Technical – coverage of as many aspects of magnetics as possible
  - Geographical



- Gender and Ethnic
- The DL should also be a member of the Magnetics Society. Under exceptional circumstances a non- member can be considered as long as he/she agrees to become a member.

This year we have an excellent set of DL's giving talks on 3 diverse areas:

- Half-Metals, Spin Torque, and Nanorings (Prof. Chia-Ling Chien, Johns Hopkins),
- Micro Fabrication Techniques for Magnetic Information Storage Devices: From Bubbles to Thin Film Recording Heads to Nano Magnetic Structures (Dr. Robert E. Fontana, Jr. Hitachi Global Storage Technologies), and
- Dynamics in magnetic micro- and nanostructures (Prof. Burkard Hillebrands, Technische Universität Kaiserslautern)

Further details of their talks in addition to brief biographies can be found in the following section. The DL's are currently in the process of finalizing their plans for the second half of the year, so if you are interested in having one (or more) talk in your location, now would be a good time to issue the invitation! Please contact the DL's directly for their availability or contact the DL coordinator (Roy Chantrell, rc502@york.ac.uk) for further information or help with arrangements. Roy would also be happy to receive comments on the aims of the program and any suggestions for its further development. He would also be interested in hearing of innovative use of the program, so as to be able to circulate examples of good practice. As one example, the UK chapter has a record of organizing 'topical meetings' around the visit of a DL, in which the DL presentation is complimented by a further 2-3 invited talks within the same area. These meetings have proven extremely popular and made the magnetics society very attractive to UK magneticsians.

Finally, the success of the DL program was founded on the efforts of previous coordinators (Isaak Mayergoyz and Stan Charap). On behalf of the membership, the awards committee chair (Bruce Gurney) and Roy Chantrell would like to record their appreciation of a job well done by Isaak and Stan in creating a lively and effective program with its enormous contribution to the activities of the Magnetics Society.

***Roy Chantrell***  
***Coordinator, IEEE Distinguished Lecturer Program***  
 Physics Department,  
 York University,  
 York, YO10 5DD, UK  
 Email: [rc502@york.ac.uk](mailto:rc502@york.ac.uk)

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# IEEE MAGNETICS SOCIETY

## DISTINGUISHED LECTURERS FOR 2006

### SPIN ELECTRONICS

**Michael Coey**

Trinity College Dublin

Conventional electronics has ignored the spin on the electron. Besides its fundamental unit charge, the electron has a magnetic moment due to its quantum of angular momentum. Things began to change in 1988, with the discovery of giant magnetoresistance in metallic thin film stacks. This led to the development of spin valves and magnetic tunnel junctions, which allowed magnetic recording to ride the tiger of 100% year-on-year growth of recording density for the past ten years. Tunnel junctions are the active elements for most schemes for nonvolatile magnetic random-access memory, which will be briefly surveyed.

These devices, which underpin the multi-billion dollar magnetic recording industry, are nothing more than sophisticated magnetoresistors, the simplest two-terminal electronic device. If we are to see a second generation of spin electronics, it will be necessary to develop more complex devices such as a three-terminal spin transistor with gain. Here magnetic semiconductors are required, or at least the ability to manipulate spin-polarized currents in normal semiconductors. The puzzling new family of dilute magnetic oxides, such as ZnO:Co or SnO<sub>2</sub>:Mn, and the emerging class of d<sup>0</sup> ferromagnets such as HfO<sub>2</sub> or CaB<sub>6</sub> may produce a new paradigm for magnetism in solids, and support entirely new device concepts. A major challenge is to separate spin and charge currents in solids, and transmit information magnetically, without dissipation.



**Michael Coey** received a BA degree in physics from Cambridge University in 1966, and a PhD from the University of Manitoba in 1971. He worked as a researcher in the Centre National de la Recherche Scientifique in the 1970s, before moving to Trinity College Dublin, where he has been Professor of Experimental Physics since 1986.

Michael Coey has broad interests in magnetism, spanning materials hard and soft, crystalline and amorphous, metallic, semiconducting and insulating as well as magnetic phenomena and devices. He coordinated the 'Concerted European Action on Magnets' (1984-94), a pioneering group of academic and industrial researchers devoted to all aspect of the understanding, development an application of rare-earth iron permanent magnets. More recently, he led the Oxide Spin Electronics Network, OXSEN 1996-2000. Currently he is Deputy Director of Ireland's nanoscience centre CRANN. He serves as Divisional Associate Editor of *Physical Review Letters* and on the editorial board of the *Journal of Magnetism and Magnetic Materials*.

His main research interests at present are in spin electronics, including magnetic semiconductors, as well as magnetotransport and magnetoelectrochemistry. He has published more than 500 papers, and is co-author of books on Magnetic Glasses and Permanent Magnetism. Michael Coey is the recipient of the Charles Chree medal of the Institute of Physics, and the gold medal of the Royal Irish Academy. He is a fellow of the Royal Society, and a Foreign Associate of the National Academy of Science.

**Contact:** *J. M. D. Coey,*

School of Physics, Trinity College, Dublin 2, Ireland.

Tel: +353 1 6081470;

Fax: +353 1 6772941;

email: [jcoey@tcd.ie](mailto:jcoey@tcd.ie)

## MASSIVE INFORMATION: EXPLOITATION AND SECURITY

**Ronald S. Indeck**

Washington University

Magnetic information technologies have enabled the amount of data stored last year to increase, by some estimates, by nearly one order of magnitude over that of the previous year. Personal data stores have reached into the terabyte regime and enterprise stores are now measured in petabytes. Digital music and video recorders have brought large data stores into the consumer market. About 80 percent of these data are unstructured (i.e., not indexed), inherently unstructureable (e.g., audio, images, or DNA data), rapidly changing (e.g., intelligence data and medical records), or held as an object within an otherwise structured database (such as memo fields, voice records, etc.). To find something of interest and ultimately extract actionable knowledge from these unstructured data, like finding specific needles in a haystack of many needles, one must process all of the data stored — not just an index as is often done with structureable data. Furthermore, since data stored are increasing at a rate faster than electronic processing capacity (as guided by Moore's Law) our ability to manage this information in reasonable times is further aggravated.

New and tractable processing approaches, yielding performance improvements in excess of 100,000 over conventional systems, may be possible over storage networks and large disk arrays with capabilities that include line-speed compression, encryption, signal processing and other broad functionality. In this presentation I will explore emerging systems and hybrid concepts that circumvent conventional, sequential processor and bus-bandwidth limits, making data movement more effective and efficient, as well as enabling content-enhanced storage on ingest. Early critical applications include intelligence (both government and commercial), medicine, scientific research, financial services, and enterprise storage networks.



**Ronald S. Indeck** received the B.S.E.E., M.S.E.E., and Ph.D. degrees from the University of Minnesota. He is a Founder and Technical Advisor to Exegy, Inc. He was a National Science Foundation Research Fellow at Tohoku University in Sendai, Japan. Since 1988 he has been in the Department of Electrical Engineering at Washington University, where he is the Das Family Distinguished Professor and Director of the Center for Security Technologies. He has published more than 50 peer reviewed technical papers and has been awarded more than 20 patents. He has received the National Science Foundation Presidential Young Investigator Award, the Missouri Bar Association's Inventor of the Year Award, the IBM Faculty Development Award, the Washington University Distinguished Faculty Award, the IEEE Centennial Key to the Future Award, and the IEEE Young Professional Award.

Indeck is a Fellow of the IEEE and a member of the American Physical Society. He is on the board of the Federal Bureau of Investigation's InfraGard program. He has served several international conferences and was co-chairman of the 2002 International Magnetics Conference. He has served as an editor of *IEEE Transactions on Magnetics* and as president of the IEEE Magnetics Society. Indeck currently consults for industry and government, and leads research in projects of recording physics, magnetic devices, security, and data mining in massive databases.

**Contact: Prof. R. S. Indeck,**

Center for Security Technologies, Department of Electrical Engineering,  
Washington University, St. Louis, MO 63130 USA;  
telephone: (314) 935-4767;  
fax: (314) 935-7500;  
e-mail: [rsi@wustl.edu](mailto:rsi@wustl.edu)

# BEYOND THE LIMITS OF MAGNETIC RECORDING: AN ITINERANT MAGNETICIAN LOOKS AT HYSTERICAL LOOPS

**Mason L. Williams**

Hitachi Global Storage Technologies (Retired)

For several decades there have been declarations that digital magnetic recording as we know it is about to reach the ultimate limit of areal density. Technological advances have enabled steady progress primarily through simultaneous scaling of dimensions and tolerances over several orders of magnitude and use of materials with larger energy densities. In the 1990's it became clear that then current approaches would be limited to about 40 Gb/ sq. in. by the combined requirements that individual grains have reversal barriers of above 40 kT for long term data retention and that a bit cell contain 100 or more grains for adequate media signal-to-noise. Recent areal density demonstrations at about 6 times that limit have been possible with perpendicular recording and improved materials, but perhaps we are again nearing the ultimate physical limits, unless a novel idea comes along. In addition to perpendicular recording, technologies suggested to extend the limits include patterned media, thermally-assisted writing and tilted media. We'll discuss the potential advantages and challenges of these approaches. Areal density is primarily limited by write head materials and fabrication tolerances, while data-rate is limited by sensor technology which must provide several times kT of signal energy (and low noise levels) to detect a bit. Sensors have evolved from inductive heads to anisotropic magneto-resistive heads to in-plane giant magneto-resistive (GMR) devices with CPP (current across the gap) GMR devices with spin-tunneling sensors also under consideration. We'll discuss the attributes of these technologies and the anticipated requirements. Powerful error correction codes will also be required if we are to reach 1 Tb/ sq. in, so attention must be paid to writing, reading and arithmetic.



