GMAG NEWSLETTER

Topical Group on Magnetism and its Applications
No. 12, February 2003

A Topical Group of The American Physical Society
Edited by R. Bruce van Dover

A Note from the Chair

It is a great pleasure to have this forum to communicate with members of the Topical Group on Magnetism and its Applications (GMAG). Our group is continuing to grow with 558 members at last count. GMAG is playing an increasingly important role in helping APS to organize the March meeting, and opportunities abound for further advancing our dynamic field in APS and the science community in general.

The organization of the March APS Meeting has now been completed. It is noteworthy that 606 abstracts were submitted in the magnetism category, which corresponds to 11% of the total. This represents significant growth from the previous year. A full description of GMAG sponsored or co-sponsored focus sessions appears elsewhere in this Newsletter. An outreach activity for students at the March Meeting is called "Lunch with the Experts." GMAG is sponsoring two speakers and tables including: Liesl Folks (IBM) ÿ "Fabricating magnetic nanostructures: life in an industrial lab," and Dave Sellmyer (Nebraska) ÿ "Nanoscale magnetic materials by design."We are greatly indebted to Frances Hellman, Program Chair and Chair-Elect of GMAG, for her excellent work in arranging our part of the March meeting program. We also thank all of the sorters, symposia organizers, session chairs, and invited speakers for their major contributions.

You may be aware that GMAG will hold its election of officers and executive committee very soon. Please look for the ballot to be circulated soon and vote. Thanks are due to the Nominating Committee, Yves Idzerda, Julie Borchers, David Landau, and Mark Kryder for developing an outstanding slate of candidates.

An important and pleasant function of GMAG involves the nomination of members to be Fellow of the APS. Only ½ % of the total APS membership is eligible for election to fellowship each year, and this amounts to 3 GMAG nominations. The deadline for nominations is April 1, and information on the nomination process can be found at http://www.aps.org/fellowships/. The member-submitted nominations are evaluated by GMAG 's Fellowship Committee, chaired by the newly elected Vice-Chair, along with all the GMAG Executive Committee members. The Fellowship Committee passes on its recommendations to the general APS Fellowship Committee for final action. The process is highly competitive, so careful and comprehensive nominations are required. My perusal of our membership list suggests that we have a large number of deserving candidates, so I urge you to make the effort to nominate. Since this is the last Newsletter during my term as Chair, I would like to thank all of the officers and executive committee members for their administrative work. Special thanks goes to Frances Hellman (Chair Elect and Program Chair), Peter Schiffer (Vice Chair and Fellowship Chair), and Bruce van Dover (Secretary-Treasurer). Bruce has served in this capacity for several years and has been a great help in knowing APS procedures and accomplishing needed tasks. I also have benefited from many helpful suggestions from Jeff Lynn (Past Chair), as I have performed the tasks of various GMAG offices.

I hope to greet you at the Business Meeting in Austin!

Inside

GMAG Officers

GMAG Newsletter

The GMAG Newsletter is published occasionally by the Topical Group on Magnetism and Its Applications, a unit of the American Physical Society. It is distributed free to all members of the topical group.

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March APS Meeting

The 2003 APS March meeting will be held March 3-7 (note the imminent and early date); information on the meeting, registration and hotels can be found at http://www.aps.org/meet/MAR03/. We hope you are planning to attend!

Sorting of contributed talks was done Friday and Saturday, December 13-14, 2002. 5685 abstracts were received, up substantially from the 5221 abstracts received last year. Of the 19 sorting categories, 606 (11%) were in the magnetism category (6.n), up dramatically from the 418 abstracts last year. These abstracts were sorted by Jack Bass, Julie Borchers, Bob Celotta, Dan Dahlberg, Bruce Harmon, Vince Harris, Jeff Lynn (Team Leader), Andy Millis, Dan Pierce, John Snyder, and Kurt Wierman. John Wilkins (DCMP) was overall Program Chair and coordinated both the sorting and the invited symposia. Everyone worked hard and did a great job. The focus topics were particularly popular, with the following sessions being organized:

6 sessions 6.11.1
Theory and simulation of magnetism and spin-dependent properties

9 sessions 6.11.2
Magnetic nanostructures and hetero junctions

11 sessions 6.11.3
Magnetoresistive oxides

5 sessions 6.11.5
Spin transport and spin dynamics in metal-based systems

11 sessions 2.9.2
Spin dependent phenomena in semicon ductors

Many thanks to the organizers of these Focus Sessions (see previous GMAG newsletter) for putting together an exciting program and getting the word out to all of you.

