

GMAG NEWSLETTER

A Focused Group within The American Physical Society

N^o 10, February 2002, Edited by R Bruce van Dover

A Note from the Chair



It is a pleasure to welcome you to the current newsletter of the Topical Group on Magnetism and Its Applications (GMAG). Our group continues to thrive within the APS and gain membership. In the previous newsletter I outlined some of the upcoming activities of GMAG, in particular the Congressional Reception being planned (with DCMP and DMP), the APS participation in the Federation of Materials Societies, and of course the March meeting program in Indianapolis. I'd like to bring you up-to-date on these undertakings.

It shouldn't come as a surprise that the tragic events of this Fall have impacted these activities, beginning with the scheduled meeting in downtown Washington of the trustees of the Federation of Materials Societies on September 11, which was of course abruptly cancelled. The FMS trustees have met since then, and a report of that meeting can be found elsewhere in this newsletter. The Congressional Reception was scheduled for early October, and was also cancelled both because of the increased security at the Rayburn building where the reception was to be held, and because Congress' attention was obviously focused elsewhere. Discussions are presently underway to determine if/when this Materials Physics Reception should be rescheduled.

The long term impact on the Science and Engineering community, however, will certainly eclipse the effects on these near-term activities. We are already seeing longer-term effects such as restrictions on research and information sharing, heightened security and restricted access to national facilities, and certainly changes in budget priorities that will proffer opportunities as well as perils. Another concern is the possibility of restrictions on international collaborations, and on foreign students coming to the US for undergraduate, graduate, and postdoctoral training. This latter problem is a particular concern for the physics community, where half the Ph.D. degrees awarded by our universities are to foreign nationals. The current reliance on foreign students can be viewed either as a detriment, or a national resource, and emphasizes the enhanced

importance of conveying our capabilities, opportunities, and needs to our national leaders. The APS will have to make some critical decisions to determine how best to do this, through its members, leadership, the APS public affairs office, and possibly through affiliations such as the Federation of Materials Societies. Your input into the APS on these important matters will certainly be welcome.

On a brighter note, the organization of the March meeting program is now complete, and Magnetism continues to be a very robust topic. Of the 19 major sorting categories, magnetism (6.) contained 8% of the 5221 (up slightly from last year) submitted abstracts. The two focus topics cosponsored with the Division of Materials Research (Magnetoresistive Oxides, organized by Takeshi Egami, John Mitchell and Peter Schiffer, and Magnetic Nanostructures and Heterostructures, organized by Julie Borchers, Liesl Folks, and Shufeng Zhang), had 11 and 15 sessions respectively. These are particularly timely topics, and I'd like to thank the organizers for their efforts on behalf of the GMAG (and DMP) memberships. A complete report on the sorter's meeting can be found elsewhere in this newsletter. We are also sponsoring two tables this year for young scientists to "Lunch with the Experts". This was started by DCMP a couple of years ago, and has been *very* well received by its intended audience of graduate students and postdocs.

An important function of GMAG entails nomination of members to fellowship status. Only 3% of the total APS membership can be advanced to fellowship in any given year, which translates into 3 nominations for GMAG. The deadline for nominations is April 2, and information on the nomination process can be found at <http://www.aps.org/fellowship/> These member-submitted nominations are evaluated by the GMAG Fellowship committee; the newly passed bylaw stipulates that the (to be elected) Vice-chair of GMAG is the Chair of the fellowship committee, and the at-large members of the GMAG executive committee are members of this committee. The fellowship committee nominates two regular candidates and one alternate candidate to the general APS Fellowship committee. Successful nominations are announced by the end of the calendar year. This process is highly competitive and takes considerable work both for the member nominators and for the committee, but it is very important for GMAG to advance strong candidates. So if you know of someone who is deserving of this honor please consider making the effort to nominate.