*Mason L. Williams* received a B.S. in Engineering in 1964 from the California Institute of Technology, and the M.S.E.E. degree in 1966 and a PhD in Electrical Engineering with Physics minor in 1970 from the University of Southern California where he studied under Professor Jan Smit.

In 1970, Dr. Williams joined IBM in San Jose, California, initially in a Manufacturing Research department. In his first year he was assigned to work with R. Larry Comstock on characterization and testing of experimental magnetite film media. That collaboration led to the so-called "Williams-Comstock" analytical model of digital magnetic recording. In 1982, he joined the Magnetic Recording Institute and managed an investigation of perpendicular magnetic recording briefly. In 1985 he became manager of Advanced Recording

Heads at the IBM Almaden Research Center in San Jose. In that role he managed the development of micro-magnetic modeling for magneto-resistive head elements and the first building of spin-valve head test structures to verify biasing techniques. In 1992, Dr. Williams became the IBM representative to the Ultra-High Density Magnetic Recording Head project of the National Storage Industry Consortium, aimed at 10 Gb/sq in technology. In 1996, he became part of the Extremely High Density Recording Strategy Team at INSIC. In 1999, he was elected to the IEEE grade of Fellow. In 2001, he was selected as an IBM Master Inventor, and holds several recording head patents. At the end of 2002, Dr. Williams retired from IBM and joined Hitachi Global Storage Technologies. He worked on novel perpendicular head approaches and then focused again on recording physics and integration modeling until retiring from Hitachi in 2005.

**Contact: Mason L. Williams,**

5826 Vargas Ct, San Jose, CA 95120 USA; telephone: (408) 268-7791;

e-mail: [mason.williams@alumni.caltech.edu](mailto:mason.williams@alumni.caltech.edu)

## IEEE NEWS

### 2007 IEEE President's Election

#### Candidates for 2007 IEEE President-Elect Answers to 10 Questions

19 March 2006

From Your Newsletters Editor's Desk:

IEEE Board of Directors selected **Lew Terman** and **John Vig** to be the two candidates for 2007 IEEE Pres-Elect.

In an effort to better present their platforms and in connections with the upcoming elections, Lew and John, assisted by the TAB Newsletters Committee have prepared for the readers the following "Answers to 10 Questions by the two Candidates for 2007 IEEE President-Elect".

**Lew Terman** ([www.terman.org](http://www.terman.org)) can be contacted at [l.terman@ieee.org](mailto:l.terman@ieee.org), and **John Vig** ([www.JohnVig.org](http://www.JohnVig.org)) can be contacted at [j.vig@ieee.org](mailto:j.vig@ieee.org).

#### **QUESTION: What are IEEE's strengths?**

**Lew Terman:** The volunteers are perhaps the most important strength; it is their enthusiasm, expertise, and time which is key to the success of the Institute.

Another major strength is the IEEE's generation and dispersion of high quality Intellectual Property, including archival publications, conferences/meetings, and standards. It is this IP which produces the revenue streams that financially enables the IEEE and create the information flow which is so valuable to the technical community. The IEEE publishes over 30% of the published material in IEEE's fields of interest, and its conferences/meetings around the world enable rapid dispersal of new results, as well as networking and face-to-face discussions.

A third major IEEE strength is globalization: RAB's structure of geographical based entities extends around the world in over 150 countries, allowing networking and the interchange of technical information at the local level.

Fourth, the IEEE has recovered from the recent downturn to a strong overall financial position. Reserves are at an all-time high, though some problems remain for specific O/Us. The financial performance of the Societies and Councils has been very important.

Finally, the IEEE has an excellent staff supporting the volunteers and working with them for the Institute and its goals.

**John Vig:** The IEEE's main strengths include:

- 1) That we are a non-profit membership organization; we have ~50,000 volunteers who contribute to the IEEE's >350 conferences, >100 journals, >300 sections, >900 standards, >40 societies and councils, etc.
- 2) The breadth and quality of products & services: publications, conferences, workshops, standards, educational products and services, sections, chapters...



3) Our diversity – i.e., that we have ~360K members, in 150 countries. The membership includes not only engineers but also computer/IT professionals, scientists...; men and women; members of all cultures..., and that our activities transcend national borders.

**QUESTION: What are the major challenges facing the IEEE?**

**Lew Terman:** Membership has been essentially flat in recent years, and the number of higher grader members has been decreasing. A major problem has been the retention of new graduates, now below 25% three years after graduation. Society membership continues to decline, and the fraction of IEEE members without society membership is now over 43%. Much of this can be attributed to a perceived lack of value of IEEE membership relative to its cost. Increased support of member career development is important. IEEE membership will be 50% in Regions 7-10 within 10 years with current trends; the implications (and opportunities) need to be thoroughly examined. The long-term impact of IEL on membership could become significant.

Open Access is the major long-term question for publications - if all publications are available for free on the web, the IEEE publication business could collapse. Publication timeliness has been a problem, new publications are launched too slowly, and there is a strong need for practical publications to engage the practitioners/"bench-top engineers". Finally, there is the impact of going to full electronic publishing and on what schedule it might occur.

While the overall IEEE financial position is good, there are specific units with problems; further reduction of the infamous Infrastructure Charge is needed through continual evaluation of the efficiency of our operations. With the continuing growth of reserves, long term financial plans/goals for the reserves and their use must be developed.

Finally, the IEEE needs to react to new technologies faster to claim leadership positions in these technologies as they emerge. We must continue our search for effective and fair governance.

**John Vig:** How to provide sufficient value to justify the membership dues is a major challenge. A growing number of members who work for institutions which provide "free" access to IEEE's publications and conferences are asking, "I get everything I want from IEEE for free, so, why should I be a member?"

About 80% of IEEE members don't read IEEE journals on a regular basis. "The articles are by academics, for academics." Half of IEEE members work in industry. Providing more practical content without diluting the quality of our publications is a major challenge.

Half of IEEE's revenues result from the sale of publications. "Open access," the worldwide movement to disseminate scholarly research literature online, free of charge, threatens these revenues.

**QUESTION: What are the major changes IEEE needs to be making?**

**Lew Terman:** Membership: increase (and actively market) membership benefits around the world, broaden the base of membership such as aggressively moving into software, services, applications and solutions. Follow up the China initiative with similar efforts for India and Eastern Europe.

Publications: establish a faster track for new publications, pilot new publications that are more practically-oriented, and establish a reward system for reducing the submission-to-publication time. Develop the best search capability for technical material, and make it a membership benefit.

Education: the *Expert Now* program for continuing education is off to an excellent start; aggressively push it and make it available to members.

Financial: drive good financial behavior for Operating Units with reserves by giving them more access to those reserves – as the ratio of the O/U’s reserves to expenses increases, allow access to an increased percentage of the reserves. Continue to work on decreasing the Infrastructure Charge and increasing revenues, though not at the cost of making IEEE’s prime goal increased surpluses/reserves. Develop a long-term financial plan/goals for the IEEE reserves.

Governance: the current governance structure is not egregiously broken; continue to work towards streamlining operations and governmental efficiency.

Finally, work across the IEEE major Boards to establish a spirit of working together, understanding each others problems, and working with staff on identifying and solving tactical and strategic problems.

**John Vig:** To improve the IEEE’s agility, e.g., with respect to entering new technologies, I have proposed that we establish an IEEE Venture Capital Fund. Any person could propose an idea, and, if the idea is judged to be worthy, receive up to \$100,000 to implement, or show the feasibility of, the idea.

To provide practical content, I have proposed that we create a new category of peer-reviewed publications, “application notes” - which would include “how-to’s,” and case studies; and that we digitize many of the ~600 IEEE Press books and make them available to members, and members only, for free.

The IEEE should be more willing to take prudent risks, and it should be more willing to terminate unsuccessful activities.

To explore new ideas, the IEEE should experiment more – with new membership models, dues structures, publication models (e.g., new forms of peer review), etc.

The IEEE needs to improve its communications with members. The Institute should become a real newspaper, i.e., it should report both the good and the bad, and it should publish controversial views, even when such views may displease the leadership.

The IEEE should join with other engineering and scientific organizations to establish a public relations campaign to improve the image of engineering and science.

**QUESTION: What are some of the important challenges facing IEEE as a publisher in service to its membership?**

**Lew Terman:** Issues raised by Open Access will need to be anticipated and managed. A major implication is to at least maintain the revenue stream which our publications generate. IEEE needs to help members navigate the mass of data available from IEEE, other technical publications, and on the web. Practical publications need to be developed with the collaboration of RAB and TAB. Goals for article publication timeliness must be set, and rewards established for publications to meet or exceed the goals. Establish a fast approval track for new publications. Maintain the importance of peer review. Keep monitoring the possibility of going to all electronic publishing, and establish when or if it should occur well before any critical point occurs.

**John Vig:** Open access, the worldwide movement to disseminate scientific and scholarly research literature online, free of charge is a serious challenge because half of IEEE’s revenues result from the sale of publications. Google, at [www.scholar.google.com](http://www.scholar.google.com) and similar services, now make it easier to find the free copies of publications. Papers can be read without having to pay the publishers.

Delayed open access, e.g., making publications open access two years after publication, would not be as damaging. It would allow the IEEE to maintain most of its publication revenues while fulfilling its mission of being “for the benefit of humanity and the profession.”

A frequently heard criticism of IEEE publications is that they are primarily “by academics, for academics;” they are not useful for practitioners. About half of our membership is from industry. If our publications are not useful for the majority of our members, then we have a serious problem.

I have proposed three solutions to this problem. One is to ask authors to provide, voluntarily, a “practical impact statement” with their papers. The second is to create a new class of peer reviewed publications, “application notes,” and the third is to digitize IEEE Press books and make them available to the membership.

The mean time between an author’s submission and the date of publication of an article is too long for some of our journals; the delay for five of our journals has been >120 weeks. This must not be allowed to continue, and it need not continue, as evidenced by the fact that the mean is <50 weeks for 31 of our journals.