There were in addition many sessions organized from the abstracts contributed to general sub-categories in overall category 6, as well as three invited symposia organized by GMAG and a number of magnetism-related symposia organized by the DCMP (DCMP is responsible for the large majority of symposia at the March meeting, with other divisions and topical groups directly allocated a few additional symposia).

All abstracts are handled electronically now, and the APS staff puts together the first draft of the bulletin in a week's time. This bulletin was then made available on Dec. 20 to all the sorters to make changes, check errors, and put the bulletin in final form. Corrections for the Magnetism category were coordinated by GMAG Chair Elect Frances Hellman, and the bulletin was finalized by Jan. 3. Authors and chairs are then contacted electronically about the details of their abstracts and sessions, and the printed version goes to press. It makes for a very busy holidays, both for the APS staff and the sorters. The results of these efforts are given in the following table of sessions which are particularly relevant to GMAG members.

In addition to the scientific sessions listed below, please join us for the GMAG Business Meeting. Room 18C, Austin Convention Center, Tuesday, 17:30. At this meeting, the new GMAG-sponsored APS fellows will be announced, GMAG activities and expenditures for the past year will be presented, and plans for next year will be discussed. GMAG wants and needs your participation to be a successful topical group representing the magnetism community both within APS and to the outside community.

Brief Technical Report

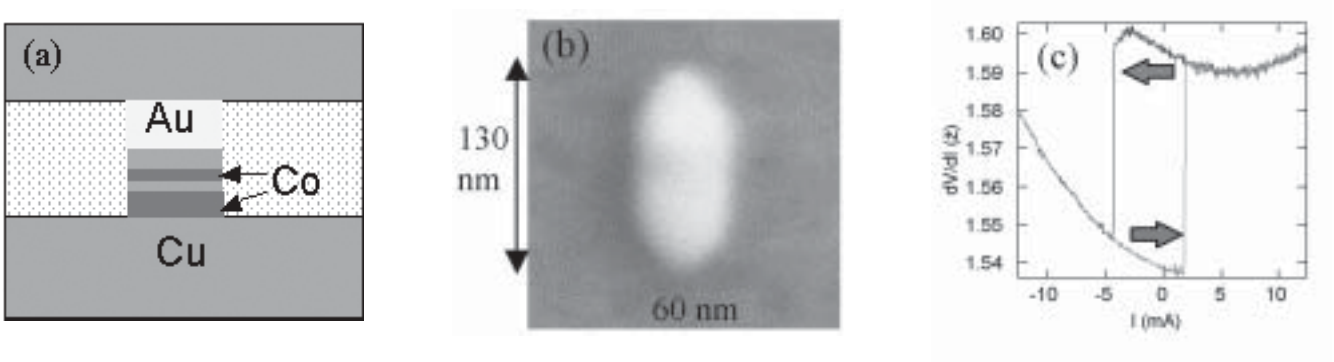
Editors note: The following is another in our series of technical reports, aimed at providing a concise introduction to a timely subject. The intent is to help provide some perspective on exciting advances in our nortoriously broad field. Please contact me with suggestions for other topics we might cover in theis space.

–Bruce van Dover (rbv2@cornell.edu)

Spin Transfer – A New Way to Manipulate Magnetism at the Nanoscale

When an electrical current flows from a normal metal electrode (N) into a ferromagnetic thin film layer (F1) the charge carriers are spin-filtered due to the spin-dependent reflectivity properties of the normal – ferromagnet interface. The degree of the spin filtering is determined by the differences between the band structure of the normal metal and the up-spin and down-spin band structure of the ferromagnet. The emergent spin-polarized current can then be transported a substantial distance, >50 nm, without major loss of spin-polarization by passing it through a normal metal layer with a long spin-relaxation length. If such a polarized current impinges onto a second ferromagnetic layer (F2), whose magnetic moment is not necessarily aligned with the first, a second spin filtering occurs. As the result, the transmitted electrons passing into and through F2 have a net polarization aligned with its magnetic moment, while the reflected electrons have a net polarization in the opposite direction. This rotation of the direction of the net polarization of the transmitted spin current by the second ferromagnet has the effect of exerting a reaction torque on its magnetic moment. Recently it has been definitively demonstrated that this "spin-transfer" effect can, as originally predicted by Slonczewski and Berger, provide a new means of tuning spin interactions, and of manipulating and reversibly switching the orientation of nanoscale magnets with direct currents rather than with magnetic fields.

