



IEEE Magnetics Society NEWSLETTER

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Martha Pardavi-Horvath, Editor

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 2. **SMM17** 17th Int. Conf. on Soft Magnetic materials, Bratislava, Slovakia, *September 7-9, 2005.*
 3. **ISPMM2005** Int. Symposium on Physics of Magnetic Materials, Singapore, *September 14-16, 2005.*
 4. **ISMST-8** 8th International Symposium on Magnetic Suspension Technology, Dresden, Germany, *September. 26 - 28, 2005.*
 5. **50th MMM** San Jose, California, *October. 30-Nov.3, 2005.*
 6. **IEEE SENSORS 2005**, Irvine, California, *October. 31-Nov.3, 2005.*
 7. **ICST'05** Int. Con. on Sensing Technology, Palmerston, New Zealand, *November 21-23, 2005*
 8. **LAW3M05** Seventh Latin-American Workshop on Magnetism Magnetic Materials and their Applications, Reñaca, Chile, *December 11-15, 2005*
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NEWS FROM THE PRESIDENT OF THE MAGNETICS SOCIETY

I am pleased to report to all members that the Magnetics Society continues to do very well in all regards and that our operations are running very smoothly. Since my last report to the Society a few significant events have occurred which I will summarise below.

The undoubted highlight of the last three months has been the highly successful Intermag conference held in Nagoya. The conference had a very high attendance and exact numbers will be published later. Suffice to say that the attendance was well in excess of the 1,200 who attended the previous non-UD Intermag in Amsterdam; in my view that is a remarkable achievement and shows the benefits to the Society and the membership of taking the conference off-shore. It is my great pleasure to suggest an enormous vote of thanks to all those involved in the organisation of the Nagoya Intermag but in particular the Japanese chairman, Susumo Uchiyama, and the US chairman, Roger Wood. They produced a conference of the highest technical and social quality and are thoroughly deserving of our thanks. It is always difficult to pick out other individuals who have made exceptional contributions, but I would personally like to place on record my thanks to Takao Suzuki of the Toyota Technological Institute, who raised an all-time record level of industrial support, and also to the Publications chairs and their staff who did a remarkable job in getting the publications completed in a timely manner. Given the overall success of the conference in every respect we expect the conference to make a healthy surplus as required by IEEE.



It may be less well known to the membership, but every activity that the Society undertakes bears an overhead of something like 20% for the provision of the services of IEEE headquarters in Piscataway. Hence individuals are often concerned when they see that a conference makes a surplus of \$100,000 or more, which seems very large; when the overhead for headquarters and the Society's other activities such as student travel, distinguished lecturer etc are taken into account, however, these surpluses really are very modest. I am sure all of us would wish to work in an organisation that can operate with an overhead as small as this.

The other significant achievement of the first six months of my tenure as president has been a major effort to rejuvenate our chapters programme. Whilst many of us attend the major conferences supported by the Society, the majority of the membership does not attend such meetings but, where available, is able to attend chapters meetings such as half-day symposia and visits from distinguished lecturers. To this end, so far this year we have formed new chapters of the Society in Taiwan (Chairman Ching Ray Chang) and north Japan (Chairman Hiroaki Muraoka). Further chapters are being formed in Brazil, Singapore, and a number of countries within Europe. This is a personal priority for me and I am most grateful to the Herculean support that has been provided by Richard Dee, our Chapters and Membership Chairman. Members of the Society are invited and welcomed to form new chapters of the Society --particularly outside the United States, as at the present time just over 50% of our membership is non-US based.

All that is required is to complete a petition form, which is available on the IEEE website or direct from Richard Dee, bearing the signatures of 20 members of the IEEE of good standing. Richard has a substantial budget to support the inauguration of new chapters, and where appropriate I would encourage you to set up new chapters and commence local activities. Furthermore, our distinguished lecturers are encouraged to visit the chapter network, particularly the new chapters, and Roy Chantrell will be happy to liaise as Distinguished Lecturer Coordination to try and ensure that our DLs visit you soon after the establishment of chapters.

One slight negative for report is that our membership worldwide continues to erode. Hence the purpose of the chapters activity is to assist the Society with the recruitment of new members. We are also taking steps to tie many of our activities much more closely to member benefits: for example, in future it will be a requirement that for a student to apply for a travel scholarship, his supervisor or thesis advisor will be required to be a member of the Society and his application will require endorsement from a second Magnetics Society member of good standing. The scholarships are extremely valuable: for example, for the Nagoya conference we were able to award 25 scholarships, each with a value of \$1,000, to enable students from all over the world to come to our flagship meeting. Clearly, the cost of membership can be recouped many times over by a single award of a student travel scholarship.

The IEEE Technical Activities Board (TAB) that oversees the work of societies is also keen to promote member benefits. A recent meeting of TAB voted to adopt a policy whereby conferences must levy a differential conference fee of at least the full cost of IEEE and Society membership on all conferences that we sponsor. Hence simply going to one Intermag conference in a year means that the cost of membership is neutral to the attendee. I believe this is an increasing trend whereby those who belong to the Society must be seen to recoup benefits at least to, if not greater than, the costs of membership. Persons interested in the Society reading this newsletter are encouraged to join the Society and to encourage other colleagues to do likewise.

As indicated in my previous letter, the Technical committee of the Society has now been reappointed under the chairmanship of Mel Gomez, and I am delighted to see that a number of the new members of the new Technical committee have sought nomination for the forthcoming election to AdCom. I encourage anyone interested in the work and life of the Society to volunteer for the Technical committee, as no external nomination is required. We are, however, particularly keen to increase the multinational representation on the Technical committee as a proving ground and as an opportunity for individuals to see the work of the Society and consider running for membership of our governing body, which is our AdCom. Persons interested in participating are encouraged to contact either myself or Mel Gomez, providing some details of their background, activities for the Society, and a brief summary of their technical interests. We will endeavour to accommodate as many people as possible but obviously we have to ensure a correct technical and international balance.

In closing I would also remind you of the forthcoming MMM conference in San Jose, California, which is the 50th such event. As part of the programme I am told that there will be a special event commemorating the highlights of previous conferences. We are grateful to Randal Victoria, the conference chairman, and all his associates in both IEEE and AIP in organising this conference. Unfortunately the abstract deadline has now passed, but you will find by visiting the website that Diane Melton of Courtesy Associates, who is the Executive Director of the Society, some years ago obtained for us highly preferential rates at the very pleasant Fairmount Hotel in downtown San Jose, and that we anticipate having a very successful conference. Due to careful budgeting and the use of some of the conference reserves, you will also find that a modest reduction in the conference fee has been achieved this year.

I look forward to seeing you as many of you as possible in San Jose.

All best wishes

Kevin O'Grady
President, Magnetics Society
University of York

IEEE MAGNETICS SOCIETY OFFICERS 2005-2006

OFFICERS

First Name	Last Name	Position	Company / Institution
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

First Name	Last Name	Position	Company / Institution
Richard	Dee	Chapters	Storage Technology Corporation
Ron	Goldfarb	Publications	NIST
Mel	Gomez	Technical Committee	UMD Department of ECE
Bruce	Gurney	Awards	Hitachi Global Storage Technologies,
J.W.	Harrell	Education	The University of Alabama
Can	Korman	Publicity	George Washington University
Laura	Lewis	Finance	Brookhaven National Laboratory
Bob	McMichael	Standards	NIST
Phil	Wigen	Nominations	Ohio State University

NON-VOTING MEMBERS

First Name	Last Name	Position	Company / Institution
Roy	Chantrell	Distinguished Lecturers Coordinator	Seagate Research
David	Jiles	Editor in Chief of the Transactions	Ames Laboratory
Diane	Melton	Executive Director	Courtesy Associates
Martha	Pardavi-Horvath	Newsletter Editor	George Washington U.

CHAPTERS CORNER

THREE NEW CHAPTERS FORMED!

Since April this year, **THREE** new society chapters have been formed. The New Chapters are:

- * **SENDAI, JAPAN** under the chairmanship of **Prof. Hiroaki Muraoka**.
- * **SOUTH BRAZIL** under the chairmanship of **Prof. Renato Carlson**.
- * **TAIWAN, TAIPEI** under the chairmanship of **Prof. Ching-Ray Chang**

This is really good news for the society as it means that the magnetics community is active in these local areas, and society members and guests alike can meet under the IEEE Magnetics Society banner to their technical and social benefit. We wish them all the best for the future.

News from the POLAND Chapter:

Marion Soinski from the Poland chapter informs us of regular meetings in Poland.

On the subject of "Protection directions of watt-hour meters from influence of external magnetic fields" meetings were held in both Polish and English!

Also in late June, distinguished lecturer Professor Burkard Hillebrands from Technische Universitaet Kaiserslautern gave his lecture on "Dynamics in magnetic micro- and nanostructures". Marion reports that the lecture stimulated a quite interesting discussion after the meeting directed to the future not only of spin waves, but also quantum computers.

News from the United Kingdom/Republic of Ireland (UKRI) Chapter:

The 2005 Wohlfarth Lecture.....

This year's Wohlfarth lecture was presented by **Professor Thomas Schrefl** at the Institute of Physics, Portland Place, London on the 20th of April 2005.

The Wohlfarth Memorial lecture is an annual event held to mark the significant contribution of E.P. Wohlfarth to our understanding of magnetism and magnetic materials. In previous years the lecture was presented as a plenary at the annual conference on Condensed Matter and Materials Physics (CMMP) organised by the UK Institute of Physics (IOP). With Einstein Year celebrations afoot the CMMP conference was not staged this year, but the Wohlfarth lecture continued as the centre piece of a specially arranged half-day symposium held at the IOP.

The symposium, entitled "Advances in Magnetics and the 2005 Wohlfarth Lecture", took place on the 20th April and was organised jointly by the IEEE Magnetics Society UKRI Chapter and the IOP Magnetism group. The programme was organised by Prof. Mike Gibbs from the University of Sheffield. Portland Place was busy with a good crowd from the UK magnetism community for what proved to be an afternoon of excellent science and a very enjoyable social event.

The programme began with a presentation by Prof. Burkhard Hillebrand from the University of Kaiserslautern, one of this year's IEEE Magnetics Society Distinguished

lecturers. Prof. Hillebrand talked about “Dynamics in magnetic micro-and nanostructures”. His presentation included a discussion of confined spin-waves and showed outstanding experimental results that visualised the detailed nature of magnetization dynamics in micro- and nanoscale structures obtained using a technique of spatially and temporally resolved Brillouin-light-scattering.

Prof. Hillebrand was followed by David Wright, professor of Electrical Engineering at the University of Exeter. Prof. Wright talked about on-going developments in modelling of high density data storage in a presentation entitled “Terabit per square inch data storage using phase-change media and scanning electrical nanoprobes”. Although these media are not magnetic, the issues and modeling of the media for storage applications have overlaps. Prof. Wright described some experimental systems before discussing different approaches to modeling the recording process of the phase-change media describing both simpler analytical modeling and more powerful computational simulations.

After a tea break the seminar continued with the **Wohlfarth Lecture**. This year’s memorial lecture was given by Prof. Thomas Schrefl of the University of Sheffield on “Computational magnetics for storage applications”. Prof. Schrefl described the application of finite element and fast boundary element methods to simulate magnetization switching processes in model systems where microstructural influences on the behaviour were included. The magnetization behaviour for recording media and nanoscale magnetic structures were presented in several excellent simulations of the switching dynamics.

The session concluded with a talk by Dr Lesley Cohen from Imperial College London. Dr Cohen discussed the “Prospects for narrow gap semiconductors for hybrid spintronics”. Dr Cohen described the benefits of high spin-orbit coupling and mobility, giving control of the spin state and the prospect of high speed devices. The difficulties of realising hybrid semiconductor/ferromagnetic devices were also discussed.

Following the technical session the speakers and most of the audience enjoyed sociable discussions over a buffet dinner that ran on into the early evening.



Professor Thomas Schrefl receiving the Wohlfarth memorial Prize from Professor Keith McKewen, Chairman of the IOP Magnetism Group.

Upcoming: co-sponsored meeting, with UKMagSoc, on "Nanoscale magnets: applications & opportunities" at the University of Manchester on September 14th, 2005.

Twin Cities Chapter:

The Twin Cities chapter will receive an update on the “Advances in Magnetic Recording Head Technology”, by Ken Allen, Vice-President of Transducer Development, Seagate Technology Recording Head Operations on August 11, 2005.

IEEE Magnetics Society Chapters

	Chapter Name	Local Chapter Chair	Email Address
1	CENTRAL & SOUTH ITALY	GUGLIELMO RUBINACCI	rubinacci@unicas.it
2	CENTRAL NEW ENGLAND	ADAM TORABI	adam_torabi@maxtor.com
3	CHICAGO	JEAN F OSTIGUY	OSTIGUY@FNAL.GOV
4	DENVER, ROCKY MOUNTAIN	DAVE PAPPAS	pappas@boulder.nist.gov
5	HOUSTON	JEFFERY WILLIAMS	jwilliams@uh.edu
6	JAPAN	SHIGERU TSUNASHIMA	tsunashi@nuee.nagoya-u.ac.jp
7	LOS ANGELES	JACK JUDY	jjudy@ee.ucla.edu
8	MILWAUKEE	MARK JUDS	markajuds@eaton.com
9	PHILADELPHIA	Position Open	
10	PITTSBURGH	MIKLOS GYIMESI	miklos.gyimesi@aNsyst.com
11	POLAND	MARION SOINSKI	magneto@magneto.pl
12	ROMANIA	ALEXANDRU STANCU	alstancu@uaic.ro
13	SAINT LOUIS JT with AP, MTT, EDS, LEOS	DAVE MACKE	maccadi@aol.com
14	SAN DIEGO	GORDON HUGHES	gfhughes@ucsd.edu
15	SANTA CLARA VALLEY/SAN FRANCISCO	GERADO BERTERO	Gerardo.Bertero@komag.com
16	SEOUL, KOREA	YOUNG KIM	ykim97@korea.ac.kr
17	SINGAPORE	THOMAS LIEW	tomliew@mail.dsi.a-star.edu.sg
18	SWEDEN	TORBJORN LEMBKE	tal@magnetal.se
19	TWIN CITIES (Minneapolis/St. Paul)	BENNET DY	bdy@ieee.org
20	UNITED KINGDOM & REPUBLIC of IRELAND	MIKE GIBBS	M.R.Gibbs@sheffield.ac.uk
21	WASHINGTON/NORTHVIRGINIA	CAN KORMAN	korman@seas.gwu.edu

If you are the local chapter chairman reading this, please share with us all that's happening in your chapter and local area (e.g. talks, people activity, magnetics news, company or university news etc.). Forward a paragraph (or two), a picture, a reference to an interesting article or something inventive or newsworthy (in your opinion) to me at r.dee@ieee.org so we can include in the next MagSoc newsletter.