**QUESTION: Do you see IEEE in future years as an organization based on its strong membership base, or do you foresee other models?**

**Lew Terman:** IEEE should remain a membership-based organization. Membership is critical – it is the members through whom we serve our technical communities, and who provide the volunteers that are critical to the success of IEEE. Members also provide a means of measuring how relevant we are to the technical world, and provide the mechanism for engaging emerging technical and geographic areas.

**John Vig:** I see the IEEE continuing to be a membership-based organization - with its tens of thousands of volunteers and its membership diversity as its pillars of strength.

I do, however, see a need to experiment with membership and dues models. Some members, for example, may be willing to receive Spectrum and The Institute electronically if the dues were lowered by the costs of producing the paper copy of those publications. We have >\$160M in reserves. Therefore, we can afford to experiment.

The success of our IEEE Electronic Library (IEL) is hurting membership recruitment and retention. (IEL subscribing institutions, which include many of the largest universities and corporations, provide “free” access to IEEE publications.) I hear more and more “I get everything I want from IEEE for free, so, why should I be a member?” Therefore, another experiment I would propose is to offer reduced dues to those working or studying at a few IEL organizations and measure the effects on membership numbers.

**QUESTION: What changes in IEEE would you advocate in response to quick industrialization and potential IEEE presence in large Asian countries?**

**Lew Terman:** The two major Asian countries of interest are quite different in technical environment and social structure. I believe the current China initiative is appropriate; we need to understand the environment and the current approach seems a good first step. We need a deeper understanding of the specific needs and opportunities and how to involve that community to effectively stimulate IEEE membership and volunteerism.

India is also a key growth area in the 21<sup>st</sup> century, and currently has more IEEE members than any country outside the US. We need to understand why they join, and focus on the appropriate member and technical services to support their interest. India has a strong university structure with which we should be working.

**John Vig:** IEEE’s presence in large Asian countries is actual, not just “potential.” For example, in 2005, we held 59 conferences in China, and a total of 129 in China, India, Japan and Korea. Our publication sales, in China alone, amounted to ~\$5M in 2005. Total sales to the four countries was ~\$20M. In 2005, our combined membership in these four countries was ~45K.



Although the IEEE has made inroads in China and India, it is a long way from realizing the potential presence in these and other countries. Membership is too expensive for many in Asia, Latin America, Eastern Europe... We need a membership strategy for potential members who can't afford our dues, not just in Asia, but, throughout the world.

**QUESTION:** What do you see as the power of the IEEE President and how would you exercise this power?

**Lew Terman:** The IEEE President has three major responsibilities/opportunities:

a) Running the Board and ExCom meetings effectively, including setting up the meetings. This is important as the members of the governing bodies of the IEEE meet for only a short time, and it is important the meetings be efficient for the most effective interaction.

b) Providing leadership to the Institute: setting directions, establishing committees and study groups to get information and sift through alternatives, work with the staff, work with the IEEE Boards and governance levels. It is in this area that the President can have the most effect. I would focus on bringing the various groups in IEEE together, and on listening to their input, getting an open airing of issues and suggested solutions, and generating and following through on new ideas.

c) "Showing the flag" around the world, to both IEEE geographies/groups and non-IEEE entities - geographical, technical and political. The interactions with IEEE groups are very important to generate mutual understanding, and the interaction with non-IEEE entities is important to present the IEEE and the technical community it represents, and to understand their needs, views, and to understand possible opportunities.

**John Vig:** The president's duties are to: chair the meetings of the IEEE Board of Directors, Executive Committee and Assembly; perform ceremonial functions such as meeting with dignitaries, presentation of awards, opening remarks at conferences, etc.; promote the objectives of the IEEE; and be "the Chief Executive Officer of the IEEE."

I would make maximum use of the presidency to advocate the IEEE's agenda, both within and outside the IEEE.

I would set at least one lofty (man-on-the-moon-like) goal for the IEEE, aimed at inspiring and mobilizing the volunteers and staff.

The Board of Directors has been too inward-focused. I would propose the establishment of a council of advisors – consisting of prominent, mostly outside experts and leaders – to advise the IEEE leadership.

**QUESTION:** In the 2005 IEEE elections, only 14% of the membership voted. What, if anything, would you do to increase members' participation in IEEE elections?

**Lew Terman:** I think what we are doing this year is pretty good – talking to the Regions and other entities which invite us (with Q&A sessions where time permits), sending these 10 questions to the Newsletters, participating in the Philadelphia debate and making available recordings of the debate and presentations of the candidate platforms on the IEEE web site, and making additional information available on our personal web sites.

**John Vig:** In 1975-77, when a controversial candidate, Irwin Feerst, ran for IEEE president, 36% voted. In those days, the membership was more involved in IEEE issues than they are today.

Today, the membership is rarely informed of controversial issues. For example, last year, I received reports of meetings where readings from the Koran and Christian prayers were parts of the program. Why not report such events and ask the membership whether or not such religious expressions should be allowed as parts of IEEE events?

“THE INSTITUTE is the newspaper of the IEEE” claims The Institute’s website but, The Institute is more a “house organ” than a newspaper. As president, I would propose to the Board of Directors, and The Institute’s Editorial Board, that The Institute become a real newspaper of the IEEE.

The office holders in IEEE, especially the President and the other members of the Board of Directors, make decisions about matters that are important to the membership and the future of IEEE. Voting in the annual IEEE election is the chance members have to choose the decision makers. With only 14% voting, 7+% of the members can decide the fate of IEEE.

**QUESTION: What have been your three most important contributions to IEEE?**

**Lew Terman:** In the late 1990’s, I was instrumental in the conversion of the Solid-State Circuits Council to the Solid-State Circuits Society. This was very successful; the SSCS is now the 5<sup>th</sup> largest Society in the IEEE, and the Journal of Solid-State Circuits records the highest number of hits in IEL. I served as the first SSCS president elected by the Society.

In the mid 90’s, IEEE and TAB were going through financial difficulties. I was appointed TAB treasure, stabilized the situation and improved the communication with TAB, and served a second term as Treasurer.

In 2001, I was on the Board as the bottom fell out of the IEEE financial situation. As part of a team effort, we were able to put in place a number of changes which arrested the slide.

**John Vig:** My three most important contributions are:

The IEEE Sensors Council, i.e., I proposed it, shepherded it through the approval processes, and was elected its founding president, in 1999. In 2005, the Council’s journal published 1500 pages, and its conference had >500 registered participants.

Between 1999 and 2002, the IEEE’s reserves declined >\$50M (>40%), due, in large part, to the decline in the value of IEEE’s investments. Up to this point, the IEEE had no formal investment policy. I wrote the first draft of the Investment Operations Manual (IOM), then worked with investment professionals, volunteers and staff to finalize it and get it passed by the Board. Contained in the IOM is an investment policy which has reduced the risks and increased the transparency of IEEE’s investments.

I brought what is now the IEEE Int’l Frequency Control Symposium into the IEEE. I negotiated the takeover of this conference by an IEEE society (UFFC). This conference is now the premier international conference in its field.

**QUESTION: What would be your single and most recognized contribution that will distinguish your IEEE Presidency from those of others?**

**Lew Terman:** I would like my presidency to result in the elimination of any silos between IEEE operating units, and attacking IEEE problems with coordinated efforts across IEEE.

**John Vig:** The president under whose leadership innovation flourished in IEEE.



## The INSTITUTE online

The most current version of **The Institute** can always be found at

<http://www.ieee.org/theinstitute>

Here's your report on news around the IEEE, from the editors of The Institute. The most current version of The Institute can always be found at <<http://www.ieee.org/theinstitute>>

### *IN THE LATEST ISSUE:*

1. [Millionaire Member Rockets Into Space](#)
2. [IEEE Web Site Works Smarter, Looks Sharper](#)
3. [Candidates Named for 2007 President-Elect](#)
4. [Technological Literacy Matters](#)
5. [Join a Society for Half the Price](#)
6. [Get a Sneak Preview of "Cosmic Collisions" on IEEE Spectrum Online](#)
7. [E-waste Conference Brings Together Researchers and Recyclers](#)
8. [High-Performance Architecture Examined in New Proceedings](#)
9. [Sign Up Today for the IEEE Spectrum Career Accelerator Forum](#)
10. [Two IEEE Members Chosen as EE Times ACE Awards Finalists](#)

### **1. Millionaire Member Rockets Into Space**

Greg Olsen has had a long and accomplished career. He's an IEEE Fellow, the cofounder of two successful high-tech companies, and the recipient of a string of awards. And if that isn't enough, last October he spent 10 days in outer space, visiting the International Space Station -- a trip Olsen funded himself, paying some US \$20 million for a seat on board a cramped Russian Soyuz spacecraft. Find out more at

<http://boldfish.ieee.org:80/u/2449/00667584>

### **3. Candidates Named for 2007 President-Elect**

At least two candidates will be on the 2006 ballot for President-Elect, Life Fellow Lewis M. Terman and Fellow John R. Vig. The winner of the election will succeed Leah Jamieson, whose term as IEEE president expires at the end of 2006. Learn more about the candidates at

<http://boldfish.ieee.org:80/u/2451/00667584>

### **5. Join a Society for Half the Price**

With the year almost half gone, dues on society memberships and publications have been cut in half. The IEEE's 39 societies focus on a broad range of subjects, and together, they produce 122 publications. Individual memberships and subscriptions become active when paid for and continue through the remainder of 2006. To add societies or publications to existing memberships, visit

<http://boldfish.ieee.org:80/u/2454/00667584>



## **IEEE-USA Today's Engineer**

A Monthly webzine <http://www.todaysengineer.org>

Here's your report from **IEEE-USA** on building careers and shaping public policy.