Spin-transfer switching is realized by making one ferromagnetic layer F1 much thicker than the other so that its moment is effectively fixed and not affected by any spin-transfer torque. If an electron current then flows from F1 to and through the thinner free layer F2 the effect of the spin torque is, if the current density is high enough, to force F2 into alignment with F1. If however the current direction is reversed, so that the first spin filtering occurs at F1, the spin current that is then reflected back from the subsequent F1-N interface can exert a torque on F2 to switch it into anti-parallel alignment with F1. Since the relative orientation of the two magnetic moments can be determined from the magnetoresistance of the magnetic multilayer stack, as in the giant magnetoresistance effect, this spin transfer allows the possibility of a current addressable non-volatile magnetic memory element. For spin transfer switching to be effective the device structure must be sufficiently small in cross section that the effect of the spin torque, which varies with the current density *J*, can dominate over the effect of the magnetic field generated by the current flow (the Oersted field). The maximum value of this field varies of course as *Jr*, where *r* is the mean radius of the device, and it acts to induce the ferromagnets into vortex states. For a Co free layer of the type used in recent experiments the transition between the two effects occurs at about *r* ÿ 100 nm, resulting in spin transfer effects being observable only in nanoscale devices.



(a) A cross-section schematic of a spin-transfer device. (b) SEM top-view of a spin-transfer device prior to the deposition of the top Cu electrode. (c) Devices resistance as a function of bias current. Positive current flow is from the thin to the thick Co layer.

Spin Transfer – A New Way to Manipulate Magnetism at the Nanoscale, continued

Another manifestation of the spin-transfer effect can be seen if alternatively a strong magnetic field is applied to the nanomagnet. Then the spin-transfer torque is not able to completely reverse the nanomagnet moment, but instead it can cause the moment to precess coherently at its ferromagnetic resonance frequency, which is typically in the 10-100 GHz range. This nanomagnet precession could result in entirely new high-speed signal-processing applications, as it could enable new nanoscale devices for the generation and detection of high-frequency radiation, or e.g. lead to the development of a precessing spin wave filter for injecting a coherent spin-wave into a semiconductor. To date this uniform spin wave precession effect has only been observed indirectly such as through the rectification of rf radiation, but a number of groups are now working to directly examine the microwave radiation that spin-transfer excited nanomagnets should emit.

Since the initial demonstration of abrupt spin-transfer switching in magnetic-multilayer nanopillar devices, there have been very substantial efforts worldwide to better understand and to further enhance the phenomena. Currently the basic physics of spin transfer seems reasonably well established although much more work is needed to resolve many of the important details. If however the spin-transfer phenomenon is to be advanced to the point where practical applications become feasible it is likely going to be necessary that effective ways be found to decrease the critical current density for spin-transfer switching and for spin-wave excitation. It may also prove necessary that new nanoscale device designs be successfully implemented that can raise the impedance level of the readout of the device magnetoresistance. Certainly a great deal of magnetic materials work and spin engineering at the nanoscale will be required to take this fascinating new phenomenon from the laboratory into the world of practical applications. Given the growing interest in spin transfer that is developing world wide, the next few years should see a substantial amount of exciting progress in this direction.

– R.A. Buhrman, Cornell University

For more information see the following publications and the references cited therein:

1. J. C. Slonczewski, "Current-driven excitation of magnetic multilayers," J. Magn. Magn. Mater. **159** L1 (1996).

2. L. Berger, "Multilayers as spin-wave emitting diodes," J. Appl. Phys. **81**, 4880 (1997).

3. J. A. Katine, *et al.*, "Current-driven magnetization reversal and spin-wave excitations in Co/Cu/Co pillars," Phys. Rev. Lett. **84**, 3149 (2000).

4. M. Tsoi, *et al.*, "Generation and detection of phase-coherent current-driven magnons in magnetic multilayers," Nature **406**, 46 (2000).