Dr. Richard H. Dee
Magnetics Society Chapters Chair
r.dee@ieee.org

MAGNETICS SOCIETY MEMBERSHIP REPORT

April 2005

SUMMARY:

- 2589 Active Magnetics Society members as of April 03 , 2005.
 - 2404 Members, 24 Affiliates, 161 Students.
- Membership geographically is 50.2% US, 49.8% non US (see also table below)
- Free Student Memberships were offered at INTERMAG 2005 in Nagoya and 80 student applications were received.

MEMBERSHIP DETAILS as of April 3, 2004

<u>Grade</u>	<u>Code</u>	<u>R1</u>	<u>R2</u>	<u>R3</u>	<u>R4</u>	<u>R5</u>	<u>R6</u>	<u>R7</u>	<u>R8</u>	<u>R9</u>	<u>R10</u>	<u>TOTALS</u>
Associate	A	4	8	5	7	7	17	4	38	5	33	128
Affiliate	AF	2	3	5	5	0	4	0	2	0	3	24
Exchange	E	0	0	0	0	0	0	0	0	0	0	0
Fellow	F	12	12	5	10	6	15	4	10	0	20	94
Honorary Member	HM	4	2	1	0	1	0	0	0	0	1	9
Life Associate	LA	1	1	0	0	0	4	0	2	0	1	9
Life Fellow	LF	13	6	4	6	3	20	3	9	0	6	70
Life Member	LM	22	17	4	14	5	35	4	2	0	10	113
Life Senior	LS	10	11	7	11	3	13	1	8	1	5	70
Member	M	105	98	38	147	104	284	30	427	26	417	1676
Student	S	9	3	11	7	10	15	2	69	7	28	161
Senior Member	SM	21	27	9	20	12	34	3	56	5	48	235
TOTALS		203	188	89	227	151	441	51	623	44	572	2589

REGIONS

R1 Northeastern USA

R2 Eastern USA

R3 Southeastern USA

R4 Central USA

R5 Southwestern USA

R6 Western USA

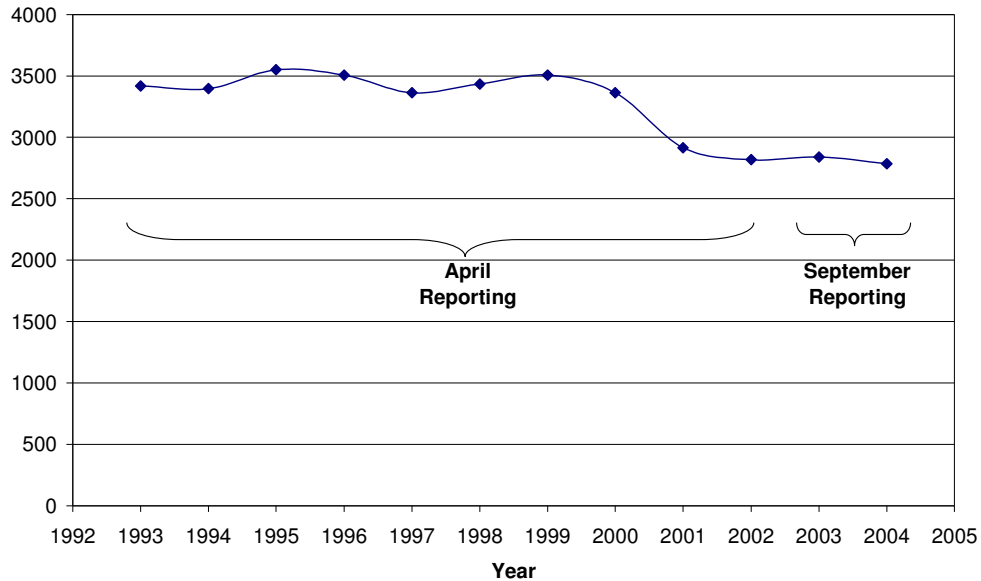
R7 Canada

R8 Europe, Middle East, Africa

R9 Latin America

R10 Asia and Pacific

Magnetics Society Membership



US Member Fees for 2004**

Full Member of the IEEE:	\$151 (\$147)
Associate Member of the IEEE:	\$151 (\$147)
Student Member of the IEEE:	\$30 (\$30)
Affiliate Fee:	\$58

Magnetics Society Fee for Member, Associate and Affiliates of the IEEE:	\$20 (\$20)
Magnetics Society Fee for Student IEEE Members:	\$10 (\$10)
Paper copy of IEEE Transactions on Magnetics:	\$20 (\$20)

** Rates for Non-US regions vary by geographic location and are generally lower than the US rates. Rates shown are for a full calendar year (Jan 1 – Dec 31). If you join between Mar 1 and Aug 15 in any year, rates are half the full year rate.

For up to date information on rates got to:

<http://www.ieee.org/services/join/memberdues.html> or
http://www.ieee.org/portal/index.jsp?pageID=corp_level1&path=membership&file=dues.xml&xsl=generic.xsl

Richard H. Dee
Magnetics Society 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. Annually 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 pursuit 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 excite, 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 for awarding DL's to dynamic individuals with a strong presence in their field. Moreover, 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

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IEEE MAGNETICS SOCIETY DISTINGUISHED LECTURERS FOR 2005

Half-Metals, Spin Torque, and Nanorings

Chia-Ling Chien

The Johns Hopkins University

The exploration of magnetic nanostructures in recent years has resulted in a string of discoveries such as interlayer coupling, giant magnetoresistance (GMR), exchange bias, and tunneling magnetoresistance. Some of these effects were utilized as read heads in high-density magnetic recording and nonvolatile magnetic storage only a few years after the original discovery. In this talk, I will describe several new topics in magnetic nanostructures from inception to realization to potential applications. Most magnetoelectronic properties are the results of the spin polarization of the constituent materials. The ultimate spin-polarized material with 100% spin polarization is called the half-metal. For example, magnetic tunnel junctions with half-metal electrodes would have the largest possible effect, switching between conducting and insulating states. The unique characteristics of halfmetals, the experimental identifications, and the confirmation of half-metals to date will be described. Since electrons have spin in addition to charge, a spin-polarized current carries angular momentum. For a large current density, the angular momentum can exert a substantial torque onto a receiving magnetic entity to excite spin waves or even to switch its magnetization. The spin torque effects are accomplished in the absence of an external magnetic field. The salient aspects of the spin torque effects in different contexts, such as switching and magnetic recording without a magnetic field, will be described. Nanorings are small entities with special attributes. A magnetic nanoring can support vortex state despite its very small size. The two chiralities of the vortex state can be exploited for magnetic recording purposes. Multilayered nanorings have also been proposed as vertical random access memory (VRAM) units. However, fabrication of nanorings using e-beam lithography has considerable limitations in the number of rings, ring size, and areal density. We have developed a new method with which a large number (10^9) of small (100 nm) rings can be fabricated with a very areal density of 45 rings per square micrometer. The magnetic and other characteristics of such arrays of nanorings will be described.



Chia-Ling Chien received the B.S. degree in physics from Tunghai University, Taichung, Taiwan, R.O.C., in 1965 and the Ph.D. degree in physics from Carnegie Mellon University, Pittsburgh, PA, in 1972. He has been a Member of the faculty in the Department of Physics and Astronomy of Johns Hopkins University, Baltimore, MD, since 1976, where he is the Jacob L. Hain Professor in Arts and Sciences. He currently directs the Material Research Science and Engineering Center on Nanostructured Materials at Johns Hopkins. His recent research focuses on magnetic nanostructures including magnetic granular solids, nanowires, multilayers, and arrays of rings and dots, and the exploration of GMR, exchange bias, half-metals, spin torque effects, Andreev reflection, and point-contact spectroscopy. He has written more than 300 journal articles and holds several

patents. He is one of the ISI's 1120 most cited physicists. He has served as Meeting Chair and Chair of the Advisory Committee of the Conference on Magnetism and Magnetic Materials. He has been awarded honorary professorships at Nanjing, Lanzhou, and Fudan Universities in China. Dr. Chien is a Fellow and the 2004 recipient of the David Adler Award of the American Physical Society.

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Micro-Fabrication Techniques for Magnetic Information Storage Devices: From Bubbles to Thin-Film Recording Heads to Nanomagnetic Structures

Robert E. Fontana, Jr.

Hitachi Global Storage Technologies

This lecture examines magnetic device structures from the perspective of thin-film processing. Techniques for forming magnetic device structure minimum features will be compared with semiconductor processing. Future storage density growth in both magnetic memories and magnetic recording will be projected using semiconductor roadmaps. The “nano” characteristics (thickness and length scale) of next-generation magnetic thin-film heads and magnetic memory devices will be compared with solid-state semiconductor designs. In the past 25 years, the bit cell size for storage products incorporating magnetic device structures decreased from 156 μm^2 bit cells (IBM 3390 disk drive) to 0.007 μm^2 (Hitachi Travelstar 5K100 mobile disk drive). For the same period, the bit cell size in nonvolatile memory products incorporating magnetic device structures decreased from 625 μm^2 (TI 100 kb bubble memory) to 1.6 μm^2 (Motorola 4Mb magnetic random access memory). These 10 to 10 increases in information storage densities resulted from increased understanding in the physics of magnetic phenomena, from advances in materials science and engineering for magnetic thin films, from development of new magnetic modeling techniques, and from dramatic improvements in the capability to fabricate magnetic device structures with smaller minimum features. The manufacture of cost-effective magnetic device based information storage products requires high-yield processing technologies for the magnetic transducer or memory element in these products. Such processing technologies are now producing devices with 120 nm features (80 Gb/in storage densities) and these same processing technologies are extendable to 30 nm features (1 Tb/in storage densities). The lecture will conclude with discussions on nanoscale processing challenges.



Robert E. Fontana, Jr. received the B.S., M.S., and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology, Cambridge, in 1969, 1971, and 1975, respectively. He is a Research Staff Member within the recording head processing function of the San Jose Research Center, Hitachi Global Storage Technologies (GST), San Jose, CA. His technical activities have concentrated on developing and improving thin-film processing techniques for fabricating magnetic device structures, first at Texas Instruments from 1975 to 1981 with magnetic bubbles, then from 1981 to 2002 at IBM with thin-film heads, and from 2003 to the present at Hitachi GST with novel flux detecting sensors and nanostructure fabrication with e-beam lithography. During his career, he has transferred processing methodologies for magnetic bubbles, magnetoresistive thin-film heads, spin-valve giant magnetoresistive thin-film heads, and tunnel-valve thin-film heads from

research concepts to manufacturing realizations. He has authored 37 papers on magnetic devices and processes and has 55 patents in thin-film magnetic structures. Dr. Fontana was named an IEEE Fellow in 1996 and he received the IEEE Cleo Brunetti Award for excellence in the art of electronic miniaturization in 2000. He was elected to the National Academy of Engineering (NAE) in 2002 for his contributions in magnetic device processing. He has served as President of the IEEE Magnetics Society (2001, 2002), as General Chair of the 1996 Magnetism and Magnetic Materials Conference, as General Chair of the 2004 Joint International Magnetics Conference and Magnetism and Magnetic Materials Conference, and is serving as an NAE member on the National Research Council's (NRC) Board on Manufacturing and Engineering Design (2003–2005).

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Dynamics in Magnetic Micro- and Nanostructures

Burkard Hillebrands

Technische Universität Kaiserslautern

For applications in sensors and in data storage, the dynamic properties of microstructures and nanostructures have gained increasing attention. The fundamental excitations in these objects are confined spin waves, and it is useful in particular to understand their properties in view of the noise spectrum in sensor and magnetoresistive random access memory (MRAM) applications. The lecture addresses the dynamics in homogeneously and inhomogeneously magnetized objects starting with an introduction to spin waves and the effects of finite dimensions. In inhomogeneous systems the excitation spectrum is complex, and new phenomena, such as localization and tunneling of modes, are discussed. The key points are illustrated by results obtained by space- and time-resolved Brillouin light scattering, which allows one to follow experimentally the propagation of spin-wave packets and to present the results in an animated format. To conclude the lecture, the analysis of ultra-high-frequency dynamic properties (2–100 GHz) of small magnetic elements with spatial resolution in the 300 nm range is presented.



Burkard Hillebrands received the diploma and Ph.D. degrees in physics from the University of Cologne, Cologne, Germany, in 1982 and 1986, respectively. After a postdoctoral stay at the Optical Sciences Center, Tucson, AZ, he received the habilitation from the RWTH Aachen, Aachen, Germany, in 1993. He was an Associate Professor at the University of Karlsruhe, Karlsruhe, Germany, in 1994. Since 1995, he has been a Full Professor at the University of Kaiserslautern, Kaiserslautern, Germany. He is the coordinator of the German priority program “Ultrafast Magnetization Processes,” the vice coordinator of the German research unit “New Materials with High Spin Polarization,” and he coordinates a European network on “Ultrafast Magnetization Processes in Advanced Devices.” He is currently the head of the Material Research Center for Micro- and Nanostructures (MINAS) at the University of Kaiserslautern. He is a member of the granting board

for collaborative research centers (SFB) of the senate of the Deutsche Forschungsgemeinschaft and a member of the Editorial Board of the *Journal of Physics D: Applied Physics*. His research field is mostly in magnetoelectronics. His special interests are in spin dynamics, material properties of thin magnetic films and multilayers, exchange bias, as well as in elastic properties of layered structures. In the field of spin dynamics, he is particularly interested in dynamic magnetic excitations in confined magnetic structures, magnetic switching, and nonlinear magnetic phenomena using space- and time-resolved Brillouin light scattering spectroscopy and time-resolved Kerr effect techniques. He has published more than 170 articles, five patents and patent applications, seven book contributions, and he is co-editor of the Springer-Verlag book series on “Spin Dynamics in Confined Magnetic Structures.”