The current version of **Today's Engineer Online** can always be found at:

<http://boldfish.ieee.org:80/u/2535/110954>

### *IN THIS ISSUE:*

1. Backscatter: Picking a Good Boss
2. **Complete the 2006 IEEE-USA Salary and Fringe Benefit Survey**
3. **IEEE-USA's H-1B Position Garner's National Media Attention**
4. 2005 IEEE-USA Annual Report Available Online
5. IEEE-USA Seeks Nominations for Board Positions
6. "IEEE Spectrum" Career Accelerator Forum Scheduled 11 April
7. IEEE Member Discounts for AeA Executive Development Programs
8. Stevens WebCampus Earns Best Practices Award for Distance Learning

### **2. Complete the 2006 IEEE-USA Membership Salary and Fringe Benefit Survey**

U.S. IEEE members are encouraged to take the 2006 IEEE-USA Membership Salary And Fringe Benefit Survey, the world's premier compensation study of technology professionals. Upon completing the survey, you will receive a free subscription to the IEEE-USA Salary Service, which includes the IEEE-USA Salary Calculator. Please take the survey at <http://boldfish.ieee.org:80/u/2538/110954>.

**3. IEEE-USA's H-1B Position** Garner's National Media Attention IEEE-USA's position on H-1B visas was recently highlighted in a Washington Post article (<http://boldfish.ieee.org:80/u/2539/110954>)

### **4. 2005 IEEE-USA Annual Report Available Online**

Now available online, the Annual Report highlights IEEE-USA's accomplishments and progress in each of the organization's five major program areas: career and member services; professional activities; government relations; communications and public relations; and public awareness.

Download the PDF at: <http://boldfish.ieee.org:80/u/2542/110954>

### **5. IEEE-USA Seeks Nominations for Board Positions**

IEEE-USA is seeking nominations for the following IEEE-USA board positions: President-Elect (2008); Member-At-Large (2008-2009); Secretary/Treasurer (2007); Vice President, Career Activities (2007); Vice President, Member Activities (2007); Vice President, Professional Activities (2007); Vice President, Technology Policy Activities (2007); Nominations & Appointments Committee (2007-08).

Eligible nominees include IEEE-USA Vice Presidents, IEEE-USA Secretary-Treasurers, and U.S. Region Directors who have completed their terms or who are serving in their second year of that term, or members who have had experience as an IEEE-USA committee chair.

Please e-mail nominee's name, recommended position, contact information and a brief biography (if possible) to Scott Grayson at <mailto:s.grayson@ieee.org> by 5 May 2006.

## SENIOR MEMBERSHIP

*Elevate your membership!*

### Requirements for elevation to IEEE Senior Member

*IEEE Bylaw I-105.3 sets forth the criteria for elevation to Senior Member Grade, as follows:*

"... a candidate shall be an engineer, scientist, educator, technical executive or originator in IEEE-designated fields. The candidate shall have been in **professional practice for at least ten years** and shall have shown **significant performance over a period of at least five** of those years."

There is no cost to convert to a Senior Member. "Senior" refers to professional experience, not age, and you do not need to be a "senior citizen" to be a Senior Member.

For full information visit the [IEEE Senior Member Web pages](#)

- Once you determine that you fulfill the [requirements](#) for Senior Member (SM) grade, identify your three references who must be IEEE Senior Members or Fellows.
  - If you have difficulty in locating individuals to serve as your references, contact your local Section or Chapter for assistance. For help in contacting your Section/Chapter Chair, email Denise Howard at [senior-member@ieee.org](mailto:senior-member@ieee.org).
  - If you have been notified by a Section officer that he or she intends to nominate you for Senior Member grade, the nominator serves as one reference as long as he/she is a Senior Member or Fellow. Otherwise, the required number of references is still three in addition to the nomination.
  - Alternatively, contact your Section Chair and ask if he or she can nominate you. This will help your Section earn a rebate at the end of the year through the [Nominate a Senior Member Initiative](#).
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# MAGNEWS

## IBM RAMAC, the world's first disk drive recognized

Last April, the IEEE recognized the IBM RAMAC, the world's first disk drive, as an IEEE Milestone. A dedication ceremony was held in San Jose on May 26. Last Friday morning, Jan. 27, 2006, the plaque, along with one from the American Society of Mechanical Engineers, was mounted at 99 Notre Dame Avenue in San Jose, site of the IBM development laboratory where RAMAC originated. Representatives from the IEEE, IBM, Magnetic Disk Heritage Center, Santa Clara County Superior Court ( which occupies the building), IBM Quarter Century Club, and the media were all on hand to witness and celebrate the event.

### RAMAC/ IEEE Milestone Presentation May 26, 2005



Left to right: Bill Bernard (mc), Cleon Anderson (IEEE President), Laura Guio (IBM), Emerson Pugh (IEEE Foundation), Al Hoagland (Magnetic Disk Heritage Center), Forest Williams (San Jose City Council)

**What:** Large historic plaques honoring the creation of the world's first hard-disk drive at this location some 50 years ago will be affixed to the building at **99 Notre Dame Ave.** by City of **San Jose** workers. (The building is now a family courthouse for the Superior Court of Santa Clara County.)

On this site, IBM researchers devised and created the first magnetic hard-disk drive – the IBM RAMAC. It had 50 disks (each disk was two FEET in diameter) and a total data-storage capacity of 5 megabytes. This may seem very small now, but at the time this was a huge innovation. It led to today's multi-billion-dollar data storage industry (led by companies such as IBM, Hitachi, Seagate, Western Digital, EMC, etc.). Continued improvements in disk drives -- pioneered by IBM in San Jose for more than four decades -- allowed computer users to access and work with more and more data as their computers increased in capability.



The plaques being installed were presented by the American Society of Mechanical Engineers (ASME) and the Institute of Electrical and Electronics Engineers (IEEE) in honor of the technical innovations that the IBM RAMAC represented in their engineering disciplines.

99 Notre Dame Ave. was designated as a City Landmark in January 2002.

**Who:** RAMAC pioneers, a current IBM executive and industry representatives:

**Al Hoagland** – RAMAC and magnetic storage pioneer (now with Santa Clara U.)

**Laura Guio** – IBM's San Jose Senior Site Executive (also: Director, Storage Development)

**Roger Hoyt** – Representative of the Institute of Electrical and Electronics Engineers



***Roger F. Hoyt, PhD, Fellow IEEE***

San Jose, CA 95120-4022

email: [roger.hoyt@sbcglobal.net](mailto:roger.hoyt@sbcglobal.net)



## **ITACHI announces**

As the hard drive industry approaches its 50<sup>th</sup> Anniversary (September 2006), expected industry growth is at an all-time high. Analysts predict that more hard drives will be shipped in the next five years, than in the previous 50. And the industry continues to evolve with a steady pace of innovation and technological advancements.

To meet the latest trends in the HDD industry, Hitachi GST is making a series of announcements around plans to double its 3.5" market share, better meet Digital Video trends, introduce a new product line for video (CinemaStar) and celebrate the last 50 years, with a look towards the future.

Please find press release headlines below and you can access the full release at [www.hitachigst.com](http://www.hitachigst.com)

- Hitachi Predicts Blazing Pace of Hard Drive Adoption on Technology's 50<sup>th</sup> Anniversary

- Hitachi GST Announces New 3.5 Inch Disk Drive Product Line that Gives DVR and Set-Top Box Customers a Dedicated High Storage Capacity Solution that's Optimized for Consumer Electronics
- Hitachi GST Declares 2006 the "Era Of Digital Video" as the Company Bolsters Its Support for This Next "Killer Application" For Consumer Electronic Hard Disk Drives
- Hitachi GST Announces Two New 3.5-inch Hard Drives That Extend the Company's Long-Standing Tradition of Performance and Capacity Leadership
- Hitachi GST Powers SM Data's StoreData Digital Cinema System in Europe



## A Faster, Denser Hard Drive Debuts

**Boost in capacity and performance adds to appeal of perpendicular drives.**

**Jon L. Jacobi**

*From the May 2006 issue of PC World magazine*

The reorientation of hard drives has begun: The first drives to use perpendicular magnetic recording (PMR) technology to pack more data into less space are out. And our tests reveal that they not only boost storage capacity but perform faster as well.

In our tests of the Seagate Momentus 5400.3 and its non-PMR 5400.2 predecessor, the PMR unit showed a modest boost overall, completing its runs in about 7 percent less time; results just for sustained throughput were even more impressive with a 15 to 17 percent gain. The PMR drive's greater areal density has little effect on seek speed, a component of many of our tests, but helped when our tasks focused on sustained throughput with sizable files.

PMR aligns the magnetic markers on a hard-disk surface in a different way to increase areal density so you can store more data on every platter. Existing technology was approaching its areal density limits, and drive manufacturers spent several years working to overcome the problem. The result for you is more and cheaper room for your data--which is no small concern in a world moving to high-definition media.

### Inside the Drive

To visualize the difference between today's longitudinal and the new perpendicular recording, picture a drive platter. The bits of data on the disk are represented by magnetized particles with their poles oriented one way or the other. Until now, they have been aligned parallel to the disk surface, like concentric rings formed by tiny dominoes. PMR stands those dominoes on end--also in concentric circles--meaning you can squeeze far more dominoes into a given surface ("[How It Works: New Drive Technology](#)" shows the difference).



Toshiba has already shipped 40GB and 80GB, 1.8-inch PMR drives. At press time, only Toshiba's Megabeat MP3 players, sold in Japan, feature them, but they'll be in various consumer electronics devices and laptops soon. The second taste of PMR comes courtesy of Seagate's new 2.5-inch Momentus 5400.3 line, which ranges from 30GB to 160GB. The 160GB model is now the biggest notebook drive available, surpassing the previous 120GB notebook champ. The new drive not only has more storage, it uses less energy and gives off less heat, making for quieter, cooler micro PCs and digital video recorders. One caveat: Many BIOSs do not support drives larger than 137GB natively. Systems with Windows XP SP1 and later, as well as Linux, though, supplant such BIOSs and can recognize the full 160GB.