5. E. B Myers, *et al.* "Thermally Activated Magnetic Reversal Induced by a Spin-Polarized Current' Phys. Rev. Lett. **89**, 196801 (2002),

6. F. J. Albert *et al.*, "Quantitative study of magnetization reversal by spin-polarized current in magnetic multilayer nanopillars" Phys. Rev. Lett. **89**, 226802 (2002).

March Meeting, Austin, TX March 3-7, 2003: Magnetism Sessions

Monday	Invited Symposia: Room 17A or Ballroom F or G	Contributed Room 18B	Contributed Room 18C	Contributed Room 18D	Contributed Room 19A	Contributed Room 16A	Contributed Rooms 11AB, 8C
8:00		**Session A28. DMP/GMAG: Focus Session: Magnetic Nanoparticles I.** *Deshmukh.*	**Session A29. GMAG/DMP: Focus Session: Current-Induced Spin Excitations.** *Rippard.*	**Session A30. DCOMP/ DMP/GMAG: Focus Session: Theory and Simulation Magnetism and Spin Dependent Properties I.** *Gyorffy.*			
11:15	**Session B5. Ballroom F McGroddy/Adler/Rahman Prize Session.** *Lieber, Brus, Schaller, Falco, White.* **Session B6. Ballroom G.** DCMP: **Spin-Dependent Transport.** *Ciorga, Kouwenhoven, Petta, Folk, Pustilnik.* **Session B7. Room 17A** DCMP: **Cooperative Phenomena Frustrated Magnets.** *Shastry, Rodaelli, Lee, Takagi, Tchernyshyov.*	**Session B28. DMP/GMAG: Focus Session: Surface and Interface Phenomena in Magnetic Films.** *Egelhoff.*	**Session B29. GMAG/DMP: Focus Session: Magnetic Oxides: X-Ray and Neutron.** *Hill, Dai.*	**Session B30. DCMP/GMAG: Correlated Electron Systems.**			**Session B19. Room 11AB DCMP/GMAG: Magnetic Phase Transitions I.** **Session B14. Room 8C, GIMS: Focus Session: Advanced Instrum-entation and Digital Signal Processing.** *Ardavan, Choi, Balakirev.*
14:30	**Session D6. Ballroom G, GMAG/DCMP: Spin-Transfer Torques in Magnetic Nanostruc-tures.** *Stiles, Albert, Arne, Heinrich, Siegmann.*	**Session D28. DMP/GMAG: Focus Session: Magnetic Oxides: Structure and Properties.** *Mitchell, Mathur.*	**SessionD29.GMAGFerromagnet on Semiconductor Structures and Spin Injection in Semiconductors.**	**Session D30. DCOMP/DMP /GMAG: Theory and Simulation of Magnetism and Spin Dependent Properties II.** *Troyer.*	**Session D31. DCMP/GMAG: Spin Chains I.**	**SessionD24. DMP/GMAG: Focus Session: Spin Injection in Semi-conductors, Incl. Devices.** *Parkin.*	
Tuesday	**Invited Symposia: Room 17A or Ballroom G**	**Contributed Room 18B**	**Contributed Room 18C**	**Contributed Room 18D**	**Contributed Room 19A**	**Contributed Room 16A**	**Contributed Rooms 2, 8C, 12B**
8:00	**Session G7. Room 17A DCMP: Quantum Criticality in Correlated Electron Systems.** *Isaacs, Rosenbaum, Pepin, Hiraka.*	**Session G28. DMP/GMAG: Focus Session: Magnetic Nanoparticles II.** *Hariharan.*	**Session G29. GMAG/DMP: Focus Session: Nanocontacts, Nanowires, and Domain Walls.** *Coey.*	**Session G30. DCOMP/DMP /GMAG: Focus Session: Theory and Simulation of Magnetism and Spin Dependent Properties III.**	**Session G31. DCMP/GMAG: Frustrated and Disordered Magnets: Experiment I.**	**Session G24. DMP/GMAG: Focus Session: Spins in Semiconductors: Digital Alloys.** *Luo.*	**Session G34. GMAG/DMP: Room 2 Focus Session: CMR: Thin Films.** *Tyson.* **Session G14. Room 8C GIMS/FIAP: Focus Session: MEMS/NEMS**