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CONFERENCE REPORTS

INTERMAG 2005

Student Travel Awardees of INTERMAG 2005 in Nagoya



Student Travel Award Winners reports

Intermag Asia 2005

by *Jill Claydon*

This year's IEEE Intermag Magnetics Conference held in Nagoya, Japan, was the first to be held outside the USA for some time, and the organisation and hospitality shown by the hosts, the Magnetics Society of Japan, certainly justified future plans to regularly take the conference around the world every third year. The conference successfully reflected the IEEE Magnetics Society's interests in all aspects of magnetic device design: the first evening's tutorials alone spanned modelling in magnetic recording, manipulation of magnetic memory by spin transfer, and new horizons in biomagnetism.

Big business played a part in the conference with the plenary lecture and MRAM Symposium. Although not strongly linked to magnetism, the *plenary lecture*, given by Mr. Kiyoshi Nakanishi, introduced us to some of the latest ideas on minimizing the environmental impact of automobiles, and suggested that we should be mindful of the environmental impact of our designs through energy efficiency etc. The *MRAM Symposium*, on the other hand, was highly relevant to elements of our research in the area of spintronics and presented the contrasting views on progress in the field from four major global contributors: Freescale, NVE, IBM and Toshiba. A Freescale representative, Saied

Tehrani, gave an instructive introduction detailing the structure of the advanced magnetic tunnel junctions that have led to the creation of 4Mb toggle devices and discussed their performance, reliability, and scalability. The NVE representative gave insights into write methods, and IBM used their presentation to demonstrate the abilities of their 16Mb asynchronous SRAM, 3-level MRAM adder. The closing talk of the symposium, presented by Hiroaki Yoda of Toshiba, gave an entertaining overview of the problems scientists face trying to satisfy the requirements of both consumers and production. He also showed, with the aid of asteroid curves, how researchers at Toshiba are overcoming some of the major difficulties associated with writing and fabrication.

The most interesting part of the conference in terms of my research was the technical program, some of the highlights of which included patterned magnetic elements, novel materials, and growth techniques, not to mention the symposium on spin electronics technology. In the area of patterned magnetic elements nanoscale structures created by e-beam lithography of magnetic materials such as permalloy (NiFe) including bars (R. Dittrich *et al.* from Sheffield) and arrays of pacman shaped dots (H. Hu *et al.* from Arizona) demonstrated the principals of domain wall nucleation with a view to their future development as storage elements. Also related to this form of fabrication, other groups described patterning innovatively shaped wires to form domain wall traps (S. McVitie *et al.* from Glasgow), and control nucleation and current induced switching (M. Laufenburg *et al.* from Konstanz) which illustrated the potential for designer domain wall movement which could lead to magnetic circuitry.

In the areas of novel growth techniques and new materials, exciting new advances are being made in half-metallic and Heusler materials, which should combine T_C above room temperature with 100% spin polarisation at the Fermi level -- thus providing new avenues for spintronic applications (e.g. X.Y. Dong *et al.* from Minnesota and Y. X. Lu *et al.* from York). These advances were further showcased in the spin electronics symposium, which gave a useful and insightful view of some of the challenges in this area. World leaders in the field discussed research into the difficulties posed by



integrating magnetic and semiconductor systems using different material systems. The talk concluded with a theoretical study of what this exciting area might accomplish if high efficiency, room temperature examples of devices such as the spin FET could be realised (M. Tanaka and S. Sugahara from Tokyo).

Perhaps the most rewarding aspects of the technical program were the opportunity to see the abilities of measurement and growth techniques not available at our own institution and to build links with others in related fields which we hope to continue in the future.

Students from University of York, UK, visiting Nagoya Castle before the start of the conference. From left Yongxiong Lu, Jill Claydon, Mark Beal, Sam Chadwick and Gonzalo Vallejo Fernández.

Submitted by
Jill Claydon
 University of York
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INTERMAG 2005, Nagoya, Japan: A student's point of view.
by Michail Kiziroglou

It was a pleasure to discover that attending INTERMAG 2005, apart from a full-time business trip, was a charming experience. At the end of every day the inevitable tiredness was accompanied with a strong feeling of having been rewarded with new knowledge and experience. The conference left me with state-of-the-art technical information on my research area, improved communication skills, fresh contacts, and brand new ideas.

Arriving in Japan was very interesting as a very organised life style could be observed everywhere. From the transportation system to the way people walk at streets, everything seemed carefully pre-arranged. Urbanism seemed to be everywhere, but people were very kind and really willing to help. It is worth mentioning that in spite of the very dense habitation, Japanese cities provide a feeling of safety, even at late hours.

The conference was held in a very modern congress centre of the city of Nagoya. Every morning and every afternoon, approximately 5 oral and 6 poster parallel sessions were held. Choosing the most relevant talks and switching between several sections every morning and afternoon to make the most out of the conference was a stimulating challenge.

A particularly interesting session was the symposium on Advanced Perpendicular Magnetic Recording, where research centres from Japan and USA including Hitachi, IBM, Seagate, and Toshiba presented their latest ideas and achievements on magnetic recording using moving parts. Later the same day, a symposium on Magnetic Random Access Memories (MRAMs) attracted attention. Debates comparing MRAMs, Flash memories and Hard Disk Drives (HDD) revealed that MRAMs are advantageous for special applications only, at least for the time being. Furthermore, it was claimed that the HDD industry has the financial power to sustain its domination at large capacity storage devices for the near future. Particularly for mobile applications, the question remained on whether the natural advantage of not having moving parts in on-chip storage devices (i.e. Flash memories, MRAMs) will overcome the maturity of the HDD technology in the future.

One of the most enjoyable and interesting talks was that of Koichi Kitazawa, Japan Science and Technology Agency, on New Applications of Magnetism. In an evening "Town Meeting" session, he discussed magnetic levitation and other unconventional applications of magnetism. His calm narration of the research steps towards his publications demonstrated in an excellent way the importance of giving a chance to new ideas.

INTERMAG 2005 was definitely a successful conference. The intellectual wealth I gained was beyond my expectations, and I am truly proud for participating and presenting my work in an event of such importance.

I would like to take this opportunity to thank IEEE for the Student Travel Award, without which I wouldn't have been able to attend.

Submitted by
Michail Kiziroglou
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HMM 2005

<http://www.hmm2005.bme.hu/>

The 5th Int. Symposium on **Hysteresis and Micromagnetic Modeling** was held in Budapest, Hungary, 30. May - 1. June, 2005. The 5th International Symposium on Hysteresis and Micromagnetics Modeling (**HMM2005**) was dedicated to the 100 years anniversary of birth of **F. Preisach**, famous for the hysteresis model named after him. The conference was organized by the Budapest University of Technology and Economics, the Research Institute for Technical



Physics and

Materials Science, Hungarian Academy of Sciences and the Pollak Mihaly College of Engineering, University of Pecs.

The conference was held in the historical building of the **Hungarian Academy of Sciences**, in the center of Budapest, along the embankment of the Danube with a splendid view of the **Buda castle**.

The papers, accepted for publication, will be published by Elsevier, in PHYSICA B. A special **Preisach Memorial**

Book will be published by the Hungarian Academy of Science Publishing House, the Akademiai Kiado.



IEEE ANNUAL ELECTIONS

Message from the President of Magnetics Society

NEED FOR PARTICIPATION IN IEEE ELECTIONS

Kevin O'Grady, IEEE Magnetics Society President

It is the time of year when the IEEE itself has to elect its officers for the forthcoming year. These elections are important, as the people we choose largely determine the policies and certainly the agenda of the IEEE itself. These policies lay down the foundation within which the Magnetics Society operates and often involve restrictions or encouragements for us to behave in certain ways. Thus it is not only desirable but almost essential that members of societies participate fully in these elections.

Often many society members are not really aware of what the umbrella organisation of the IEEE does. In addition to providing our publication vehicle and an excellent financial management system, it represents us in many areas of our professional lives (legal issues, for example), and provides organisation financial and legal services which a society of volunteers could never provide on its own.

I am aware that people very often feel remote from the IEEE, and I am constantly encouraging TAB to become closer to the societies. If we do not get closer to IEEE headquarters, however, then an improved 2-way process of understanding and participation cannot result. Hence I urge all society members to read the biographies of the candidates and to vote in the forthcoming elections.

Kevin O'Grady
IEEE Magnetics Society, President

Letter from the President of IEEE

Dear IEEE Voting Member:

The 2005 IEEE Annual Election process is underway - candidates' names have been announced and statements of candidacy and election websites will soon be available.

As an eligible voting member, your participation in the annual election is extremely important to the IEEE. To help you make informed decisions about the candidates, you have been added to an election e-mail list that will be managed by staff, not the candidates themselves. The use of this list will be limited to scheduled messages on behalf of all of the candidates on the ballot. Your contact information will not be shared with any candidates, who are prohibited by the IEEE e-mail policy from using e-mail aliases for electioneering. This process has been established to address members' concerns about unsolicited email.

If you would NOT like to be a part of this e-mail list, please click the following URL <https://myieeemembership.ieee.org/cop/login.do> to update your member profile to be UNsubscribed. You will need an IEEE Web Account to access the page*.

In mid-August all list members will receive a reminder to vote with a short message from each of the candidates as well as the link to their personal candidate information website if one is available. Information about the candidates will soon be available on the IEEE Annual Election web page at <http://www.ieee.org/elections>.

Your vote helps select tomorrow's leaders of the IEEE. I encourage you to stay informed about the election and learn about the candidates so you will be ready to make your voice heard during the balloting period.

If you have any questions about the 2005 IEEE annual election, please contact corp-election@ieee.org.
(Please do NOT reply to the address at the top of this message.)

Sincerely,

W. Cleon Anderson
President and CEO, IEEE

*To obtain a Web account or recover your username/password, go to: <http://www.ieee.org/web/accounts> or contact IEEE Member Services at www.ieee.org/memberservices.

2005 IEEE Annual Elections

Instructions to IEEE Voting Members

URL: <http://www.ieee.org/elections>

The ballots have been prepared so that order of the candidates' names varies randomly within election categories. **BALLOT MUST BE RECEIVED BY 12 O'CLOCK NOON, CENTRAL TIME USA (18:00 GMT) ON 1 NOVEMBER 2005.**

ELECTRONIC TRANSMISSION: Voting materials for the 2005 annual election are available on-line at: <https://www.directvote.net/ieee/>. To be authenticated electronically, please have your IEEE Web Account and IEEE member/pin numbers readily available. If these are not available, a Control Number and E-signature number have been provided on the paper ballot which allows members to access election materials electronically.

ELECTION CATEGORIES: Only voting members of the IEEE vote for IEEE President-Elect. The categories shown on the ballot reflect this and your Region and/or Division status in which you are eligible to vote this year. In 2005, elections are only being conducted in the Regions and Divisions for the following categories: Regions 1, 3, 5, 7, 8 and 9 for Delegate-Elect/Director-Elect, Division VII for Delegate/Director, and Divisions II, IV, VI, VIII and X for Delegate-Elect/Director-Elect. The absence of a category for Region Delegate/Director or Division Delegate/Director on your ballot indicates that no election is being conducted in the organizational unit(s) in 2005. Elections are being conducted in all Regions for IEEE Standards Association (IEEE-SA) President-Elect and Members-at-Large, and Technical Activities Vice President-Elect. IEEE-SA members must also be voting members of the IEEE to vote for the IEEE-SA President-Elect. IEEE Members must also be voting members of a technical Society to vote for the IEEE Technical Activities Vice President-Elect.

CANDIDATES: Vote for one candidate of whom you approve or whom you find acceptable in each category indicated on the form, by marking an [X] in the corresponding box **LEFT** of the name. **Any mark made in a box will count as a valid vote.**

WRITE-IN CANDIDATES: You may vote for a write-in candidate, provided the individual is not already on the official ballot for the intended position, by marking an [X] in the corresponding box **LEFT** of the line provided and writing in his/her name. If the name of a write-in candidate is the same as the name of a candidate on the official ballot, and the box is marked with an [X] for the write-in candidate, it is assumed that the voter is voting for a different person with the same name as that which appears on the official ballot.

DEADLINE FOR BALLOT RECEIPT: ONLY BALLOTS RECEIVED BY 12 O'CLOCK NOON, CENTRAL TIME USA. (18:00 GMT) ON 1 NOVEMBER 2005 WILL BE COUNTED.

NOTE: THE 2006 PRESIDENT-ELECT WILL BECOME PRESIDENT IN 2007.

REGION ELECTIONS

The world is divided into ten IEEE Regions, each represented on the IEEE Board of Directors by a Region Delegate/Director who serves a two-year term. The Region Delegate/Director (or Region Delegate-Elect/Director-Elect) is elected by the voting

members of the Region from a slate nominated by the Regional Committee. The [Region](#) territories are not necessarily confined to a State or Country boundaries. When such boundaries are crossed, the State or Country is listed under the Region that contains most of its area.

TECHNICAL DIVISION ELECTIONS

The IEEE Societies are clustered within ten [Technical Divisions](#), each represented on the IEEE Board of Directors by a Division Delegate/Director who serves a two-year term. The Division Delegate/Director (or Division Delegate-Elect/Director-Elect) is elected by the voting members of the Division from a slate nominated by the Divisional Committee.

The IEEE Magnetics Society belongs to **Division IV - Electromagnetics and Radiation**

STANDARDS ASSOCIATION ELECTIONS

The IEEE Standards Association (IEEE-SA) has the responsibility to pursue programs on an Institute-wide basis that enhances globalization of IEEE standards.

TECHNICAL ACTIVITIES ELECTIONS

The IEEE Technical Activities Board serves the technical interests of the members worldwide.

IEEE UNITED STATES OF AMERICA ELECTIONS

The IEEE United States of America (IEEE-USA) serves the professional interests of the members of the United States.

2005 IEEE Annual Elections

The CANDIDATES

FOR IEEE PRESIDENT-ELECT, 2006

[Leah H. Jamieson](#)
[Gerald H. Peterson](#)
[James M. Tien](#)



LEAH H. JAMIESON

(Nominated by IEEE Board of Directors)

Professor
 Purdue University
 West Lafayette, Indiana, USA

Leah Jamieson received the BS in mathematics from MIT and the MSE and PhD degrees in Electrical Engineering and Computer Science from Princeton University. She is the Ransburg Professor of Electrical and Computer Engineering at Purdue University and Associate Dean of Engineering for Undergraduate Education. Her technical interests include speech recognition and parallel signal processing algorithms; she has published over 160 papers. Jamieson is co-founder and director of the Engineering Projects in Community Service (EPICS) undergraduate engineering design program, initiated at Purdue and adopted by 17 universities. For her work with EPICS, she was co-recipient of the U.S. National Academy of Engineering's Gordon Prize for Innovation in Engineering and Technology Education. She has served on advisory committees of the National Science Foundation and on the Board of Directors of the Computing Research Association. She is an IEEE Fellow and a member of the U.S. National Academy of Engineering.