### Future Disks

Seagate predicts that relatively soon PMR technology will deliver at least a four-fold increase in capacity. That means 2-terabyte, 3.5-inch single-platter disks for desktops; 1TB, 2.5-inch disks for laptops; and even 50GB for tiny 1-inch drives in MP3 players in the near future.

Headroom for tomorrow is good, but how much do you gain today? The highest-capacity (500GB), 3.5-inch drives currently on the market have an areal density of 125 gigabits per square inch; the PMR Toshiba models and the Momentus 5400.3 have 133 gbps. That's a measurable, if marginal gain, but compared with the average drive's approximately 100 gbps, it's a significant improvement.

With a winning combination of more storage and greater speed, the new drives should be a welcome addition to your storage arsenal. And they cost about the same \$2 per GB as current drives--you'll find the 160GB Seagate drive kit for \$320 (list).

### New Drive Shows Its Mettle

A disk using perpendicular magnetic recording technology handily outperformed an earlier generation on our copying tests and kept a slim edge on other tests.

Product	Drive technology	Time in seconds to complete:			
		Copy files & folders	Copy large file	Find file	Symantec Virus-Scan
<a href="#">Seagate 160GB Momentus 5400.3</a>	Perpendicular	<b>290</b>	<b>228</b>	<b>132</b>	<b>108</b>
<a href="#">Seagate 120GB Momentus 5400.2</a>	Longitudinal	340	274	136	119

**CHART NOTES:** Both 5400-rpm, 2.5-inch drives had 8MB of buffer and used the ATA-100 interface. Shorter times are better. Bold denotes best score. Tests conducted by the PC World Test Center. For details on testing, click on this link: [How We Test](#). All rights reserved.

Photograph by: Marc Simon



## **New Spin-valve Bench (SVB) software from *Euxine Technologies***

### ***Spin-valve Bench* Version 2.0**

**Advanced spintronics device design and analysis software,**

**Euxine Technologies LLC, Dayton, Ohio, USA**

*All commercial names are trademarks of their respective owners*

***Euxine Technologies LLC*** released in April of 2006 Version 2.0 of its **Spin-valve Bench (SVB)** software for Microsoft Windows operating systems.

Version 2.0 represents a significant upgrade over version 1.0 and includes the following new features:

- New three-dimensional magnetic shield components. An available *Shield Assistant* feature enables the convenient setup of shield architectures;
- Significant computational speed boost compared with version 1.0;
- A generic *macrospin* model for both regularly-shaped and patterned components;
- Vast improvements of the user interface that includes the ability to store and playback calculated magnetic states, a broader data-output repertoire and new user-session control options;
- Powerful enhancements of co-installed array-patterning (*Cellider*) and background-job submission and monitoring (*MagJob*) utilities.

The SVB software offers an affordable, easy-to-use, robust and well-documented modeling environment for engineers and scientists engaged in the design and analysis of advanced spintronic devices such as multi-layer MRAM cells and MR read-head sensors. It is powered by a rigorous three-dimensional micromagnetic computation engine in combination with realistic phenomenological giant-magnetoresistance (GMR) and anisotropic-magnetoresistance (AMR) models. The user can easily model spin-torque and thermal effects for current-in-plane (CIP) and current-perpendicular-to-plane (CPP) device configurations.

To learn more about the SVB software visit us at <http://www.euxine.com/svb.htm>, and to request for a free evaluation license send us an email at [joti@euxine.com](mailto:joti@euxine.com).

*Company contact:*

**Dr. John Oti**

[joti@euxine.com](mailto:joti@euxine.com)

<http://www.euxine.com/svb.htm>

## CONFERENCE ANNOUNCEMENT

### *Information For future Student Travel Award Winners*

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Awards Committee



Dear *Student Travel Award Winner*,

As part of your student travel award from the IEEE Magnetics Society for Intermag 2005 you are requested to write a brief report on your experiences in going to the conference. This report should be no more than two pages in length, with no more than two figures or photographs, and should give an account of one or more of the following aspects of your attendance at the conference.

- You may use all or some of your report to describe the technical highlight of the conference from your point of view. This may be the particular session that you attended or it may be the Educational committee tutorial or some other part of the conference which you found particularly valuable in a technical sense.
- You may wish to comment on the conference as a whole. We would welcome your opinions on the organisation of our conferences and whether they serve the student population well.
- We know that very often students have an interesting time when going to a conference, both in terms of the travel experience and social interactions with other students or general conference participants. Feel free to use all of your report to describe your overall experience.

This year the Magnetics Society will provide travel awards to approximately 25 students. We expect to collect the student conference reports and publish many of them in the Society Newsletter on our website. This means that a selection of reports will be published in each edition of the Newsletter.

As with most publications of this kind our Newsletter Editor, Prof Martha Padarvi Horvath of George Washington University, will have the right to edit your report.

Please submit your report within the next four weeks to Prof Padarvi Horvath( [mpadarvi@gwu.edu](mailto:mpadarvi@gwu.edu) ) and please carbon copy Matt Carey ([matthew.carey@hitachiast.com](mailto:matthew.carey@hitachiast.com)) and Bruce Gurney ([bruce.gurney@hitachiast.com](mailto:bruce.gurney@hitachiast.com)).

We hope you enjoyed your conference experience and that in return you will give the writing of your report a high priority.

Best wishes,

Matt Carey/Bruce Gurney  
Student Travel Coordinator/Awards Chairman  
IEEE Magnetics Society

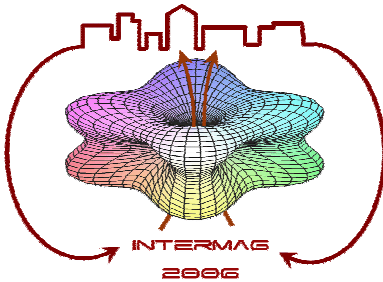
# CONFERENCE ANNOUNCEMENT 1

## International Magnetism Conference INTERMAG 2006

San Diego, California,

May 8-12 2006

<http://www.intermagconference.com/intermag2006/>



The [INTERMAG 2006](http://www.intermagconference.com/intermag2006/) Conference will be held in **San Diego, California, USA**, from **May 8 to May 12, 2006**. All members of the international scientific communities interested in new developments in magnetism and associated technologies are invited to attend and submit their latest findings to INTERMAG 2006. The Program consists of invited and contributed papers and selected papers from the conference will be published in the *IEEE Transactions on Magnetics*.

*Categories* for submission include:

1. Magnetic Recording & Magneto Optical Recording
2. Spin Electronics and Applications (Non-Recording)
3. Soft Magnetic Materials and Applications
4. Permanent Magnet Materials and Applications
5. Magnetic Thin Films and Nanostructures
6. Other Magnetic Materials & Non-Recording Applications
7. Nanomagnetism Theory
8. Characterization and Imaging
9. Sensor, High Frequency and Power Devices
10. Life Science and Applications
11. Physics and Interdisciplinary Topics

### **Deadlines:**

**Manuscript submission: March 13, 2006.**

**Advance Registration** for the conference begins on **January 30, 2006.**

*Advance Registration* via the web is the most convenient way to register and is highly recommended.

The City of San Diego offers a wide variety of things to see and do as well as a climate that is mild and pleasant all year. For complete information about traveling to San Diego visit the web site at: [www.sandiego.org](http://www.sandiego.org). There you can obtain a travel and vacation planning guide, current weather information, and maps of the area of both the downtown and the area surrounding the **Town & Country Resort and Conference Center** where InterMag 2006 will be held.

The Town & Country is located in San Diego's Mission Valley, and is served by the new light-rail trolley system. Complimentary parking is also available. All Conference activities are located on one level, with easy access for all.

The InterMag Conference sleeping **room rates** will be \$139/single or \$149/double plus tax. More complete information and room reservation forms will be available on the InterMag Conference web site in January 2006.

For more information visit the **INTERMAG Homepage** at:

[www.intermagconference.com/intermag2006](http://www.intermagconference.com/intermag2006)

## CONFERENCE ANNOUNCEMENT 2

### 6th International Conference on the Scientific and Clinical Applications of Magnetic Carriers May 17 – 20, 2006 Krems, Austria (Vienna Region)



This meeting will discuss all aspects of magnetic nanospheres, magnetic microspheres and ferrofluids. This includes

- **Preparation and analysis** of magnetic microspheres and nanospheres made from all kinds of materials such as polymers, ceramic, biomaterials, biodegradables, including fluorescent ones.

- **Applications** covered are magnetic drug delivery, molecular biology, in vitro diagnostics, contrast agents in MR imaging, stem cell separation, toxic metal removal, magnetic cell sorting, hyperthermia treatment, groundwater decontamination and magnetic particle motion analysis, just to name a few.

\* **Daily lecture series** about the fundamental physics of magnetic carriers are given by Dr. Robert Shull, NIST.

\* **Deadline** for abstract submission, reduced online registration and guaranteed hotel reservation: Friday, March 10, 2006

\* **Registration:** Euro 300 until March 10, Euro 380 thereafter; students/postdocs: Euro 150; this fee includes all lunches, a boat trip, the

reception and a dinner in the historic downtown of Krems

\* **Proceedings** will be published as fully peer reviewed articles in the online journal "Biomagnetic Research and Technology"

\* **Travel grants:** We will provide 10 participants with a travel grant of 500 Euros plus free registration. Recipients will be chosen within one week after the abstract deadline, based according to the scientific quality of their abstract. Applicants must either be doctoral and postdoctoral students, or come from an economically disadvantaged country (e.g., former Soviet Union, South America, Eastern Europe, Africa).