				Ku.			**Science, Technology, Applications and Measurements I.** *Han, Kenny.*
11:15	**Session H6. Blrm G. DCMP: DMS Spin Transport.** *Basov, Hebard, Cho.*	**Session H28.DMP/ GMAG: Focus Session: Perpendicu lar Anisotropy and Magnetic Thin Films.** *Fullerton.*		**Session H30. GMAG/DAM OP: Kondo and Correlated Electron Materials.**	**Session H31. Cat6.5 DCMP/GMAG: Spin Chains II and 2-d Antiferromagnets.**	**Session H24. DMP/GMAG: Focus Session: Spins in Semiconductors: II I-Mn-V Alloys I.** *Timm, Schiffer.*	**Session H21, Room 12B DCMP: Ferro magnet/Supercon ductor Multilayers and Magnetic Superconductors.**
14:30	**Session K6. Blrm G Prize for Research in an Undergraduate Institution; Apker Award; Buckley Prize; Davisson-Germer Prize.** *Sardar, Alicea, Doret, Altshuler, Tromp* **Session K7. Room 17A GMAG: Magnetocaloric Effect.** *Gschneidner, Naoki, Zimm, Wu.*	**Session K28. DMP/GMAG: Focus Session: Exchange-Spring Magnetic Systems.** *Wang.*	**Session K29. GMAG/DMP: Focus Session: Spin-Polarized Tunneling.** *Muenzenberg.*	**Session K30. DCOMP/DMP /GMAG: Focus Session: Theory and Simulation of Magnetism and Spin-Dependent Properties IV.** *Schulthess.*	**Session K31. DMP/GMAG: Magnetic Oxides: Bulk Samples.**	**Session K24 DMP/GMAG: Focus Session: Spins in Semiconductors: II I-Mn-V Alloys II.** *Wojtowicz, Erwin.*	
Wednesday	**Invited Symposia: Room 17A or Ballroom E**	**Contributed Room 18B**	**Contributed Room 18C**	**Contributed Room 18D**	**Contributed Room 19A**	**Contributed Room 16A**	**Contributed Rooms 8C, or 14**
8:00	**Session N7. Room 17A. DCMP: Correlated Electrons-Hidden Order.** *Amitsuka, Chandra, Jaime, Walstedt, Destefs.*	**Session N28. DMP/GMAG: Focus Session: Magnetic Nanoparticles III.** *Barbic.*	**Session N29. GMAG/DMP: Focus Session: Half-Metallics.** *Parker.*	**Session N30. DMP/GMAG: Focus Session: Magnetic Oxide Surfaces and Heterostructur es.** *Kawasaki.*	**Session N31. DCMP/GMAG: Frustrated and Disordered Magnets: Experiments II.**	**Session N24. DMP/GMAG: Focus Session: Spin Generation, Polarization and Detection.**	
11:15	**Session P4. Blrm E. DCMP: Low-Dimenstional Magnetism.** *Broholm, Zheludev, Haldane, Affleck, Tsvelik.*	**Session P28. DMP/GMAG: Focus Session: Magnetic Wires and Patterned Materials.** *Zabel.*	**Session P29. GMAG/DMP: Focus Session: GMR and Superconducti ng/Ferromagn etic Metal Systems.** *Xia.*	**Session P30. DCOMP/DMP /GMAG: Focus Session: Theory and Simulation of Magnetism and Spin Dependent Properties V.** *Chudnovsky.*		**Session P24. DMP/GMAG: Focus Session: Spin Decoherence and Relaxation in Semiconductors.** *Schliemann.*	**SessionP14. GIMS: Room8C Focus Session: Magnetic Resonance and Force Microscopy.** *McDermott* **SessionP22.Room 14. Spin Sensitive Transport and Kondo Effect in Quantum Dots.**
14:30	**Session S7. Room 17A, DCMP/GMAG: Semiconductor Spintronic Materials and Devices.** *Ciuti.*	**Session S28. DMP/GMAG: Focus Session: Phase Diagrams in Magnetic Oxides.** *Hotta.*	**Session S29. DCMP/GMA G: Focus Session: Molecular Magnets.** *Kent.*	**Session S30. DCMP/GMA G: Ruthenates.**		**Session S24. DMP/GMAG: Focus Session: Spins in Semi-conductors: Theory.** *Chattopadhyay.*	