IEEE Activities – (S'75-M'76-SM'91-F'93) **OFFICES:** Board of Directors, 2003, 2005; ExCom, 2003, 2005; Vice President, Technical Activities, 2003; Vice President, Publication Services and Products, 2005. **COMMITTEES/BOARDS:** IEEE Strategic Planning, TAB Liaison, 2002; PSPB Representative, 2005. Marketing and Sales Ad Hoc, 2005. Technical Activities Board Chair, 2003; TAB New Technology Directions Chair, 2004-05; TAB N&A Chair, 2004; TAB Management Chair, 2003; TAB Strategic Planning and Review (SPARC) Chair, 2002; TAB Periodicals Chair, 2000-01; TAB Governance Working Group Chair, 2003-04. Technical Activities Board, 1998-04; Finance, 2000-03; Management, 2002-04; SPARC, 2003-05; TAB Colloquia, 2003-04; Book Broker, 1998-99; New Technology Directions, 1996-97, 1999-00, 2003-05; TAB Periodicals, 1999; TAB Ad Hoc Committees on Streamlining Decision Making, New Financial Models, and Branding, 1998-00; RAB-TAB Chapters, 1998. Publication Services and Products Board Chair, 2005; Vice Chair, 2001; Strategic Planning Chair, 2005; Operations Chair, 2005. Publication Service and Products Board, 2000-01; Finance, 2000-01, 2005; Operations, 2001, 2005; Strategic Planning, 2000-01; PAB/TAB Electronic Products, 2000-01. Awards Board, 1996-99; Jack S. Kilby Medal Committee, Chair, 1996-99; James H. Mulligan, Jr. Education Medal Committee, 2004-05; Fellow Committee, 1995-97. Women in Engineering, 2001-05. Proceedings of the IEEE Editorial Board, 2000-01. **SECTIONS:** Central Indiana: Signal Processing Chapter,

1990-05. **SOCIETIES:** Signal Processing: President, 1998-99; N&A Chair, 2000-01; Awards & Membership Vice President, 1994-95; Awards Board Chair, 1983-84, 1991-94; Technical Directions Chair, 1996-97; Technical Committee on VLSI Signal Processing, 1983-95, Chair, 1993-94; Technical Committee on Design & Implementation of Signal Processing Systems, 1996-00, Advisory Committee 2001-05; Technical Committee on Signal Processing Education, 1999-01; Board of Governors, 1993-01; AdCom, 1981-83; Transactions on Acoustics, Speech, and Signal Processing, Associate Editor, 1986-87; Distinguished Lecturer, 1989-91. Computer: Transactions on Parallel and Distributed Systems, Associate Editor, 1991-94; Distinguished Visitor, 1990-94. Education: Harriett B. Rigas Award Committee, 2002-03, Chair, 2003. Social Implications of Technology: Member. **CONFERENCES:** International Conference on Parallel Processing, Technical Program Co-Chair, 1983. International Conference on Distributed Computing Systems, Treasurer, 1984-85; Technical Program Vice Chair, 1991. Workshop on VLSI Signal Processing, Program Committee, 1984-96. International Parallel Processing Symposium, Program Committee, 1994, 1995. **AWARDS:** IEEE Fellow, 1993; Computer Society Golden Core, 1997; Third Millennium Medal, 2000; IEEE Education Society/Hewlett-Packard Harriett B. Rigas "Outstanding Woman Engineering Educator" Award, 2000; IEEE Signal Processing Society Meritorious Service Award, 2003.

Statement – IEEE will thrive by combining the strengths of this outstanding organization with a vision for how it will realize future opportunities. My vision is to ensure action in four areas:

- **Career-long support:**
 - Ensure affordable membership.
 - Provide continuity in members' careers through local and technical communities and web services that bridge career transitions.
 - Become an international leader in lifelong learning.

- **Nimbleness in emerging technology areas:**
 - Increase our agility through interdisciplinary communities in emerging areas; use the web to quickly make visible our activities in new areas.
 - Develop entry-level content for newcomers in a technical area; as we enter new areas, focus on theory and applications from the outset.

- **Agility in the information culture:**
 - Develop our understanding of how people – especially young people – access, use, organize, and share information.
 - Test new products and services through "rapid deployment" experiments. Develop an entrepreneurial culture that fosters innovation within IEEE.

- **Global profession, local needs:**
 - Build on IEEE's global nature to enhance members' success in the global profession.
 - Meet local needs in education, accreditation, professional development, information services, and technology policy.

I will bring to the position of President a deep understanding of the IEEE and a record of leadership and service both to the profession and to IEEE. I will be guided by key principles – value of membership, appreciation for volunteers, value to the profession and to society, sound financial models – in helping IEEE realize our myriad opportunities.

Website: <http://www.ece.purdue.edu/~lhj/IEEE>



GERALD H. PETERSON

(Nominated by IEEE Board of Directors)

Senior Manager Emeritus
Lucent Technologies – Bell Labs
Flemington, New Jersey

Jerry Peterson began his engineering career as a Member of Technical Staff at AT&T Bell Labs. Over 37 years he held positions in hardware and software design and engineering management. In the past 17 years he specialized in industry global strategic standardization. He currently holds the position of Senior Manager Emeritus at Lucent Technologies Bell Labs. He holds Electrical Engineering degrees from the University of Washington and Rutgers University. He is a member of the Tau Beta Pi Engineering Honor Society where he was recognized as a “Who’s Who” in 2001. The American National Standards Institute awarded him the Finegan Standards Medal in 2001. In addition to his leadership experience in the IEEE, Jerry has served in national and international leadership on behalf of the Telecommunications Industry, demanding clear understanding and job execution in a global technology-based business-driven multicultural environment. He has lectured on this subject at Stanford and other universities.

IEEE Activities – (A’96-M’99-SM’00) **COMMITTEES/BOARDS:** President Standards Association and BoD Vice President, 2003; Member, BoD Executive Committee (ExCom) and Corporate Officer, 2003; Chair, BoD Ad Hoc on Investment Policy, 2003; Member, IEEE Standards Association Standards Board, 1997-00; Member, Standards Board Review Committee, 1997-00; Chair, Standards Board Patent Committee, 2000; Chair, IEEE Standards Association Corporate Advisory Group, 1999-01; Member, Ethics and Member Conduct Committee (EMCC), 2004-05; Member, Standards Association Board of Governors, 2000-04; Chair, EMCC Student Ethics Competition Program, 2004; ExCom Representative to Investment Committee, 2003; ExCom Representative to BoD Awards Committee, 2003; Member, Medal of Honor Selection Committee, 2003; Member, Educational Activities Board and Co-Chair Standards in Education Task Force; 2003-05; Member, Awards Board Nomination and Appointments Committee, 2005; Member and Chair (2002-03), International Awards in Communications Technical Field Award Selection Committee, 2000-03. **TECHNICAL ACTIVITIES:** Member-at-Large, Communications Society (ComSoc) Board, 2002-04; Chair, ComSoc Standards Committee, 1999-01; IEEE-USA Representative on the Technical Program Committee of the International Telecommunication Union Telecom 1999. **REPRESENTATIVES:** ABET Electrical Engineering Program Evaluator, 2004-05.

Statement– The IEEE has a solid record of success in providing valued products and services worldwide. To ensure continued success, we must take a leading role in the application and delivery of new technologies and methods. To accomplish this I believe we must strengthen the central horizontal infrastructure that will support an evolving set of delivery mechanisms not limited to the current organizational structure.

While fast-moving technical and global changes may appear disruptive, we must view these changes as opportunities to improve, grow, and expand our membership and value. Current initiatives directed by the IEEE Board are moving us forward and will receive my full leadership commitment. These include:

- Expand global participation
- Strengthen value to industry
- Increase value as defined by existing members and as needed to attract new members
- Preserve core values and goals while considering core organizational restructure
- Reduce costs and simplify operations
- Improve Board operations
- Increase organizational unit synergy

Industry has told us that technical standards are a key component of IEEE value. Thus, the existing IEEE Standards Association (IEEE-SA) business model which focuses on corporate membership and value provides a path forward. My leadership in IEEE-SA and my experience as an industry leader in national and international standards projects equips me to lead the IEEE forward. I believe in the value of the IEEE as a global institution and I am committed to giving my full time and energy to the office of President.

I appreciate your consideration and welcome your vote and support.

For more information see: <http://ghpeterson.home.att.net>.



JAMES M. TIEN (Nominated by Petition)

Yamada Corporation Professor
Department of Electrical, Computer and Systems Engineering
Rensselaer Polytechnic Institute
Troy, New York

Dr. James M. Tien received the B.E.E. from Rensselaer Polytechnic Institute and the S.M., E.E. and Ph.D. from the Massachusetts Institute of Technology. He has held leadership positions at Bell Telephone Laboratories; at the Rand Corporation; and, since 1974, at Structured Decisions Corporation which he co-founded. He joined the Department of Electrical, Computer and Systems Engineering at Rensselaer in 1977, became Acting Chair of the department, joined a unique interdisciplinary Department of Decision Sciences and Engineering Systems as its founding Chair (1988-05), and twice served as the Acting Dean of Engineering. He has published extensively, been invited to present a number of plenary lectures, and been honored with both teaching and research awards, including several from the IEEE (Fellow, SMC Joseph G. Wohl Outstanding Career Award, Major Educational Innovation Award, SMC Norbert Wiener Award), the INFORMS, the AAAS, six Honorary Professorships, and election to the U.S. National Academy of Engineering.

IEEE Activities – (S'66-M'67-S'69-M'78-SM'82-F'91) **OFFICES:** Board of Directors, 2001-04; Executive Committee, 2001-04; Publication Services and Products Board (PSPB), Vice President 2001-02, Member 2001-2005; Educational Activities Board, Vice President 2003-04, Member 2005. **COMMITTEES/BOARDS:** IEEE Organization Task Force, Chair, 1992-93; IEEE-USA Energy Policy, 1992-95; Review Committee for the IEEE Admission and Advancement Committee, 1993; IEEE Membership Options, Chair, 1993-94; Publications

Activities Board (PAB), 1987-89, 1995-00; RAB/TAB Transnational, 1991-93; Technical Activities Board (TAB), 1987-91, 1995-96; TAB Periodicals, 1984-86; TAB/PAB Society Publications, Chair, 1987-89; TAB Organization Study, 1989-90; TAB Society Presidents' Forum, Chair, 1990-91; TAB Administration Council, 1992; TAB Committee on Affiliates, 1992-93; TAB Structure Review, Chair, 1992-93; TAB Budget Review, 1991-92; TAB Strategic Planning and Review, 1993-96; TAB Standing Committees Review Committee, 1994-96; TAB Committee on Financial Policy, 1994-96; TAB Products Council, Chair, 1995-96; TAB Book Broker, 1995-96; TAB Finance, 1995-00; TAB Management, 1995-96; TAB Products Revenue Distribution, Chair, 1995-96; IEEE Nominations and Appointments Committee, 1996-97; PAB Finance, Chair, 1997-00; IEEE Finance Committee, 1997-00; IEEE Strategic Planning Committee, 1998-00, 2001-04; IEEE Simon Ramo Medal Committee, 2000-01; IEEE New Financial Model Committee, 2001-02; PSPB Electronic Products and Services Committee, 2001-02; IEEE Transnational Committee, 2001-02; IEEE Member Conduct Committee, 2001-03; IEEE Awards Board, 2001-02; Friends of the IEEE Awards Program, 2002-04; IEEE Governance Committee, 2003; IEEE Corporate Structure Working Group, 2004; IEEE Industry Relations Committee, 2004; EAB XELL Task Force, Chair, 2003-05. **SOCIETIES:** Systems, Man, and Cybernetics: IEEE *Transactions on SMC*, Associate Editor, 1980-04; SMC Review, Associate Editor, 1981-82; SMC AdCom, 1983-95; SMC Evaluation/Awards, Vice President, 1986-87; SMC Long Range Planning and Finance, Vice President, 1988-89; SMC, President, 1990-91; SMC Fellows, Chair, 1993-94, 1997-99. **TECHNICAL COMMITTEES:** Panel of Technical Publication Editors, Chair, 1989-90; IEEE Engineering Foundation Research Initiation Grant Program Review, Chair, 1990-92; Neural Networks Council, 1991-92. **CONFERENCES:** Program Committee Member for Annual SMC Conferences, 1978-05; SMC International Conference, General Chair, 1997. **AWARDS:** Joseph G. Wohl Outstanding Career Award, 1998; IEEE Major Educational Innovation Award, 2000; Third Millennium Medal, 2000; Major Educational Innovation Award, 2000; Norbert Wiener Award, 2004.

Statement – I accept the petition candidacy for the 2006 IEEE President-Elect position with great honor and humility. I have the global vision and the necessary qualifications to address the unprecedented challenges confronting our members and our profession. IEEE should be **“The Global Resource of Choice”** for scientific, educational and professional products and services. We can address these challenges through collaborative actions.

Qualifications:

I am:

- Employed in both industry and academia,
- Culturally sensitive(Regions 1, 9 & 10),
- Technically engaged(4 Societies), and
- Professionally involved(4 of IEEE's 6 Major Boards) and the IEEE Board of Directors.

I possess:

- Strong background (RPI/MIT degrees),
- Demonstrated leadership (IEEE VP, PSPB & EAB; Corporate VP; Chair of two departments; twice Dean of Engineering), and
- Demonstrated excellence(several IEEE and related awards, including election to U.S. National Academy of Engineering).

Challenges: Since 2000, the IEEE-related industries have been economically challenged. As a learned society, we must overcome these and related challenges, including:

- Maintaining our distinctive advantage of excellence;
- Enhancing our member services; and
- Bridging to industry with attractive offerings.

Actions: To be the global resource of choice, we should, as examples,

- Offer a cafeteria of benefits and allow members to self-customize their benefits annually;
- Strategize globally while allowing our regional and technical units to act locally in support of their members' careers; and
- Bridge to industry with an attractive web-based library of our best short courses.