You are cordially invited to our next and 6th Conference by:

#### Urs Häfeli

University of British Columbia  
Vancouver, Canada

#### Wolfgang Schütt

IMC University of Applied Sciences  
Krems, Austria

#### Maciej Zborowski

The Cleveland Clinic Foundation  
Cleveland, U.S.A.

#### Mirka and Ivo Safarik

Academy of Science  
Ceske Budejovice, Czech Republic

For more information, please visit our website [www.magneticmicrosphere.com](http://www.magneticmicrosphere.com)

## CONFERENCE ANNOUNCEMENT 3

# TMRC

THE MAGNETIC RECORDING CONFERENCE

2006

TMRC

Perpendicular  
Recording

August 7-9, 2006 Pittsburgh, Pennsylvania  
Sponsored by the IEEE Magnetics Society

And co-sponsored by:

Data Storage Systems Center (DSSC) - CMU  
Center for Magnetic Recording Research (CMRR) - UCSD  
Institute for Information Storage Technology (IIST) - SCU  
Center for Micromagnetics & Information Technologies (MINT) - U of MN  
Center for Materials for Information Technology (MINT) - U of AL  
Center for Research on Information Storage Materials (CRISM) - Stanford  
Computer Mechanics Laboratory (CML) - UCB

### Conference Chairman

Dr. Mark Re  
Seagate  
1251 Waterfront Place  
Pittsburgh, PA 15222  
Phone: 412-918-7101  
Fax: 412-918-7034  
[mark.re@seagate.com](mailto:mark.re@seagate.com)

### Program Co-chairmen

Prof. Jim Bain  
Carnegie Mellon University  
Department of ECE  
5600 Forbes Ave.  
Pittsburgh, PA 15213  
Phone: 412-268-3602  
Fax: 412-268-4585  
[jbain@ece.cmu.edu](mailto:jbain@ece.cmu.edu)

Dr. Francis Liu  
Western Digital  
44100 Osgood Road  
Fremont, CA 94539  
Phone: 510-683-7336  
[francis.liu@wdc.com](mailto:francis.liu@wdc.com)

### Local Chairman

Prof. Jimmy Zhu  
Carnegie Mellon University  
Department of ECE  
5600 Forbes Ave.  
Pittsburgh, PA 15213  
Phone: 412-268-8373  
Fax: 412-268-8554  
[jzhu@ece.cmu.edu](mailto:jzhu@ece.cmu.edu)

### Publications Chairman

Dr. Sining Mao  
Seagate  
7801 Computer Ave.  
Minneapolis, MN 55435  
Phone: 952-402-7909  
FAX: 952-402-8074  
[Sining\\_mao@seagate.com](mailto:Sining_mao@seagate.com)

### Publicity Chairman

Dr. Moris Dovel  
Headway Technologies  
678 S. Hillview Dr.  
Milpitas, Ca 95035  
Phone: 408-934-5625  
Fax: 408-934-5400  
[Moris.dovels@headway.com](mailto:Moris.dovels@headway.com)

### Treasurer

Dr. Joost Mortelmans  
12388 Priscilla Ln  
Los Altos Hills, CA 94022  
[mortelms@gmail.com](mailto:mortelms@gmail.com)

## AN INTERNATIONAL CONFERENCE ON PERPENDICULAR MAGNETIC RECORDING

The 17th Magnetic Recording Conference (TMRC 2006)  
will be held August 7-9, 2006 at  
Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

TMRC 2006 will have a slightly different focus than previous TMRC conferences. In the past, conference topics rotated between magnetic recording heads, media and systems. With the recent introduction of perpendicular recording products, this conference will focus on **perpendicular recording components, system integration and extendibility**. Approximately 30 invited papers will be presented orally at the conference and will later be published in the IEEE Transaction on Magnetics. The topics to be presented include:

- Perpendicular recording media technology
- Perpendicular recording head technology
- Perpendicular recording system and integration topics
- Perpendicular recording channels, coding and error-correction technologies
- Perpendicular recording physics
- System reliability
- Extendibility of perpendicular recording technology

Nominations for speakers should be made to the Program Chairs: Prof. Jim Bain ([jbain@ece.cmu.edu](mailto:jbain@ece.cmu.edu)) and Dr. Francis Liu ([francis.liu@wdc.com](mailto:francis.liu@wdc.com)) via e-mail by March 22, 2006.

There will also be a poster session at the conference. The poster session will have contributed posters in addition to those given by the invited speakers. Poster contributors must send a one-page abstract to the Program Chairs by July 15, 2006. The program booklet with invited paper digest will be available by the end of June 2006.

Current information on TMRC 2006 can be found at  
<http://www.dssc.ece.cmu.edu/tmrc2006/>




## CONFERENCE ANNOUNCEMENT 4

2006 Asia-Pacific Microwave Conference

# APMC 2006

December 12-15, 2006 Pacifico Yokohama, Yokohama, Japan

<http://www.apmc2006.org>




### "SAIL FOR THE MICROWAVE OCEAN"

#### Final Call for Papers

The 2006 Asia-Pacific Microwave Conference (APMC 2006) will be held at the Pacifico Yokohama, Yokohama, Japan, on December 12-15, 2006. This conference is organized and sponsored by the Institute of Electronics, Information and Communication Engineers (IEICE) of Japan, and is cooperatively sponsored by IEEE MTT-S, URSI, EuMA and IEEE MTT-S Japan Chapter.

#### CONFERENCE TOPICS

- A.
**Active Devices and Circuits**  
 Low-Noise Devices and Circuits, High-Power Devices and Circuits, Control Circuits (MIX, Osc., SW, etc.), MMICs and HMICs (Receivers, Transmitters, etc.), SiGe/RF-CMOS Devices, Microwave Tubes, Active and Adaptive Antennas, Others
- B.
**Passive Components**  
 Filters and Resonators, Ferrites and Surface Wave Components, Packaging, Passive Devices and Circuits, Waveguides and Striplines, WDM Components, RF MEMS, LTCC Devices, Directional Couplers and Hybrids, Others
- C.
**Systems**  
 Wireless Systems, Broadband Wireless Access, Optical Fiber Systems, Microwave Applications (ITS, SPS, etc.), Microwave Medical & Biological Applications/EMC, Phased Array Antenna Systems, Millimeter-Wave Radar and Sensor, Remote Sensing, Wireless LAN and Bluetooth, Quasi-Zenith Satellite Systems, Digital Broadcasting, Others
- D.
**Basic Theory and Techniques**  
 Scattering and Propagation, Electromagnetic Field Theory and CAD, Antenna Theory, Microwave Antennas, Microwave Photonics, Microwave Superconductivity, Measurement Techniques, Artificial Materials, Others
- E.
**Emerging Technologies**  
 Photonic Bandgap, Software Defined Radio, Wireless Ad hoc Network, Mobile Access, 4G Communication Systems, Terahertz and Submillimeter Wave Components, System on Package, HAPS, MIMO Systems, UWB Systems, Others



#### TIME TABLE

Paper Submission Deadline: May 31, 2006  
 Notification of Acceptance: August 1, 2006  
 Final PDF file with Camera-Ready Manuscript  
 Deadline: September 15, 2006

**ALL SUBMISSIONS MUST BE IN PDF  
 FORMAT.**

Hard copies not accepted

## CONFERENCE ANNOUNCEMENT 5

# 10<sup>th</sup> Joint MMM/Intermag Conference

January 7-11, 2007 • Baltimore, Maryland

### **FIRST CALL FOR PAPERS**

Abstract Deadline: August 9, 2006

The 10th Joint Magnetism and Magnetic Materials (MMM)/Intermag Conference will be held at the Baltimore Marriott Waterfront Hotel in Baltimore, Maryland from Sunday, January 7 through Thursday, January 11, 2007. Members of the international scientific and engineering communities interested in recent developments in magnetism and associated technologies are invited to attend the Conference and contribute to its technical sessions.

**SCOPE OF THE CONFERENCE:** This Conference will include all basic and applied science and technology related to the field of magnetism. The technical subject categories for the Conference are located at the end of this Call.

#### **ABSTRACT SUBMISSION REQUIREMENTS:**

- The presenting author **must** be a paid registrant. The Conference does not provide support for any contributed papers.
- Abstracts must be submitted prior to the **August 9, 2006 deadline**.
- **All abstracts must be submitted via the WEB submission system ONLY.**
- Submit all abstracts electronically, using the link found at (<http://www.magnetism.org>).  
The link will be **available** starting **July 19, 2006**.
- Abstracts should be **300 words** or less, and are limited by the submission system.
- Abstract acceptance will be announced via email. Authors will be advised as to the status of their submission by mid September 2006.

**PROGRAM:** The program will consist of invited and contributed papers falling broadly within the scope of the categories listed at the end of this Call.

**PUBLICATION:** The Proceedings of the Conference will be published in June 2007 as special issues of the *Journal of Applied Physics* and *IEEE Transactions on Magnetics*. Entire sessions will be assigned to one or the other of these publications by the Program Committee.

**All manuscripts must be received by October 31, 2006.**

**EXHIBITS:** An exhibition of related services, equipment, materials, software, technical journals and books will be held as a part of the 2007 Joint MMM/Intermag Conference. Individuals and organizations who are interested in purchasing booth space should contact **Roseann Kuryla**, Exhibits Coordinator at Courtesy Associates at: email:[2007joint@courtesyassoc.com](mailto:2007joint@courtesyassoc.com); Fax: 202-973-8722.