	Jonker, Palmstrom, Tanaka, Petukhov.					*Niu.*	
Thursday	**Invited Symposia: Room 17A or Ballroom G**	**Contributed Room 18B**	**Contributed Room 18C**	**Contributed Room 18D**	**Contributed Room 19A**	**Contributed Room 16A**	**Contributed Room 7**
8:00	**Session V6. Blrm G DCMP: Scanned Probe Techniques,** *Kleiman, Dholakia, Marcus, Tombesi, Fisher.*	**Session V28. DMP/GMAG: Focus Session: Patterned Magnetic Structures,** *Grimsditch, Ross.*	**Session V29. DMP/GMAG: Focus Session: Magnetoresistive Oxides: Theory,** *Yunoki.*	**Session V30. GMAG/DCMP: Magnetic Domains, Dynamics, and Phenomena.**	**Session V31. DCMP/GMAG: Frustrated and Disordered Magnets: Theory and Computation.**	**Session V24. DMP/GMAG: Focus Session: Spin Effects in Semiconductor Nanostructures.**	
11:15	**Session W7, Room 17A. CSWP/GMAG: Magnetism and Dimensionality: Bulk, Films and Lateral Nanostructures.** *Suzuki, Aronson, te Velthuis, Abermathy, Folks.*		**Session W29. DMP/GMAG: Focus Session: Magnetic Oxide: Optical and Related Spectroscopies ,** *Perebeinos.*	**Session W30. DCOMP/DMP/GMAG: Focus Session: Theory and Simulation of Magnetism and Spin Dependent Properties VI.**	**Session W31. DCMP/GMAG: Kondo and Correlated Election Models.**	**Session W24. DMP/GMAG: Focus Session: Spin Effects in Chalcopyrite, Rutile, Anatase and Spinel Systems.**	
14:30		**Session X28. Focus Session:Micromagnetics in Patterned Devices & Magnetic Damping,** *Arrott.*	**Session X29. DCMP/GMAG: Focus Session: Spin Ladders and Molecular Magnets**	**Session X30. DMP/GMAG: Focus Session; Magnetic Oxides: Transport,** *Takenaka.*		**Session X24 DMP/GMAG: Focus Session: Ferromagnetic Semiconductors:**	**Session X33. Room 7 GMAG/DMP: Focus Session:Exchange-Biasing.**
Friday	**Invited Symposia: Ballroom G**	**Contributed Room 18B**	**Contributed Room 18C**	**Contributed Room 18D**	**Contributed Room 16A**		
8:00	**Session Y6. Blrm G. FIAP/DMP: Novel Nano-structured Materials for Magnetic, Photonic and Structural Materials Applications,** *Narayanamurti, Madhukar, Wang, Fan, Malshe.*		**Session Y29. GMAG/DMP: Focus Session: Manganites: Charge Ordering,** *Renner.*		**Session Y24. DMP/GMAG: Focus Session: Spin-Spin Interactions in Semiconductors and Thin Films.**		
11:15	**Session Z6. Blrm G. DCMP: CMR-Spin Transport,** *Lyon, Jan, Dessau, Argyriou.*	**Session Z28. GMAG/DCMP: Fundamental Properties of Bulk Magnetic Materials.**	**Session Z29. GMAG/DCMP: Hexaborides and Magnetic Excitations.**				

Elections 2003

The GMAG Nominations Committee (Chair: Yves Idzerda, Montana State University. Members: Julie Borchers, NIST Center for Neutron Research, Mark Kryder, Seagate Research. APS Council Representative: David Landau, University of Georgia) is pleased to nominate the following slate of candidates:

For Vice Chair:
Jack Bass (Michigan State University)
William Butler (University of Alabama)

For Member at Large, 2 positions at regular 3-year term:

Carlos Gutierrez (Southwest Texas Sate University)
Laura Lewis (Brookhaven National Laboratory)
Mark Stiles (National Institute of Standards and Technology)
James MacLaren (Tulane University)

Brief biographies follow, along with the official ballot.

Remember to sign your ballot. Unsigned ballots are not valid. If you are concerned about voting anonymously, sign the ballot illegibly.

Please return completed ballots by 28 March 2003 to:
R Bruce van Dover
Materials Science & Engineering
Cornell University
Ithaca, NY 14853-1501

Candidate-supplied biographies and statements.