TOGETHER, WE CAN ADVANCE IEEE'S GLOBAL VALUE

2005 IEEE Annual Elections

FOR DIVISION DELEGATE-ELECT/DIRECTOR-ELECT, 2006
DIVISION DELEGATE/DIRECTOR, 2007-2008 – DIVISION IV
(ELECTROMAGNETICS AND RADIATION)

[Edward Della Torre](#)

[Ralph H. Justus](#)



EDWARD DELLA TORRE

(Nominated by Division IV)

Professor
George Washington University
Washington, DC

Edward Della Torre received the B.E.E. from Brooklyn Polytechnic Institute, the M.Sc. in electrical engineering from Princeton University, the M.Sc. in physics from Rutgers University, and the D.E.Sc. degree from Columbia University. He has been a professor at George Washington University since 1982. He also taught at Rutgers, McMaster, and Wayne State Universities, and served as Chairman of the Electrical and Computer Engineering Departments at the latter two universities. He performed research at the Bell Laboratories, the University of Toronto, and the National Institute of Standards and Technology during sabbatical years.

He is a Life Fellow of the IEEE and a Fellow of the American Institute for Physics. He is the author or coauthor of over 250 technical papers in refereed publications and three books. He has made over 200 conference presentations, holds 18 patents, and is a regular reviewer for many technical journals. He has chaired several IEEE Conferences.

IEEE Activities – (S'53-A'55-M'57-SM'65-F'79-LF'97) **COMMITTEES/BOARDS:** Technical Activities Board, 2001-02. **SOCIETIES:** Magnetics Society: Conference Executive Committee, Member, 1990-03; Past President, 2000-02; President, 1999-00; Vice President, 1986-87. **CONFERENCES:** INTERMAG Conference: Chairman, 1996; U.S. Chairman, 1993; Local Chairman, 1989; Program Co-Chairman, 1986; Publicity Chairman, 1975; Program Committee Member for many conferences.

Statement – If elected IEEE Division IV Delegate-Elect/Director-Elect, I am prepared to represent the interests of the members of our Societies. I have participated in TAB meetings, served on many committees, presided over major conferences, both U.S. and non-U.S., and was President of the IEEE Magnetics Society. So I have become familiar with the problems of a multinational society. The interests of the IEEE are not limited to any one country, and only through international cooperation can we achieve our lofty goals.

As an active researcher, I am well acquainted with all aspects of performing research. The IEEE has helped my career immensely, through its publications and conferences, and I intend to work to keep those gates as wide open as possible for others. Dissemination of ideas is crucial to our mission, and we should endeavor to maintain our high standards through our transactions, conferences and other means. It is important to maintain a

everything that I can to perpetuate these goals.



RALPH H. JUSTUS

(Nominated by Division IV)

Vice President, Technology and Standards
Consumer Electronics Association
Arlington, Virginia

Mr. Justus is Vice President, Technology & Standards with the Consumer Electronics Association overseeing 70 committees developing standards for consumer electronics technologies in product safety audio, video, mobile electronics, antennas, home networking and automatic data capture. He serves on the Boards of Directors of the Advanced Television Systems Committee and the American National Standards Institute and is active in the areas of electromagnetic compatibility, radio and television technologies, high definition television and digital audio radio systems, and non-ionizing radiation. He participates on numerous domestic and international committees including IEC, ITU-R and CISPR and also serves on the Advisory Board of the Wireless Rehabilitation Engineering Research Center. Previously he worked for the National Association of Broadcasters and the Federal Communications Commission's Television Branch and its FM and AM Branches. He holds a Bachelor, Electrical Engineering degree from the Georgia Institute of Technology.

IEEE Activities – (S'74-M'75-M'84-SM'05) **COMMITTEES/BOARDS:** Technical Activities Board, 2003-05, 1987-91. **SOCIETIES:** AdCom Member, Consumer Electronics Society, 1998-05; AdCom Member, Broadcast Technology Society, 1986-91; Member, SCC-28, 1983-91; ASC C63, Member and Chair SC5, 1991-97; Member, IEEE-USA CCIP, 2005. **CONFERENCES:** Member, International Conference on Consumer Electronics, Technical Program Committee, 1998-05; Chairman, Fall Broadcast Symposium (BT Society), 1986; Vice Chairman, Fall Broadcast Symposium, 1985; Treasurer, Fall Broadcast Symposium, 1984; Secretary, Fall Broadcast Symposium, 1983.

Statement – As a member of the Consumer Electronics, Broadcast Technology, Electromagnetic Compatibility and Communications Societies – and involved at many levels of their operations from member, conferences, volunteer and President -- I have found a theme common to all of them – we love our technical fields. This is supported by the highest ranked benefits of Society membership: staying technically current and interacting with our peers. Our Societies provide the means to enhance this with their key publications, conferences and Chapter activities. Our Societies and their volunteers are IEEE's core strength.

Every Division Director has a seat at the Board of Directors. If elected, I will work hard to see that Societies' needs get addressed, bringing your tactical issues to help craft the strategic solutions to advance the continued success of the whole. The Institute has done well of late with finances, publications, conferences and member services. I vow to help further these achievements and more, and look forward to meeting you all next year.

2005 IEEE Annual Elections Candidates

Candidates whose names will appear on the 2005 IEEE Annual Election Ballot are listed below. Links to candidates' personal web sites will be created as they become available. These links point to a candidate's personal web site and do not necessarily reflect the opinion or position of the Institute.

** Candidate nominated by petition*

Position Candidate

IEEE President-Elect, 2006

[Leah H. Jamieson](#)
[Gerald H. Peterson](#)
[James M. Tien*](#)

Division IV Delegate-Elect/Director-Elect, 2006

Edward Della Torre
Ralph H. Justus

Region 1 Delegate-Elect/Director-Elect, 2006-2007

[Howard E. Michel](#)
[Charles P. Rubenstein](#)

Region 3 Delegate-Elect/Director-Elect, 2006-2007

[Eric S. Ackerman](#)
[William B. Ratcliff](#)
[Clarence L. \(Lee\) Stogner](#)

Region 5 Delegate-Elect/Director-Elect, 2006-2007

[Francis B. Grosz, Jr.](#)
[David J. Pierce](#)

Region 7 Delegate-Elect/Director-Elect, 2006-2007

[Gerard M. Dunphy](#)
[Eric Holdrinet](#)
Maïke Luiken Miller
[Ferial El-Hawary*](#)
[Vijay K. Sood*](#)

Region 8 Delegate-Elect/Director-Elect, 2006

[Gerhard P. Hancke](#)
[Jean G. \(Jean-Gabriel\) Remy](#)

Region 9 Delegate-Elect/Director-Elect, 2006-2007

Enrique E. Alvarez
Juan R. (Ramon) Falcon
Enrique A. Tejera M.

Standards Association President-Elect, 2006

[George W. Arnold](#)
Raymond Hapeman
[Forrest D. \(Don\) Wright](#)

[Standards Association Board of Governors](#)
[Member-at-Large, 2006-2007](#)

Paul Nikolich
[Carl R. Stevenson](#)

[Standards Association Board of Governors](#)
[Member-at-Large, 2006-2007](#)

L.B. (Bruce) McClung
T.W. Olsen

[Technical Activities Vice President-Elect, 2006](#)

Jose R. (Roberto) Boisson de Marca
[Peter W. Staecker](#)

[IEEE-USA President-Elect, 2006](#)

Russell J. Lefevre
[John W. Meredith](#)

[IEEE-USA Member-at-Large, 2006-2007](#)

Burton J. Loupee
[Gregg L. Vaughn](#)

IEEE NEWS

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.
- If you have been notified by a Section officer that they intend 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 they can nominate you. This will help your Section earn a rebate at the end of the year through the [Nominate a Senior Member Initiative](#).

IEEE congratulates our 347 new Senior Members.

The last A&A Review Panel meeting was held on 16 April 2005 in San Juan, PR. Bill Gjertson, Chair of the A&A Committee, would like to thank the panel of Senior Members and Fellows from the Puerto and Caribbean Section who took part in the review process.

The Senior Member Update in Excel with listings in three formats: by Region/Section, by Last Name, and by Society can be accessed online from the Senior Member Update Web page at <http://www.ieee.org/ra/md/smupdates.html>.

If you have any questions regarding the status of a Senior Member application, send your inquiry to "[MailTo:senior-member@ieee.org](mailto:senior-member@ieee.org)" or go to <http://www.ieee.org/ra/md/smappstatus.html>.

For information on how your Section or Society can earn cash rewards for nominating Senior Member candidates, see Nominate a Senior Member Initiative at <http://www.ieee.org/ra/md/sminitiative.html>.

To check how your Region, Section or Society is doing in terms of Senior Member elevations and nominations this year, go to <http://www.ieee.org/ra/md/smstats.html>.

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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. Tien Joins Race for 2006 President-Elect
2. Virtual Museum Sings Electronic Music
3. Embedded Systems Engineers Have New Online Community
4. Court Supports IEEE-USA File-Sharing Position
5. Temple University Wins First IEEE Ethics Competition
6. Marketplace of Ideas: Playing Games
7. IEEE Spectrum Hosts Online Career Forum
8. Motion Picture Camera Stabilizer Wins Presidents' Scholarship

IEEE-USA Today's Engineer A Monthly webzine

<http://www.todaysengineer.org>

From Washington, D.C.: IEEE-USA TODAY'S ENGINEER E-MAIL UPDATE for 1 August 2005
Your Monthly U.S. IEEE Member E-Mail Update on "Building Careers & Shaping Public Policy"

<http://www.ieeeusa.org>

IN THIS ISSUE:

1. August 2005 IEEE-USA TODAY'S ENGINEER Webzine Covers "Cybersecurity Forum: A Crisis of Prioritization"; "Transitioning from School to Work"; "What Should Engineering Students Be Learning About Intellectual Property?"
2. IEEE-USA President Challenges Fellow Members to Promote U.S. Membership
3. IEEE-USA Advocates Protection of Personally Identifiable Health Information, Development of Technology-Based National Health Information Network
4. IEEE-USA Employment Navigator Offers Members Better Tools, Resources, Opportunities
5. IEEE-USA Offers U.S. Members Improved Tool to Communicate with Congress
6. IEEE-USA Helps to Shape Monthly Technology TV News Spots

The **IEEE** is the world's largest technical professional society with approximately 360,000 members in 170 countries. Through its members, the IEEE is a leading authority on areas ranging from aerospace, computers, and telecommunications to biomedicine, electric power, and consumer electronics. The IEEE produces 30 percent of the world's literature in the electrical and electronics engineering and computer science fields, and has developed more than 900 active industry standards. The organization also sponsors or cosponsors more than 300 international technical conferences each year. Additional information is available at www.ieee.org.

Contact: **Marsha Longshore**

732 562 6824 908 217 3594 (cell)

m.longshore@ieee.org

MAGNEWS

U.S. Congress Recognizes Seagate Engineer For Advancing Society, Culture And Commerce

Dr. Rajiv Ranjan commended for Leadership in Science and Technology

SCOTTS VALLEY, Calif.—16 June 2005— Seagate Technology (NYSE:STX) today announced that one of its Silicon Valley-based scientists, Dr. Rajiv Ranjan, has been recognized by a statement to the Congressional Record for leadership in science and technology. This special and rare acknowledgement was given for his extraordinary contribution and pioneering research work in the field of magnetic recording.

"My passion for discovery has allowed me to work with many brilliant people over the years at Seagate. Hearing my accolades on the Congressional floor was very moving," said Ranjan, executive director of research and development at Seagate's Fremont facility.

Seagate CEO Bill Watkins acknowledged Ranjan's 54 US patents in data storage and his contribution to data storage technology. "Innovation like Rajiv's is uniquely suited to a culture like Seagate's, where people are encouraged to take risks, look at things in new and unconventional ways, and where teamwork is at the heart of everything we do," said Watkins.

Ranjan patents have played an instrumental role in a variety of data-recording technology breakthroughs. The products Rajiv and his team have contributed to span not only computing markets, but are now being incorporated into consumer electronic products, such as portable music players, PDAs and cell phones.

Congresswoman Zoe Lofgren, who honored Ranjan for his work said, "Technical leaders like Rajiv Ranjan have been the lifeblood of Silicon Valley, and continue to prove that we remain on the leading edge of exciting new technologies."

Ranjan, a resident of San Jose, has worked at Seagate and its predecessor companies for 11 years.

About Seagate

Seagate is the worldwide leader in the design, manufacturing and marketing of hard disc drives, providing products for a wide-range of Enterprise, Desktop, Mobile Computing, and Consumer Electronics applications. Seagate's business model leverages technology leadership and world-class manufacturing to deliver industry-leading innovation and quality to its global customers, and to be the low cost producer in all markets in which it participates. The company is committed to providing award-winning products, customer support and reliability to meet the world's growing demand for information storage. Seagate can be found around the globe and at www.seagate.com.

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For further information, contact [Brian Ziel](mailto:brian.ziel@seagate.com), (831) 439-5429.

Hitachi Boosts Speed For Industrial-Strength Notebook Hard Drive

Higher Performance Ideal for Desktop-Replacement Systems

SAN JOSE, Calif. - May 11, 2005 - Hitachi Global Storage Technologies has set a new notebook performance record, announcing today worldwide availability of the fastest* 2.5-inch hard drive for mobile applications. The 7200 RPM Travelstar(tm) 7K100 is first to market with desktop-class

performance on a 2.5-inch hard drive for notebook systems such as Dell's Inspiron XPS Gen 2 system.

With 100 gigabytes** (GB) of storage capacity, the Travelstar 7K100 is bigger, faster and stronger than its award-winning predecessor, creating an industrial-strength notebook hard drive. Hitachi's second-generation 7200 RPM 2.5-inch product offers a 67-percent storage-capacity increase and a 33-percent performance improvement (sustained data transfer rate) over the previous generation. In addition, a 50-percent improvement in operating shock tolerance gives users greater system reliability and data integrity. Within its class, the 7K100 features industry-leading 300 Gs and 1000 Gs operating and non-operating shock specifications, respectively.

"Hitachi created the 7200 RPM notebook hard drive segment in 2003 to give mobile users a performance rush; based on strong demand, we are now bringing an even more powerful product to the market," said Bill Healy, senior vice president, product strategy and marketing, Hitachi Global Storage Technologies. "We've learned much about the 7200 RPM notebook hard drives over the past several years and have applied that experience to create the quintessential performance product."