**REGISTRATION:** Advance Conference Registration will be available starting **October 1, 2006**.

**VISA REQUIREMENTS FOR ENTRY INTO THE USA:** Citizens of other countries must carry a valid passport and visa to enter the USA. Foreign participants should contact the United States



Embassy, Consulate, or Office of Tourism in their home country AS SOON AS POSSIBLE to determine their particular visa requirements. Participants requiring visas must initiate the application process many months in advance of their departure date. More details at: <http://www.magnetism.org>

#### **TECHNICAL SUBJECT CATEGORIES**

- I. Fundamental Properties and Cooperative Phenomena
- II. Magnetoelectronic Materials and Applications
- III. Computational Magnetics and Imaging
- IV. Soft Magnetic Materials and Applications
- V. Hard Magnetic Materials and Applications
- VI. Structured Materials
- VII. Special Magnetic Materials
- VIII. Magnetic Recording
- IX. Sensors (not magnetic recording), High Frequency and Power Devices
- X. Applications and Interdisciplinary Topics

#### **CHAIRMAN**

***Julie Borchers***

[www.magnetism.org](http://www.magnetism.org)



## FORTHCOMING CONFERENCES

### 17<sup>TH</sup> INTERNATIONAL CONFERENCE ON MAGNETISM ICM

August 20-25, 2006;

Kyoto International Conference Hall, Kyoto, Japan

This triennial meeting is organized under the auspices of the International Union for Pure and Applied Physics (IUPAP). The first of the series took place during 1958 in Grenoble, France, and has been followed by similar, highly regarded, conferences held in various parts of the world.

These are dedicated to the presentation and discussion of the latest developments and ideas relevant to magnetic and related materials.

ICM 2006 is jointly sponsored by the Science Council of Japan, the Physical Society of Japan, The Magnetics Society of Japan, The Japan Society of Applied Physics and the Japan Institute of Metals.

Contact JTB Communications: Tel: (+81) 6-6348-1391; Fax: (+81) 6-6456-4105; E-mail:

[icm2006@jtbcom.co.jp](mailto:icm2006@jtbcom.co.jp)

<http://icm2006.com/>

[ICM 2006](#)

### HIGHLY FRUSTRATED MAGNETISM 2006

15-Aug-2006 - 19-Aug-2006

Highly Frustrated Magnetism 2006 (HFM2006) will be held at Icho Kaikan, which is the alumnus union building for Osaka university medical school, Osaka, Japan.

The conference is a satellite of the International Conference on Magnetism (ICM17), which will be held during Aug. 20th - 25th in Kyoto, Japan.

More information is available at [www.kobe-u.ac.jp/hfm2006/index.html](http://www.kobe-u.ac.jp/hfm2006/index.html)

### YAMADA CONFERENCE LX

16-Aug-2006 - 19-Aug-2006

**Research in High Magnetic Fields,**

Sendai Civic Auditorium in Sendai, Japan

The *International Conference on Research in High Magnetic Fields* will take place in Sendai (Japan) as the "Yamada Conference LX RHMF2006" from August 16th to August 19th 2006, jointly hosted by the High Field Laboratory for Superconducting Materials (HFLSM), Institute for Materials Research, Tohoku University, and "The High Magnetic Field Forum of Japan". It is a satellite symposium of the International Conference on Magnetism ICM 2006, in Kyoto, Japan, from August 20th to August 25th 2006, and succeeds symposia in Toulouse (2003), Porto (2000), Sydney (1997), Nijmegen (1994), Amsterdam (1991), Leuven (1988) and Osaka (1982). The conference aims to cover recent advance of research in high magnetic fields. The scientific program is planned including tutorial topics, plenary lectures and invited papers as well as contributed papers. Both oral and poster sessions will be scheduled.

More [information](#)

## **IEE MEGAGAUSS XI CONFERENCE 2006**

10-Sep-2006 - 14-Sep-2006

Imperial College, London, UK

The Megagauss XI Conference is the latest in a line of conferences that date back to 1965, when Megagauss I took place in Italy at Frascati (Roma). Since then subsequent conferences have brought together distinguished scientists and technologists from many countries to present their latest theoretical and experimental studies in such areas as the generation of ultrahigh magnetic fields, the development of flux compression generators, liner implosions for fusion problems, high-current switching technologies, and the application of these techniques in many areas of science and technology. For further information, please visit [www.IEE.org](http://www.IEE.org) or contact [powerpns@iee.org](mailto:powerpns@iee.org).

## **19<sup>TH</sup> INTERNATIONAL WORKSHOP ON RARE EARTH PERMANENT MAGNETS AND THEIR APPLICATIONS**

August 29-September 2, 2006;

Beijing International Convention Center, Beijing, China

Contact Prof. Li Wenxiu: Tel: (+86) 10-65211206; Fax: (+86) 10-6512-4122; E-mail:

[SQ@csm.org.cn](mailto:SQ@csm.org.cn)

<http://www.csm.org.cn/REPM06.HTM>

## **52<sup>ND</sup> CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS**

November 5-9, 2007; Tampa, Florida

## **53<sup>RD</sup> CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS**

November 10-14, 2008; Austin, Texas

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## BOOK REVIEWS

### Magnetic Actuators and Sensors

John R. Brauer

ISBN: 0-471-73169-2

Hardcover

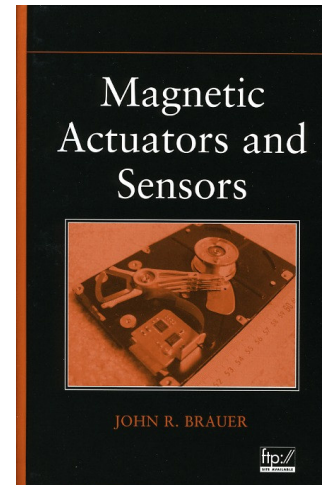
308 pages

February 2006, Wiley-IEEE Press

US \$120.00

This practical text features computer-aided engineering methods for the design and application of magnetic actuators and sensors, using the latest software tools. John Brauer highlights the use of the electromagnetic finite element software package Maxwell® SV and introduces readers to applications using SPICE, MATLAB®, and Simplorer®. A free download of Maxwell® SV is available at the Ansoft site, and the software files for the examples are available at

[ftp://ftp.wiley.com/public/sci\\_tech\\_med/magnetic\\_actuators](ftp://ftp.wiley.com/public/sci_tech_med/magnetic_actuators)



The text is divided into four parts:

- \* Part One, Magnetics, offers an introduction to magnetic actuators and sensors as well as basic electromagnetics, followed by an examination of the reluctance method, the finite element method, magnetic force, and other magnetic performance parameters

- \* Part Two, Actuators, explores DC actuators, AC actuators, and magnetic actuator transient operation

- \* Part Three, Sensors, details Hall effect and magnetoresistance as they apply to sensing position. Readers are introduced to many other types of magnetic sensors

- \* Part Four, Systems, covers aspects of systems common to both magnetic actuators and sensors, including coil design and temperature calculations, electromagnetic compatibility, electromechanical finite elements, and electromechanical analysis using system models. The final chapter sets forth the advantages of electrohydraulic systems that incorporate magnetic actuators and/or sensors

A major thrust of this book is teaching by example. In addition to solved examples provided by the author, problems at the end of each chapter help readers to confirm their understanding of new skills and techniques. References, provided in each chapter, help readers explore particular topics in greater depth. With its emphasis on problem solving and applications, this is an ideal textbook for electrical and mechanical engineers enrolled in upper-level undergraduate and graduate classes in electromechanical engineering.



## Coding and Signal Processing for Magnetic Recording Systems

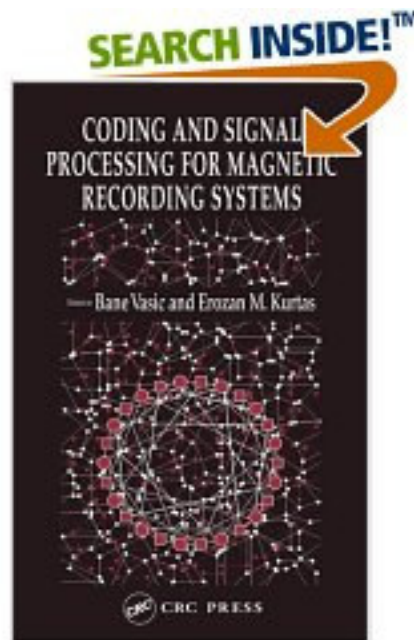
*Edited by:* Bane Vasic and Erozan M. Kurtas

In the past 10 years or so, there has been an enormous amount of progress and innovation in magnetic recording systems. The amount of information being generated in the area of coding and signal processing for magnetic recording systems is mind-boggling (ironically, the advances themselves have allowed us to store and archive all this information!). In this book the editors have managed to compile an impressive collection of articles written by renowned researchers in the area of coding and signal processing for recording systems. The articles comprehensively cover all aspects of magnetic recording read channels including their architecture, mathematical modeling of readback and noise, information-theoretic capacity and, of course, existing and advanced coding and signal processing techniques.

The book is divided into six sections covering various aspects of magnetic recording read channels. Depending on the area of interest, the required mathematical skill varies from a basic knowledge of algebra and calculus to a sound knowledge of probability. The book is not an introductory text; nevertheless, adequate introduction and background information pertaining to magnetic recording systems is found in the articles, especially in the first three sections. These sections give an introduction to magnetic recording systems, their history, physics, architecture, and existing signal processing and coding methods. They are meant to introduce concepts and tools that are used or built upon throughout the rest of the book. The second section is in some sense the heart of the book, for it details the mathematical modeling of magnetic recording channels and introduces digital signal processing and coding techniques used for them. The section also has a couple of nice articles about the “information theory” of magnetic recording channels.

The fourth and fifth sections deal with coding and signal processing for read channels, respectively. The articles in both the sections can be broadly classified into two categories: survey type articles describing existing and state-of-the-art techniques; and articles detailing new advances and novel techniques. These articles give a comprehensive coverage of the techniques and concepts that are prevalent in the field. The fifth section has the most to offer; the articles are self-contained with mostly previously unpublished work. Last, but certainly not least, the sixth section contains articles describing iterative decoding techniques that have shown immense potential for use in future magnetic recording systems.