Candidates for Vice Chair (vote for one)

William Butler

Currently I am director of the Materials for Information Technology Center at the University of Alabama. I also serve as Director of the NSF- sponsored Materials Research Science and Engineering Center which is part of the MINT Center. From 1972 through 2001, I worked in the Metals and Ceramics Division of Oak Ridge National Laboratory. For most of that period I served as Group Leader of the Theory Group. From 1969 through 1972 I was an assistant professor of physics at Auburn University. I received my Ph. D. in Solid State Physics in 1969 at the University of California at San Diego working under Professor Walter Kohn. My research interests include all aspects of magnetism and magnetotransport, especially issues related to magnetic storage. I am a life member and fellow of the American Physical Society as well as a member of the IEEE Magnetics Society. In the previous years, I have served as Co-Chair of the Materials Research Society Spring Meeting and on the Program Committee of the MMM Meeting.

Statement:

It is an honor to be nominated for Vice Chair of the Topical Group on Magnetism of the American Physical Society. One of the duties of the Vice Chair is to serve as chairperson of the Fellowship Committee. Because of the strict limitation on the number of fellows that may be selected in any one year, this is a position of considerable importance and trust that I pledge to fulfill with care and integrity. Another initiative that I would pursue is updating and improving the group website, http://www.aps.org/units/gmag/. For example, I would like to see our website post notices of opportunities for industry, faculty, intern, post-doc and graduate students specific to magnetics.

Jack Bass

Present Position: Professor of Physics, Michigan State University

Education and Experience: B.S. 1959 California Institute of Technology. M.S. 1961, Ph.D. 1964 University of Illinois, Urbana. Assistant Professor, Associate Professor, Professor, (Chair 1983-88) Michigan State University. Guest dozent, ETH, Zurich, Switzerland 1970. Visiting professor, University of Nijmegen, Netherlands 1978. Senior visiting fellow, Imperial College, London 1979. Visiting professor, Bar-Ilan University, Israel 1979. Senior visiting scientist, Max-Planck-Institute (MPI/CNRS), Grenoble, France 1988,1995. Visiting professor, University of Paris Sud, Thomson Labs., Orsay, France 1996,1997.

Research Interests: Vacancies in Metals; Magnetotransport; Field-Ion-Microscopy; Thermoelectricity; Ultra-low (mK) Temperatures; High Precision Resistance Measurements; Spin-Glasses; Giant Magnetoresistance; Current-Driven Excitations in Magnetic Multilayers.

Professional Societies, Honors, Services to GMAG:

American Physical Society (Fellow-1975); American Assoc. Physics Teachers; AAAS Sigma Xi; Haloid-Xerox Predoctoral Fellowship, 1961; Raytheon Predoctoral Fellowship, 1962; MSU Senior Sigma Xi Award for Meritorious Research, 1981; MSU Distinguished Faculty Award, 1994; GMAG Board (2001-2004); Focus Session Co-organizer for March Meetings.

Elections 2003, continued

Candidates or Member at Large (vote for two)

Carlos J. Gutierrez

Carlos J. Gutierrezis currently a Professor of Physics at Southwest Texas State University (SWT) since September 1992. At SWT, he was awarded an NSF CAREER grant in the area of thin film magnetism and he was awarded the SWT President's Award for Scholarly activities in 2001. His current magnetism research interest is in thin film/interface magnetism of itinerant and oxide magnetic systems fabricated by reactive ion beam sputtering techniques guided by novel structural characterization techniques using high resolution and glancing incidence x-ray diffraction. He is presently conducting research in magnetic photonic materials, metastable exchange biased structures and anisotropy engineered polycrystalline and highly textured magnetic alloy and oxide structures. In addition, he is also conducting more traditional Si microelectronic materials research in collaboration with nearby industry groups due to its possible connection with spintronics. Previous to this university position, he was a National Research Council Postdoctoral Associate with Prinz's group at the Naval Research Laboratory from 1990-1992 where he explored the fundamental properties of exchange coupled metastable magnetic film structures using MBE and collaborative synchotron characterization. He received his PhD in physics in 1990 from the Johns Hopkins University with Prof. J.C. Walker (retired) with C.L. Chien as a member of the dissertation defense committee.