Users of notebook systems that employ the Travelstar 7K100 as the leading-edge storage component will experience a marked performance improvement in a variety of computing activities: Windows XP start-up, application loading, copying files and general HDD usage (playing an MP3 file, viewing pictures, browsing the Internet, etc.). Hitachi's benchmark testing of the 7K100 during these activities shows a 25-percent faster performance over the fastest competitive 2.5-inch 5400 RPM drive on the market (comparisons were made to 5400 RPM drives as no competitive 7200 RPM 2.5-inch drives were available for testing at time of announcement).

Desktop-Class Performance

The heightened level of performance, higher capacity and ruggedness on the 7K100 are intended to give greater mobility to power users who have traditionally looked to desktop systems for premium functionality. These include PC gamers, graphic arts designers, digital video editors, computer-aided-design engineers, as well as general users who demand the latest and best that notebook technology has to offer.

The Travelstar 7K100 significantly outperforms competitive notebook hard drives as well as some 3.5-inch desktop drives. In fact, Hitachi benchmark testings have shown as much as a 7-percent faster performance rate when compared against 7200 RPM desktop drives with a 2-megabyte cache.

"The leadership attributes that define the Travelstar 7K100 are indicative of the deep R&D resources we apply to our entire 2.5-inch hard drive product line," Healy added.

More For Speed

As the architect for the performance-focused 7200 RPM 2.5-inch hard drive segment, Hitachi has been working to grow the market and seed acceptance among users. Since mid-2003 when the category was launched, Hitachi has seen a notable shift toward higher-performing notebook systems due to a growing sophistication in the user base and to the aggressive movement to wireless computing. In response, Hitachi is actively planning to support this growth trend and expects to significantly expand its production of 7200 RPM 2.5-inch drives by the end of 2005.

"Notebook computer manufacturers are sensitive to the growing demand for more disk drive performance and capacity, and the Hitachi 7K100 responds to that demand," said John Donovan, vice president, TrendFOCUS. "While the 7200 RPM segment for notebooks is still a relatively small one, Hitachi's continued technology advancements will do much to accelerate the growth of this category."

To provide a broader set of options for customers, Hitachi has increased the number of capacity points in its 7200 RPM offering to 60, 80 and 100 GB. The Travelstar 7K100 PATA model is now

shipping to customers worldwide in all capacities. Hitachi will also deliver a SATA version with 1.5 Gbits/second interface transfer rate*** in July. In addition, an enhanced availability (E7K100) model, offering 24x7 availability for blade server applications, will follow later this summer. All Travelstar 7K100 models are ROHS compliant.

White papers related to Hitachi's hard drive products, including 2.5-inch hard drive technologies, are available at the following web site: <http://www.hitachigst.com/tech/techlib.nsf>.

Technical Specifications

Travelstar 7K100 & E7K100
 60/80/100 GB
 9.5 mm in height
 7200 rpm
 66/66/81 billion bits per square inch maximum areal density
 2/2/2 glass disk platter(s)
 3/4/4 GMR recording head(s)
 1000 G/1ms non-operating shock,
 300 G/2ms operating shock
 4.2 ms average latency
 10 ms average read time/11 ms average write time
 1.1 W active idle (PATA); 1.3 W (SATA) (not applicable for E7K100)
 0.85W low-power idle (PATA); 1.0 W (SATA) (not applicable for E7K100)
 100 MB/sec maximum interface transfer rate ATA-6 Ultra DMA mode-5 (PATA)
 150 MB/sec interface transfer rate Serial ATA 1.5Gb/s
 115 grams
 2.6/2.6/2.6 Bels typical idle acoustics
 3.0/3.0/3.0 Bels typical operating acoustics

* media transfer rate based on available specs - 629 (Hitachi) vs. 538.2 Mbits/second (from closest competitor)

** 1 gigabyte equals 1 billion bytes

*** includes enhanced features such as Native Command Queuing, Hot Plug, Staggered Spin-up

(tm)Travelstar is a trademark of Hitachi Global Storage Technologies in the United States and other countries. Other company, product and service names may be trademarks or service marks of others.

About Hitachi Global Storage Technologies

Hitachi Global Storage Technologies was founded in 2003 as a result of the strategic combination of Hitachi's and IBM's storage technology businesses. Hitachi GST is the industry's second largest hard disk drive manufacturer in revenue.

The company's goal is to enable users to fully engage in the digital lifestyle by providing access to large amounts of storage capacity in formats suitable for the office, on the road and in the home. The company offers customers worldwide a comprehensive range of storage products for desktop computers, high-performance servers and mobile devices. For more information on Hitachi Global Storage Technologies, please visit the company's Web site at <http://www.hitachigst.com>.

About Hitachi, Ltd.

Hitachi, Ltd., (NYSE: HIT), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 347,000 employees worldwide. Fiscal 2004 (ended March 31, 2005) consolidated sales totaled 9,027.0 billion yen (\$84.4 billion). The company offers a wide range of systems, products and services in market sectors including information systems, electronic devices, power and industrial systems, consumer products, materials and financial services. For more information on Hitachi, please visit the company's Website at <http://www.hitachi.com>

Sun to Buy StorageTek for \$4.1 Billion

Thursday June 2, 5:57 pm ET

By Matthew Fordahl, AP Technology Writer

Sun Microsystems to Buy StorageTek for \$4.1 Billion to Try to Become One-Stop Tech Shop

SAN JOSE, Calif. (AP) -- Hoping to revive a business that still hasn't recovered from the Internet bust, Sun Microsystems Inc. agreed Thursday to buy Storage Technology Corp. for \$4.1 billion in an attempt to capitalize on the digital age's flood of information.

Sun, which was a profitable Wall Street darling in the 1990s, isn't straying from its core business of making computers and software. Rather, it's to become a one-stop tech shop for companies, government agencies and other organizations, said Sun CEO Scott McNealy.

"We're actually putting together all the pieces here," he said in an interview.

Still, the acquisition of the company popularly known as StorageTek poses a risk for Sun, whose previous efforts in the area have failed to gain traction. On Thursday, Moody's Investors Service said it was putting Sun's debt rating under review for possible downgrade.

Shares of Sun fell 11 cents, or 2.8 percent, to close at \$3.79 on the Nasdaq Stock Market. StorageTek shares soared more than 16 percent, or \$5.13, to close at \$36.36 in trading on the New York Stock Exchange.

Sun agreed to pay \$37 per share in cash for the Louisville, Colo.-based company, representing an 18.5 percent premium over StorageTek's closing stock price Wednesday. The deal includes the assumption of StorageTek employee stock options.

"It's clearly a major event in the history of (information technology)," said Patrick Martin, StorageTek's CEO. "It joins together two of the industry's leading technology innovators."

StorageTek, founded in 1969, makes tape drives and network management and backup software for businesses and government agencies. In recent years, its business has grown by helping companies organize and store massive amounts of information.

But, like Sun, it also has a troubled past, including a 1984 bankruptcy filing and a 1999 reorganization. It has 7,100 employees compared with Sun's 32,000. Sun declined to say whether jobs would be cut.

In 2004, StorageTek reported a net income of \$191 million on sales of \$2.2 billion, compared with Sun's fiscal 2004 loss of \$388 million on sales of \$11.2 billion.

Sun said the deal will add to its operating profit in the first 12 months after it closes, expected in the late summer or early fall pending regulatory and shareholder approval. The boards of both companies have given their nods.

The deal is the biggest move by Santa Clara-based Sun since the Internet crash of 2000 devastated its sales and profits as cash-flooded dot-coms evaporated and corporate spending on information technology collapsed.

Though rivals have long since revived, Sun continued to founder despite a series of layoffs, reorganizations, strategy shifts and executive departures. Its server business was particularly hard hit by the popularity of less expensive hardware and software such as servers built with Intel Corp. chips and the Linux operating system.

In recent quarters, Sun appears to have stabilized, though profitability hasn't been consistent, as it has revamped both hardware and software products, signed a truce with archrival Microsoft Corp. and launched subscription-based program licensing.

Still, despite steep losses and shrinking revenue, Sun has managed to maintain more than \$7.4 billion in cash and marketable securities, according to its most recent financial report. However, the acquisition will shrink that reserve, leaving Sun with less of a cushion in case integration goes awry.

Analysts also questioned how the acquisition will drive growth.

"We do question the rationale of a transaction which reduces Sun's cash hoard by 40 percent, and does nothing to re-ignite revenue growth or profitability," Steven Fortuna, an analyst at Prudential Equity Group, said in a research note. "We would rather have seen the company buy back a billion shares and fire 10,000 people."

Gordon Haff, an analyst at the research firm Illuminata, said acquiring StorageTek would distance Sun from its past and make the company more closely resemble its archrivals Hewlett-Packard Co. and IBM Corp.

"If Sun really can pull off this integration, it really does make them much more of the one-stop, integrated computer systems company than they've ever been in the past," Haff said. "In a way, it's a very different culture for Sun."

But McNealy, who once famously compared the 2002 mega-merger of HP and Compaq Computer Corp. to the collision of two garbage trucks, said the combination of Sun and StorageTek is a good fit.

"As soon as this thing closes, the way to do it is just staple the two price lists together," he said. "That's about as much serious product marketing that is necessary in phase one. It's quite complementary."

Sun, however, is no stranger to merger headaches. In 2000, it attempted to bolster its presence in low-end server offerings with the \$2 billion all-stock purchase of Cobalt Networks Inc. Three years later, it effectively killed off the product line.

McNealy said Sun hasn't seen success in storage previously because it wasn't as big as other industry players such as EMC Corp. That won't be an issue after Sun acquires StorageTek's field support and sales team.

"Against the storage competitors like EMC, the one knock they had against us was that we weren't serious, that we didn't have a critical mass and mission-critical support capability in the sales environment," he said. "All of a sudden now, we have all of that."

Spin-valve Bench

**Advanced spintronics device design and analysis software,
Euxine Technologies LLC, Dayton, Ohio, USA**

Euxine Technologies released in June of 2005 the maiden Version 1.0 of its new Spin-valve Bench (SVB) software for Microsoft Windows operating systems. This product is positioned as an affordable, turnkey, 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. The application blends a friendly and versatile user interface with an accurate computation engine that rigorously accounts for three-dimensional micromagnetic interactions. Giant-magnetoresistance (GMR) and anisotropic-magnetoresistance (AMR) calculations are based on realistic models that reflect the micro-structural, current-distribution and spin-torque properties of a device. Also available are the thermal modeling of device components and the modeling of devices in current-in-plane (CIP) and current-perpendicular-to-plane (CPP) electrical circuit configurations.

The data-input areas of the software are organized in intuitive categories for easy problem set up. A user can easily create a device by adding and independently specifying the characteristics of the device components, and can then apply external fields in order to calculate magnetic states and generate magnetization, GMR and AMR transfer curves. An exclusive time-saving feature of the software is a new-design window that offers up a retinue of popular start-up templates to choose

from. The user has at his or her disposal a convenient context-sensitive online help facility and ready access to the following optimization and productivity tools (separate applications in their own right): *Cellider* (an array-patterning tool) and *MagJob* (a background, batch-job submission and monitoring tool).

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

Company contact: Dr. John Oti,
joti@euxine.com

Lacie And Hitachi Collaborate To Deliver Industry's Largest Capacity External Storage Solutions

500GB Hitachi Deskstar Hard Drives Provide Advanced Features and Renowned Quality

NEW YORK CITY @ DV Expo (July 20, 2005) - LaCie and Hitachi, two pioneers of innovative hard drive technology and design, today announced a collaboration to deliver three external hard drives with record capacities for both consumer and enterprise users. LaCie selected 500GB Hitachi Deskstar 7K500 hard drives for its 2TB Biggest F800, 500GB Ethernet Disk mini and 2TB Bigger Disk Extreme storage solutions. Hitachi has incorporated a number of unique design features that make its 500GB hard drive well-suited for use in digital video editing, multi-drive RAID storage and numerous other high-bandwidth applications.

"We are pleased to expand our relationship with LaCie to include their latest high-capacity external storage solutions," said Steve Pereira, director, Hitachi Global Storage Technologies Europe Limited. "LaCie and Hitachi are both known for providing customers with breakthrough features, unique design and cutting-edge technology. LaCie is using 500GB Deskstar hard drives to deliver external storage solutions with massive capacities and that are easy to use for both consumer and enterprise customers."

"LaCie is excited to work with Hitachi to deliver the largest capacity hard drives solutions on the market," says Olivier Mirloup, LaCie Senior Product Manager. "LaCie has a history of developing award-winning storage solutions and Hitachi's ongoing leadership in the internal hard drive industry makes this pairing a natural fit. Linking our strengths will be a great benefit to our customers."

Hitachi Deskstar drives will provide LaCie customers with industry-leading capacity and award-winning performance. Several Deskstar 7K500 design attributes combine to enhance system performance and usability, including fast data transfer rates, low power consumption and "Smooth Stream" technology, an advanced error recovery process designed to improve digital content management.

The following LaCie solutions include 500GB Hitachi Deskstar 7K500 internal hard drives:

- LaCie Biggest F800 is a RAID subsystem offering a higher level of data protection

for professionals with secure storage for 2TB data. The 4-bay array supports RAID levels 0, 0+1, 5 and RAID 5+hot spare in a sturdy aluminum enclosure with FireWire 800 and Hi-Speed USB 2.0 interfaces for use on PCs or Macs. Biggest F800 allows for easy installation of four arrayed disks with no driver required. Should the system overheat or a drive fail, the Biggest F800's smart alarm will notify the administrator via an audible sound and automatically begin rebuilding a faulty drive for those using RAID 5.

- LaCie Ethernet Disk mini is an affordable network hard drive for use in homes or small offices with 500GB shared storage space. Anyone plugged into the dual-purpose Ethernet Disk mini can instantly

share files via the fast Ethernet connection without having to install drivers, or the drive can be attached via USB 2.0 to any individual computer for faster throughput and a private connection. Designed for small office and home environments, the user-friendly LaCie Ethernet Disk mini is plug and play - no prior networking experience is required.

- LaCie Bigger Disk Extreme is a compact and sturdy drive designed to support multi-stream audio/video editing in a variety of formats with burst transfer rates reaching up to 85MB/s and unrivaled 2TB capacity. A true plug-and-play device, the LaCie Bigger Disk Extreme has a built-in RAID 0 configuration that allows for instant high-speed data transfers of up to 85MB/s and immediate large-scale backup without the need for complicated setup. LaCie Bigger Disk Extremes are hot-pluggable for file sharing among FireWire 800/400 and iLink/DV workstations. No drivers or software installation is required for those using Windows XP, Windows 2000 or Mac OS X operating systems.