The articles contain a good mix of theory and practice, reflecting the background of the authors, some of whom are in academia and some in industry; but overall the book leans towards the practical side. Great care has been taken to make sure that perpendicular recording be given equal consideration as longitudinal recording, and justifiably so. The fact that many of the authors are from Seagate (and their collaborators) helps a lot in furthering this. The articles have pictures and graphs that either illustrate concepts or show results which not only make the reading more enjoyable, but also help greatly in assimilating the concepts and ideas presented in the articles.



The editors have done a really commendable job in compiling this book. This is a must-have book for anyone who plans to pursue serious research in the field of coding and signal processing for magnetic recording systems.

by

*Naveen Singla*

Post-Doctoral Research Associate,  
Department of Electrical and Systems Engineering,  
Washington University,  
St. Louis, MO-63130, USA.

[singla@essrl.wustl.edu](mailto:singla@essrl.wustl.edu)

<http://www.essrl.wustl.edu/~singla>

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## IEEE PUBLICATION NEWS

### IEEE Press rises again!

The last couple of years have been stirring times for IEEE Press, the Institute's book-publishing program. After several years of disappointing financial results, a partnership contract signed with John Wiley and Sons and put into effect in 2001 improved the situation somewhat, but not enough to eliminate annual deficits. As a result the Publication Services and Products Board, following a careful study, voted in June 2004 to recommend closing the Press down when the Wiley contract expired in February 2005. Later that month the Board of Directors examined the PSPB recommendation and eventually tabled the motion, thereby suspending any action upon it while not endorsing long-term continuation of Press either.

During 2005 much effort was devoted at Press to improve its future prospects. A renegotiated contract with Wiley, staff restructuring and newly integrated electronic delivery options via Xplore are all likely to improve the financial situation. The PSPB has therefore approved a three-year plan for Press to continue operations and show that it can meet or exceed stated goals for its activities in that time.

#### Need for new book proposals

A result of the uncertainties of these last few years has been a dwindling of new book ideas entering the pipeline of books under development. At a recent meeting of the IEEE Press Editorial Board and Society Liaisons it became clear that a particularly strong push toward signing up new authors and developing ideas for new book series would be necessary to refill that pipeline and get Press back on track. The Magnetics Society would like to urge its members to consider authorship with the IEEE Press/Wiley for a number of reasons:

- **Visibility and prestige.** IEEE Press and Wiley have published some of the greatest names in the profession and are known for timely, authoritative, practical books. By joining this group of authors your reputation in the profession will grow beyond what your journal papers and conference talks can provide.
- **Help and advice during the writing stages.** The staff at IEEE Press and at Wiley are able to provide extensive, personalized assistance to help with the development of the manuscript, and the Society Liaisons can serve as intermediaries and advisors during that process.
- **IEEE Press and Wiley can sell books!** This partnership, consisting of the largest professional society for electrical and computer engineers together with an established professional publisher with a worldwide marketing reach, offers unrivalled access to the engineering community internationally.
- **Royalties.** IEEE Press/Wiley offers book contracts with competitive royalties equal to other publishers in the field.
- **Help the Magnetics Society.** Books that are developed and published with the sponsorship of the Society generate additional royalties payable directly to the Society, with no adverse impact on the author's share.

Any Society member who feels qualified and willing to either write a book or work as an Editor of a book series (a task that also generates royalties) is urged to contact either of the Society Liaisons at the addresses given below.



## CURRENT MAGNETICS SOCIETY BOOKS

The Society has sponsored several books currently for sale through Wiley, and another is due out later this year. Remember that, as an IEEE member, you are eligible for a 15% discount on all IEEE Press books. Make your purchases via [www.wiley.com](http://www.wiley.com), and quote the **promotion code 18493** to claim your discount.

*Just published*, about two months ago, is

**Magnetic Actuators and Sensors** by **John S. Brauer** (*see book review*),  
2006, 306 pages. ISBN 0-471-73169-2.  
List price \$120; IEEE members' price \$102

Due out *later this year* will be a new edition of

**Introduction to Magnetic Materials** by **B. D. Cullity**, revised by C. D. Graham.

*Earlier Society-sponsored publications include:*

**Kanu G. Ashar**, **Magnetic Disk Drive Technology**  
1997, 368 pages. ISBN 0-7803-1083-7.  
List \$115, members \$97.75

**Richard Bozorth**, **Ferromagnetism** (reissue of the 1951 original publication)  
1993, 992 pages. ISBN 0-7803-1032-2  
List \$120, members \$102

**Eric D. Daniel, C. Dennis Mee, and Mark H. Clark**, (editors),  
**Magnetic Recording: The First 100 Years**  
1999, 360 pages. ISBN 0-7803-4709-9  
List \$83.95, members \$71.36

**Edward Della Torre**, **Magnetic Hysteresis**  
1999, 240 pages. ISBN 0-7803-6041-9  
List \$81.95, members \$69.66

**Richard J. Gambino, Takao Suzuki**, **Magneto-Optical Recording Materials**  
2000, 464 pages. ISBN 0-7803-1009-8  
List \$148, members \$125.80

**Allan H. Morrish**, **The Physical Principles of Magnetism** (reissue of the 1965 original)  
2001, 704 pages. ISBN 0-7803-6029-X  
List \$115, members \$97.75

Further information on all these books can be found at:

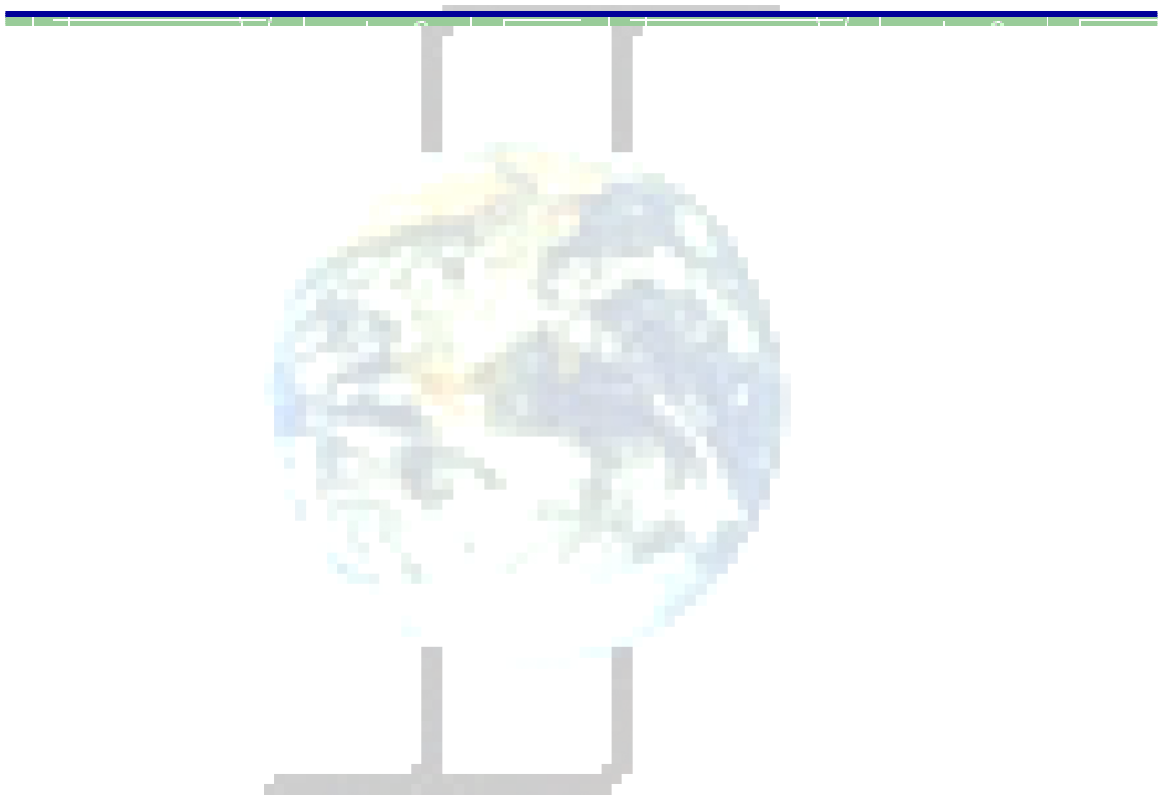
<http://shop.ieee.org/store/>



Place orders at  
<http://www.wiley.com>

For general enquiries and assistance, contact  
**John T. Scott,**  
Magnetics Society Book Publishing Liaison,  
[john.t.scott@verizon.net](mailto:john.t.scott@verizon.net)

For new books on data storage, the contact is  
**Gordon F. Hughes,**  
[gfhughes@ucsd.edu](mailto:gfhughes@ucsd.edu)



## ABOUT THE NEWSLETTER

The objective of the **IEEE Magnetics Society Newsletter** is to publicize activities, conferences, workshops and other information of interest to the Society membership and technical people in the general area of applied magnetics. Manuscripts are solicited from the Magnetics Society membership, organizers of conferences, officers of the Society, local chapters, and other individuals with relevant material.

The Magnetics Society Newsletter is published electronically at the IEEE Magnetics Society webpage <http://www.ieemagnetics.org/>

The Newsletter is published in January, April, July and October.

Submission deadlines are January 1, April 1, July 1, and October 1 respectively.

Please send articles, letters and other contributions to the editor:

Martha Pardavi-Horvath  
Professor of Engineering and Applied Science

Department of Electrical and Computer Engineering  
The George Washington University  
801 22<sup>nd</sup> Street NW  
Washington, DC 20052

VOX: 202-994-0418

FAX: 202-994-0227

LUX: [pardavi@ieee.org](mailto:pardavi@ieee.org)

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