In service to the magnetism community, Gutierrez has been the local chair of the MMM-Intermag Conference San Antonio Meeting (2001) and the Treasurer for the 2002 Tampa MMM Conference. He is also a member of the Advisory Committee for the Conference on Magnetism and Magnetic Materials (MMM). Because of his interest in scientific and engineering workforce diversity issues, he is a Life member and past Board of Directors member for SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) and was recently elected to the APS Committee on Minorities in Physics. At SWT, he has been a key member in the development of new Materials Physics integrated teaching/research innovations that has been recognized by the AIP and APS. He is strongly committed to undergraduate and graduate education and would like to see GMAG play a larger role in the training of magnetism students.

Laura H. Lewis

Laura H. Lewis is a Materials Scientist in the Materials Science Department at Brookhaven National Laboratory (BNL), where she has been since 1993. Her current research interests focus on elucidating the materials factors, both intrinsic and extrinsic, that provide functionality to nanostructured magnetic materials. Included are investigations of the basic relationships between crystal lattice defects, microstructure, and the magnetic properties of advanced permanent magnet materials and related nanostructured and amorphous systems. She received her Ph.D. in Materials Science in 1993 from the University of Texas at Austin under the guidance of Prof. John B. Goodenough for study on coupled magnetic and structural phase transitions in transition-metal chalcogenides and pnictides. She is on the Executive Committee and is a spokesperson for the BNL Center for Functional Nanomaterials, a new DOE national user facility designed to provide researchers with state-of-the-art capabilities to fabricate and study nanoscale materials, including magnetic nanomaterials. Additionally, Laura H. Lewis is an Adjunct Professor in the Materials Science and Engineering Department at the State University of New York, Stony Brook, and maintains a strong educational and research contact with the undergraduate and graduate population of that Department. In service to the magnetism community, she is the Program co-chair of the 2003 IEEE International Magnetics Conference (INTERMAG03) and since 1996 has served on numerous Program Committees and as a Session Chair for the MMM (Magnetism and Magnetic Materials) and INTERMAG conferences. She organized the 1999 Spring MRS Symposium on "Advanced Hard Magnets: Principles, Materials, Processing" and was moderator and organizer of the Evening tutorial on "Magnetic Nanotechnology in the Next Decade" at the 8th Joint MMM-Intermag Conference in San Antonio, Texas (2001).

Mark D. Stiles

Mark D. Stiles is a Physicist at the National Institute for Standards and Technology, where he has been since 1988. His current research interests center around magnetic multilayers. He has used a variety of approaches ranging from simple models to first principles calculations to study topics including interlayer exchange coupling, spin transport, and exchange bias. He received his PhD in Physics in 1986 from Cornell University with Prof. John Wilkins.

Elections 2003, continued

In 1999, he worked on the history of magnetism poster that was displayed at the Centennial Meeting of the APS. He was impressed with the breadth of magnetism research, but disappointed with the disconnection between different areas of research. He would like to see GMAG bring these different areas together to take advantage of common interests.

James M. MacLaren

James M. MacLaren is Professor of Physics at Tulane University and has been serving as an Associate Provost since July of 2001. He has been on the faculty at Tulane since 1990. His current research interests are in applying density functional theory to the calculation of properties of magnetic materials. This work has been concerned with anisotropy and exchange calculations for perfect and imperfect magnetic superlattices, and the use of first principles data from bulk and defect structures to predict hysteresis loop shapes and coercivities. His work on transport has covered three main areas: magneto-optics, giant magneto resistance and more recently spin dependent tunneling. Again the thrust of his research has been to use first principles calculations to either calculate directly transport phenomena, or to use calculated data to fit simpler models, such as the Boltzmann transport equation. He has published over 100 articles mostly in the area of magnetism and magnetic materials. He received his PhD in physics in 1986 from the Imperial College London under the direction of Prof. John Pendry.

In service to the magnetism community, he has been a publications editor and publications chairman several times for the Conference on Magnetism and Magnetic Materials, served two consecutive three year terms on the conference's advisory committee (ADCOM), as well as most recently serving as Program co-chair for the 47th the Conference on Magnetism and Magnetic Materials in November of 2002. He is strongly committed to both undergraduate and graduate education and would like to see GMAG play a bigger role in assisting these students find successful and rewarding careers.

Please hand this to a colleague interested in Magnetism and its Applications

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