LaCie drives are available immediately worldwide direct from LaCie or through the company's specialized dealer network. For more information, visit www.lacie.com.

[About LaCie](#)

LaCie creates external storage solutions and color monitors that help professionals and everyday users easily manage their digital lives. Powerful technology combined with unique designs by the internationally acclaimed Philippe Starck, Neil Poulton and Porsche Design GmbH make LaCie the world leader in storage innovation. Established in France in 1989, LaCie is now headquartered in North America, Europe and Asia and listed on the Paris Nouveau Marché (code 5431). For more information, visit www.lacie.com.

Hitachi Global Storage Technologies is introducing a **new 2.5-inch hard drive**, with several features that will make it a leading contender in the notebook and consumer electronics markets. The 4,200 rpm Hitachi Travelstar 4K120 hard drive uses new technology developed by Hitachi that:

- Makes power consumption 30% more efficient, via Hivert (Hitachi Voltage Efficiency Regulator), extending battery life by up to 20 minutes on average.
- Creates cooler operation. With hard drives among the top three heat producers in laptop computers, the 4K120's significantly lower heat dissipation will reduce the overall heat emission of notebooks for greater lap comfort. In CE environments, the cooler-running hard drive can be used in a new category of smaller, entry-level DVRs intended for spaces such as bedrooms, where quieter operation is possible as fans are not required for cooling the host device.

[About Hitachi Global Storage Technologies](#)

Hitachi Global Storage Technologies was founded in 2003 as a result of the strategic combination of Hitachi's and IBM's storage technology businesses. Hitachi GST is the industry's second largest hard disk drive manufacturer in revenue.

The company's goal is to enable users to fully engage in the digital lifestyle by providing access to large amounts of storage capacity in formats suitable for the office, on the road and in the home. The company offers customers worldwide a comprehensive range of storage products for desktop computers, high-performance servers and mobile devices. For more information on Hitachi Global Storage Technologies, please visit the company's Web site at <http://www.hitachigst.com>.

[About Hitachi, Ltd.](#)

Hitachi, Ltd., (NYSE: HIT), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 347,000 employees worldwide. Fiscal 2004 (ended March 31, 2005) consolidated sales totaled 9,027.0 billion yen (\$84.4 billion). The company offers a wide range of systems, products and services in market sectors including information systems, electronic devices, power and industrial systems, consumer products,

materials and financial services. For more information on Hitachi, please visit the company's Website at <http://www.hitachi.com>.

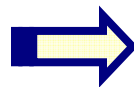
QUIZ

What has this to do with magnetism?



Solution

Go to the **END**



CONFERENCE ANNOUNCEMENT 1

16th Magnetic Recording Conference TMRC 2005 August 15-17, 2005 Stanford University, Stanford, California, USA

We are pleased to announce the program for
The 16th Magnetic Recording Conference (TMRC 2005)

TMRC 2005 will have six oral sessions and poster sessions to focus on magnetic recording heads and systems.

- Advanced Read Heads
- Write Head Technology
- Recording Systems
- Reliability and Mechanics
- Advanced Coding and Detection

The program booklet for this conference contains registration, lodging and transportation information. While the oral program has been finalized, the poster sessions are continuing to request contributions. The attached booklet contains information on how to make submissions for poster presentations before the July 15th deadline.

The program and the schedule is downloadable in pdf format from
<http://tmrc.nanointernational.org/program.htm>

Conference registrations should be sent to (650) 941-8035 by FAX or 12388 Priscilla Ln, Los Altos Hills, CA 94022, USA by mail. Please register by July 18th to take advantage of the discounted conference rates. Please refer to the attached booklet for additional information.

Current information on TMRC 2005 can be found at
<http://tmrc.nanointernational.org>

Moris Dovek

Publicity Chairperson

CONFERENCE ANNOUNCEMENT 2



Bratislava, Slovakia

7-9 September 2005

SECOND ANNOUNCEMENT AND CALL FOR PAPERS

Organized by the
**Slovak University of Technology, Faculty of Electrical Engineering and
 Information Technology and
 Slovak Academy of Science, Institute of Physics and Institute of Experimental
 Physics**

Venue

The Conference will be held at the Incheba EXPO Bratislava an exhibition facility, located within 20 minutes by public transportation from the centre of the town (<http://www.incheba.sk>). Bratislava is the capital of Slovakia. Having around 450 000 inhabitants it is the largest city in the country. With several universities, there are about 50 000 students in the season. The town spreads on both banks of the Danube River at the foot of the Low Carpathians. It ranks among the warmest spots in Slovakia with temperatures around 25 centigrade in the beginning of September. Bratislava is accessible with its own International Airport (20 km from the Conference site) or the Airport Vienna-Schwechat, Austria, which is only 40 km from the place. There are also regular IC trains from Vienna (60 km), Prague (350 km) and Budapest (200 km).

Scope

The Soft Magnetic Materials Conferences provide a forum for presentation of advances in the research and application of soft magnetic materials. This SMM Conference will be the 17th in a series of international meetings devoted traditionally to all kinds of soft magnetic materials with a special emphasis on industrial aspects and applications.

Topics

Contributions are now invited, however not limited, to the following areas:

- basic problems, magnetization processes
- magnetic characterization, measurement techniques
- electrical steels: GO, NGO, thin electrical steels, higher Si-alloys
- FeNi, FeCo, Amorphous and Nanocrystalline Alloys
- Ferrites and other oxides, powder and composites
- design of electromagnetic components: modelling of magnetic circuit and numerical methods
- power applications (*e.g.* motors, transformers, actuators)
- electronic and high frequency applications

Preliminary Registration and Abstracts

Prospective contributors are asked to indicate provisional title, topic area and three to five key words describing the content of their work. Registration should be done exclusively on-line, at Conference Web site <http://www/smm17.com>. Two hard copies and electronic version (rtf file by E-mail) of one-page abstract of intended paper should be submitted to the SMM17 Conference Secretariat not later than by 15 March 2005. Abstracts must be prepared in accordance with instructions that can be downloaded from the Conference Web site. The abstracts of contributions accepted for inclusion in Conference Programme will be published (from the author supplied "camera-ready copy") in Conference Abstracts to be handed-out to participants at the beginning of the Conference.

Registration fees

Expected registration fees: Regular fee 440 €, Student fee 210 € Accompanying person fee 200 €

Publications

Final versions of papers are due on 30 May 2005. Submitted papers will be peer-refereed and the authors will receive eventual comments and recommendations in time of the Conference. All conference contributions will be published, after the event, in Journal of Magnetism and Magnetic Materials.

Important terms and deadlines

- Submission of one-page abstracts not later than 15 March 2005
- Notification of acceptance 1 April 2005
- Early registration, before 15 May 2005
- Full paper submission, deadline 30 May 2005

International Advisory Committee

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Antony J. Moses, Cardiff, UK
(MosesAJ@Cardiff.ac.uk)

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Local Organising Committee

Chairman:

Jan Bydžovský, STU Bratislava, SK
(jan.bydzovsky@stuba.sk)

Secretariat of Conference

FEI, STU, Ilkovičova 3, 812 19 Bratislava, Slovakia
Phone: +421 2 654 22 783, Fax: +421 2 654 22 756,
E-mail: smm17@iris.elf.stuba.sk

CONFERENCE ANNOUNCEMENT 3



International Symposium on Physics of Magnetic Materials 2005

14th September ~ 16th September, 2005
Grand Copthorne Waterfront Hotel, Singapore
Hosted by Data Storage Institute, Singapore

The 6th International Symposium on Physics of Magnetic Materials 2005 (ISPMM 2005) will be held at the Grand Copthorne Waterfront Hotel, Singapore, from September 14 to September 16, 2005. The ISPMM 2005 is a forum where scientists and engineers can discuss new developments in the field of physics and applications of magnetic materials. Selected presented papers will be published in the Journal of Magnetism and Magnetic Materials.

Topics of the Symposium

A. Magnetic Recording Materials, Physics & Devices

- AA. High Bs Materials and Write Head Technology
- AB. GMR Sensors and Read Head Technology
- AC. Recording Media and Materials (including MO media)
- AD. Magnetic Nano-particles and Nano-structured Films
- AE. Head Disk Interface and Tribology
- AF. Advanced Storage Systems, Recording Physics and Modeling

B. Spintronics

- BA. Magnetic Semiconductors
- BB. Half Metal and CMR Materials
- BC. Spin-dependent Transport
- BD. Spintronic Devices and Physics

C. Biomagnetics

- CA. Nano-particles for Cell Separation, Bio-detection, etc
- CB. Magnetic Sensors for Bio-applications, DNA Labeling, etc
- CC. Magnetic Drug Delivery
- CD. Magnetic Bio-imaging

D. Hard/Soft Magnets and Applications

- DA. Nano-structured Hard Magnets
- DB. Hard Magnet Processing and Applications
- DC. Magnetic Oxide and Applications
- DD. Amorphous/Nano-crystalline Magnetic Materials

Important Dates of ISPMM 2005

Digest submission opens	26 th Apr. 2005
Digest submission deadline	20 th May 2005
Full paper submission deadline	10 th Aug. 2005
Advance registration deadline	20 th Aug. 2005
Conference date	14 th ~16 th Sept. 2005

For more details of the ISPMM 2005, please visit the conference website:

<http://ispmm2005.dsi.a-star.edu.sg/>

<http://ispmm2005.dsi.a-star.edu.sg/>

CONFERENCE ANNOUNCEMENT 4

ISMST-8

8th International Symposium on Magnetic Suspension Technology

September 26 - 28, 2005,

Dresden, Germany

Dear Colleague,

We are pleased to announce the *8th International Symposium on Magnetic Suspension Technology, ISMST-8*. The symposium will be held from September 26 - 28, 2005 in Dresden, Germany. It will bring together experts from all over the world to present and to discuss the latest developments in magnetic suspension technology. The ISMST-8 will cover all areas of magnetic suspension by actively controlled and superconducting, passive magnetic bearings including the related magnetic and superconducting materials. The topics addressed are such promising applications as flywheels for the energy storage and magnetically levitated transportations systems, but include also other applications of magnetic bearings, e.g. in electric machines, control and guiding systems as well as modelling.

Important dates to remember:

- February 14, 2005 : On-line Abstract Submission Open
- March 1, 2005 : Deadline for On-line Abstract Submission
- May 31, 2005: Deadline for Advanced Registration

We are looking forward to hosting you in Dresden at ISMST-8.

Günter Fuchs (Conference co-chairman)

Ludwig Schultz (Conference co-chairman)

ISMST-8 secretariat

IFW Dresden

P.O. Box 270116

D-01171 Dresden, Germany

Web site: <http://www.ifw-dresden.de/imw/ISMST8>.

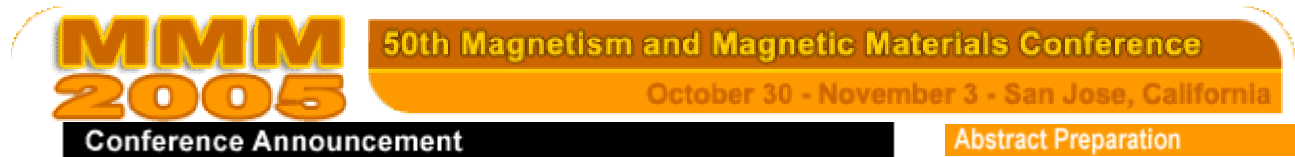
Phone: +49 351 4659 405

Fax: +49 351 4659 541

E-mail: ISMST8@ifw-dresden.de

CONFERENCE ANNOUNCEMENT 5

<http://www.magnetism.org>



Conference Announcement

This conference annually brings together scientists and engineers interested in recent developments in all branches of fundamental and applied magnetism. Emphasis is placed on experimental and theoretical research in magnetism, the properties and synthesis of new magnetic materials, and advances in magnetic technology. The Program consists of invited and contributed papers. Abstract booklets will be made available at the Conference, and Proceedings will be published in the Journal of Applied Physics.

Please [click here](#) to submit your article for the Proceedings

[Click Here](#) for Itinerary Planner (Program)

Abstract Preparation
Airport Transportation
Announcement
Author Information
Best Poster Award
Best Student Presentation Award
Categories
Committee Contacts
Conference Registration
Editors
Final Call for Papers
Future Conferences
Hotel Information
Nominations for Invited Speakers
Local Information
Partner Program
Presentation
Publication
Session Chair Guidelines
Speaker Practice Room
Student Travel
Symposia and Special Events
Visa Requirements

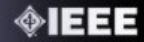


Conference announcement 6



IEEE SENSORS 2005

The 4th IEEE Conference on Sensors



Hyatt Regency Irvine
Irvine, California
Oct. 31st - Nov. 3rd, 2005

Organized by the IEEE Sensors Council

General Chair

Andrei Shkel, University of California, Irvine, USA

The conference will be held at the Hyatt Regency Irvine, within 15 minutes of Disneyland, California Adventure, Knott's Berry Farm, South Coast Plaza Mall, Fashion Island, Newport Beach, Huntington Beach, Oak Creek and Pelican Hill Golf Courses, Edison Field (Anaheim Angels) and Arrowhead Pond (Anaheim Mighty Ducks).

Orange County Attractions: <http://www.visitorangecounty.net/attractions.html>

Abstract Submission Deadline April 20, 2005

Topics of Interest:

- 1. Sensors Phenomena and Modeling** (theory, characterization, CAD modeling, and testing of sensors)
- 2. Sensor and Actuator Systems** (sensor electronics, actuator systems, sensor-actuator systems, multiple-sensor systems, intelligent sensing, sensor arrays, "electronic nose" technology, sensor buses, sensor networks, voting systems, telemetering, internet-based and other remote data acquisition, and control of sensors)
- 3. Chemical and Gas Sensors** (devices, materials, and technology)
- 4. Biosensors** (sensor arrays, lab-on chip, online monitoring, process control, test kits, materials, and technology)
- 5. Optical Sensors** (radiation sensors, optoelectronic/photonic sensors, and fibers)
- 6. Mechanical sensors** (inertial, pressure, and tactile)
- 7. Physical Sensors** (thermal, **magnetic**, and mass-sensitive devices)
- 8. Applications** (automotive, medical, environmental monitoring, consumer, alarm and security, military, nautical, aeronautical and space sensor systems, robotics, and automation)

Further information at

<http://ewh.ieee.org/tc/sensors/sensors2005/index.html>

CONFERENCE ANNOUNCEMENT 7

 <p> http://icst.massey.ac.nz/ icst2005@massey.ac.nz ICST 2005 J. Mukhopadhyay, MSc PhD R.M. Hudson, MSc PhD S. Dhandapani, MSc PhD, Malaysia </p>	<p style="text-align: center;"> International Conference on Sensing Technology </p> <p style="text-align: center;"> November 21-23, 2005 Palmerston North, New Zealand Call for Papers </p>
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ICST 2005 is intended to provide a common forum for researchers, scientists, engineers and practitioners throughout the world to present their latest research findings, ideas, developments and applications in the area of sensing technology. ICST 2005 will include keynote addresses by eminent scientists as well as special, regular and poster sessions. All papers will be **peer** reviewed on the basis of a full length manuscript and acceptance will be based on quality, originality and relevance. The review process will be **double blind** and author details will not be divulged to the reviewers. Accepted papers will be published in the conference proceedings.

Topics will include, but are not limited to, the following:

- Vision Sensing
- Sensors Signal Processing
- Sensors and Actuators
- Sensors Phenomena and Modelling
- Sensors Characterization
- Smart Sensors and Sensor Fusion
- Electromagnetics Sensors
- Chemical and Gas Sensors
- Physical Sensors
- Electronic Nose Technology
- Biological Sensors
- Electro-optic Sensors and Systems
- Mechanical sensors (inertial, pressure, and tactile)
- Nano Sensors
- Acoustic, Noise and Vibration Sensors
- Wireless Sensors
- Optical Sensors (radiation sensors, optoelectronic/photonic sensors, and fibres)
- Lab-on chip
- Sensor Arrays
- Intelligent sensing
- Telemetry
- Online monitoring
- Applications of Sensors (automotive, medical, environmental monitoring, consumer, alarm and security, military, nautical, aeronautical and space sensor systems, robotics, and automation)
- Solid State Sensors
- Internet-based and other Remote Data Acquisition

Paper Submission

Authors are invited to submit the full manuscript (4 to 6 pages including references) of their technical paper, for oral or poster presentation, in **MS Word format** using web (<http://icst.massey.ac.nz/>)

For further details, please **contact**: Subhas Mukhopadhyay
S.C.Mukhopadhyay@massey.ac.nz

CONFERENCE ANNOUNCEMENT 8

Seventh Latin-American Workshop on Magnetism Magnetic Materials and their Applications (LAW3M05)

Reñaca (Chile) December 11-15, 2005

<http://www.law3m.cl>

VII Latin American Workshop
on Magnetism, Magnetic Materials and Their Applications
Reñaca , Chile December 11-15, 2005

APS American Physical Society
CONICEN
GECS
CONICYT
INICIATIVA CIENTIFICA MILLENIO
ICM
Museo Milenio
SOCHIFI
UTP
UNIVERSIDAD DE LA FUENTE
CLAF
IUPAP

<http://www.law3m.cl/>
law3m@ufro.cl

Description: Latin-American Workshops on Magnetism, Magnetic Materials and their Applications are held every two years in different Latin-American countries and open to participants from all over the world. Sessions include: invited talks, oral contributions, poster contributions, advanced topic discussions, round table on collaborations and others. Working language is English. Proceedings will be published as a special but consecutive number of Physica B.

Main topics:

Cooperative phenomena in magnetism
 Artificially structured materials
 Spintronics: spin injection and detection
 Magnetic nanostructures
 Transition metal oxides
 Magnetic multilayers
 Low-dimensional magnetism
 Spin glasses and frustrated systems
 Giant and colossal magnetoresistance
 Molecular and cluster magnetism
 Computer simulations of magnetic systems
 Applications and interdisciplinary topics

Submission of abstracts will be on-line in a format to be defined on May 31 2005. **Each fully registered participant** will be entitled to submit contributions according to the following rules: (1) There is no limitation in the number of contributions submitted as posters (Acceptance of each abstract is decided by the Organizing Committee). (2) Only one contribution can apply for consideration as an oral presentation (Acceptance is decided by the Organizing Committee). (3) Only one of the actually presented papers (oral poster) can be submitted for the Proceedings in Physica B, following peer review.

Deadlines:

31 July 2005	Abstracts, pre-registration and beginning of hotel reservation.
31 August 2005	Announcement of abstract acceptance
30 September 2005	Deadline for discount registration fee
31 October 2005	Full paper reception for the Proceedings (to be published in Physica B)
11 December 2005	Venue at hotel Conference Town, Reñaca and beginning of LAW3M-05 (www.ctown.cl) There is no deadline for hotel registration but it will be handled on the basis of "first come first served".

Registration:

Regular	US\$ 300.-
Discount fee	US\$ 250.- (if paid before September 30, 2005)
Student	US\$ 150.-

CONFERENCE ANNOUNCEMENT 9

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

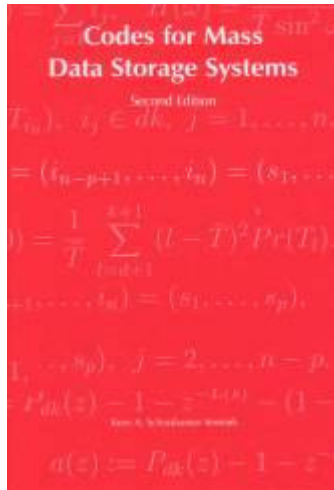
The Cleveland Clinic Foundation
Cleveland, U.S.A.

Mirka and Ivo Safarik

Academy of Science
Ceske Budejovice, Czech Republic

For more information, please visit our website www.magneticmicrosphere.com

BOOK REVIEW



Codes for Mass Data Storage Systems

Fully Revised Second Edition!

by **Kees A. Schouhamer Immink**

Institute for Experimental Mathematics, Essen-Duisburg,
Germany

This book, much like its predecessor, is an excellent exposition on the exciting field of constrained coding for storage applications. It is comprehensive in that almost every area within the purview of constrained coding can be found within: capacity computation, spectral analysis, design, encoding, and decoding of run-length limited (RLL), DC-free, and DC-RLL codes. The required mathematical background is minimal beyond a basic knowledge of probability, linear algebra, and some combinatorics.

Kees Immink is a pioneering researcher in the field of constrained coding and this is thoroughly reflected in the profound and lucid treatment of the subject in this book.

The book and its chapters are very well-structured; it begins by describing techniques used to analyze constrained codes and continues with chapters on RLL codes, DC-free codes, and DC-RLL codes. These codes are described in considerable detail in terms of their design, performance, and implementation. The text is illustrated with many figures and tables, and each chapter contains numerous examples all of which serve to clarify and firmly embed the concepts in the reader's mind.

Although rich in theoretical aspects of constrained codes, the book is written more with the practitioner, rather than the researcher, in mind. Wherever possible, the author has traded mathematical rigor for brevity, no doubt to make the book accessible to as wide an audience as possible. However, adequate references are provided for the reader who wants to delve deeper. The list of over 350 references, including journal and conference publications as well as patents, is very extensive and a result of the author's years of research in the field. The author provides in-depth description of codes, like the EFM code and several RLL codes, some of which have become standards in the storage industry.

The book is obviously an extension of the 1991 edition, but as the author notes it also covers significant developments of the past decade in the field of constrained coding. In keeping with their growing importance, sliding-block codes and enumerative coding are described in much more detail than in the previous edition. A section on enumeration using fixed-point arithmetic has been added, again as part of the author's effort to blend theory with practice. A new chapter on guided scrambling has been added and describes in considerable detail the application of the method for the design of DC-free codes. Numerous other additions to the new edition make it one of the most comprehensive texts on constrained coding. Although certain new topics, e.g. two-dimensional RLL codes or (0,G/I) codes, are included in the book, they receive only a cursory mention which leaves the reader desiring more. Although the new edition expands on the old, some chapters that were present in the previous edition have been removed, without explanation. Again, however, adequate references are provided on these subjects pointing the inquisitive reader in the right direction.

The book is highly recommended for anyone who maintains a keen interest in storage systems, from those with little or no background in the field of constrained coding to engineers in the storage industry, for whom the book will serve as a handy reference.

Naveen Singla

Electronic Systems and Signals Research Laboratory,
Department of Electrical and Systems Engineering,
Washington University,
St. Louis, MO 63130, USA.
<http://www.essrl.wustl.edu/~singla>

IEEE PUBLICATION NEWS

Members who would like to volunteer their services as technical reviewers are needed. Society members with **ideas for new books** or candidates for the **Classic Re-Issue** series are urged to get in touch with:

John T. Scott,
Magnetics Society Liaison to IEEE Press
 E-mail: john.scott@physics.org

For **Classic Re-Issues**, the contact is
 Stan Charap charap@ece.cmu.edu

For **new books in data storage**, the contact is
 "Gordon F. Hughes" gfhughes@ucsd.edu

For **new books in other areas**, the contact is
 John T. Scott john.scott@physics.org

IEEE XPLORE(R) RELEASE 1.5:

The IEEE Xplore(R) Release 1.5 provides free abstract/citation records for guests and enhanced linking to complete abstract/citation records for IEEE members and subscribers, as well as:

- ▶ Title history for related journals and magazines
- ▶ Ask *IEEE link for referenced articles not in IEEE Xplore
- ▶ Google to index IEEE abstracts, enabling searches to locate IEEE content directly from a Google web search
- ▶ Thomson ISI now includes links from their Web of Science products directly to articles in IEEE Xplore(R).

In addition, through IEEE Xplore 1.5, subscribers to the IEEE Member Digital Library can now sort information in their personal file cabinets by publication name, primary author and original filing date.

For more information on this release, visit
<http://ieeexplore.ieee.org/xpl/ReleaseNotes.jsp>

Starting in 1965 with *vol. 1*, now all papers published in **IEEE TRANSACTIONS ON MAGNETICS** are available at **IEEE Xplore**, as well as the searchable **Cumulative Index 1985-2000, Volumes 21-36**

Ron Goldfarb
Publications Chair
r.goldfarb@ieee.org

QUIZ – Solution

Magnetic Termite Mounds of Australia

The '**magnetic**' termite mounds of far northern Australia are imposing and spectacular, but what intrigues any observer is how these tall, thin mounds tend to align in the direction of north to south. Termites are found on all continents, but magnetic mounds are natural wonders of the tropical Australian landscape.

Two species of termites regularly build magnetic mounds. One of these is *Amitermes laurensis*, from Cape York Peninsula and eastern Arnhem Land. It is named after the township of Laura, near the southern limit of magnetic mounds in Queensland. Curiously, south of this area *Amitermes laurensis* does not build magnetic mounds, but erects simple conical mounds. The other species that builds magnetic mounds is *Amitermes meridionalis* from near Darwin in the Northern Territory.



On Cape York Peninsula, magnetic mounds are found in two different situations. The first is on so-called 'graveyard flats', where a few to many hundreds of mounds occupy poorly drained, flat areas of one to three hectares. The other situation is on large, open grassy plains. These plains are usually located behind mangroves along stretches of low-lying coast. They may extend for several kilometers and there may be thousands of magnetic mounds. Both situations can be

inundated for long periods during the wet season.

'Magnetic' Mounds

The mounds are built from soil brought from beneath the ground. The soil is cemented together with the insects' saliva and excreta. Magnetic mounds, besides being tall, thin and wedge-shaped with the longer axis orientated from north to south, differ from conventional mounds in several other ways:

Mound Growth

Magnetic mounds are enlarged by the termites adding thin layers of galleries on the surface around a central, almost solid core. In other species (for example, the rounded mounds of *Coptotermes*), the mound is enlarged by concentrated building in one part of the mound. This produces a "budding" effect. These have thick outer walls and the galleries are internal.

Why Build 'Magnetic' Mounds

The awesome spectacle of plains populated by giant thin mounds all lined up parallel to one another has caused considerable puzzlement. Why do the termites build magnetic mounds? Many suggestions in the past have been largely speculative. Robert Logan Jack, an early Queensland Government geologist who led many expeditions into Cape York Peninsular late last century, thought the shape of the mounds might be to promote rapid drying during nest construction. Certainly the large flat faces of the mound directly face the morning and afternoon sun. Eric Mjöberg, a Swedish biologist and anthropologist who visited Cape York Peninsula in 1912, suggested the elongated shape of the mounds was to avoid damage from winds. Modern theories explain the phenomenon as a means to protect the colony inside the mounds from extremes of temperature induced by the strong tropical sun. Protection is particularly needed in the hot summer months that coincide with rains. Other species of mound-building termites can retreat into cool, insulated underground galleries when temperatures in the mound are high. But northern Australia has heavy monsoon rains, and the areas where the mounds occur are inundated with water during the "wet", so the termites cannot retreat underground and must survive the summer heat in the mound itself. In the morning the sun shines full on the eastern face of a magnetic mound. At this stage the western face is not only in shade, but also insulated from the hot eastern face by the thick, solid core of the nest.

Temperature measurements show that there may be up to 8 °C difference in temperature between the two surfaces. In the afternoon the reverse happens and the western face becomes much hotter than the eastern. At midday, the hottest part of the day when no shade is cast, only the thin upper edge of the mound is presented to the sun so minimum heat is absorbed. It has been shown that more termites can be found in galleries on the western face in the morning and more on the eastern face in the afternoon - so there is obviously a pattern of migration to cooler parts of the nest during the course of the hot daylight hours.

Experimental rotation of mounds to an east-west orientation has been shown to upset the temperature pattern inside the mound causing an overall rise of up to 6 °C internal temperature. **To build "magnetic" mounds the termites must be able to sense the direction of the earth's magnetic field. It has been suggested that they do this by means of magnetite in their tissues, as has been shown in other animals, such as dolphins and pigeons, that orient themselves without access to visual guides.** Another problem of the internal environment of a mound, perhaps solved by the flat shape of the structure, is that of 'breathing'. Just like a grazing mammal, the collective members of a termite colony breathe oxygen from the atmosphere and give off carbon dioxide. These gases must permeate the outer wall of the mound. During the wet season moisture reduces the permeability of the wall. The high ratio of surface area to volume of a flattened

“magnetic” mound increases the area over which this essential exchange of gases can take place. In other words, the whole mound acts like a “terrestrial gill” for the colony. This idea is further supported by the frequent presence of thin side buttresses to the mounds of *Amitermes laurensis*. This further increases the surface through which gases can permeate.

Further Information

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<http://www.fish.com/~brad/aus/kakadu2/>

<http://www.fish.com/~brad/aus/kakadu2/magnetic-termite-mounds.jpg>

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