Finally, since this will be the last newsletter during my term as Chair, I'd like to take this opportunity to thank all the members of the executive committee for the generous donation of their time and expertise in carrying out the work of GMAG this year. Any time advice or assistance was needed everyone willingly pitched in. And I'd also like to particularly thank Dave Sellmyer (Chair of the Program Committee), Frances Hellman (Chair of the Fellowship Committee), and Barbara Jones (Chair of the Nomination Committee), as we all know that the lion's share of the work falls on the committee chairs. A special thanks is also due to Bruce van Dover, who as Treasurer has been responsible for handling the finances of GMAG, has been the webmaster guru, and has organized the newsletter you are reading, since the inception of GMAG. Lastly, I like to say that it's also been a real pleasure working with the leadership of DCMP and DMP on

the various projects of mutual interest.

Please vote in the upcoming election, and hope to see you in Indianapolis.

March Sorters Meeting

The sorters meeting was held Friday and Saturday, December 14-15. 5221 abstracts were received, up slightly from last year. All were electronically submitted. Of the 19 sorting categories, 418 (8%) were in the Magnetism sorting category (6.n). These abstracts were sorted by Bruce Harmon (Ames Laboratory), David Jiles (Ames Laboratory), Jeff Lynn, Team Leader (NIST); Peter Schiffer (Penn State) and John Mitchell (Argonne National Laboratory)--Magnetoresistive Oxides Focus Topic; Julie Borchers (NIST) and Shufeng Zhang (Missouri)--Magnetic Nanostructures and Heterostructures Focus Topic. The following lists the GMAG sponsored sessions.

March Meeting, Indianapolis, March 18-22, 2002

GMAG Sponsored Sessions

GMAG Business Meeting. 108, ICC. Tuesday, 17:30

(Note: Invited Speakers are shown in italics, session chairs in parentheses)

Invited Symposia

Room: Wabash 2

GMAG: Ferromagnetic semiconductors, *van Schilfgaard, Chun, Kapa, Farrow, Tabata*, (Erwin)

Wednesday 14:30

GMAG/FIAP: Novel magnetic technologies, *Zhu, O'Handley, Ginder, Pelrine*, (Sellmyer) Thursday 8:00

GMAG: Nanomagnets and high spin molecules, *Garanin, Sarachik, Wernsdorfer, Hendrickson, Dalal*,

(Chudnovsky) Thursday 14:30

GMAG/DCMP: Magnetic interactions and low lying states, *Perring, Golosov, Kaplan, Fernandez-Baca*,

Soh, (Mahanti) Friday 8:00

GMAG/DMP Jointly sponsored "Focus" sessions on Magnetic Nanostructures and

Heterostructures

Room 108

Effects of spin polarized currents, *Fert*, (Hellman) Monday 8:00

Magnetic coupling in multilayers (Lederman) Monday 11:00

Patterned magnetic structures, *Albrecht*, (Anders) Monday 14:30

Spin polarization in ferromagnets, *Xing, Ji*, (Harris) Tuesday 8:00

Exchange biasing role of antiferromagnetism and theory, *Schulthess, Scholl*, (O'Donovan) Tuesday 11:00

Magnetic clusters and arrays, *Majetich*, (Li) Tuesday 14:30

Magnetic tunnel junctions, *Cebollada*, (Suzuki) Wednesday 8:00

Exchange biasing: New materials and structures, *Hellwig, Krivorotov*, (Maat) Wednesday 11:00

Magnetic domains in nanostructures, *Wiesendanger*, (Ijiri) Wednesday 14:30

Magnetic nanoparticles theory (Hadjipanayis) Thursday 8:00

Giant magnetoresistance, *van Wees*, (Snyder) Thursday 11:00

Anisotropy in magnetic films (te Velthuis) Thursday 14:30

Magnetic nanoparticles experiment (Chambers) Friday 8:00

Room 207

Disorder Controlled Interfaces in Condensed Matter, *Pokrovsky, Shibauchi*, (Krusin-Elbaum) Tuesday 8:00

Room: Sagamore 4

Magnetization dynamics and excitations, *Choi*, (Shi) Friday 8:00

GMAG/DMP Jointly sponsored "Focus" sessions on Magnetoresistive Oxides

Room 109

Phase separation 1, *Dagotto, Neumeier*, (Smolyaninova) Monday 8:00

Polarons, *Goodenough* (Lynn) Monday 14:30

Charge and orbital ordering 1, *Khomskii, Nagaosa*, (Ching) Tuesday 8:00

Spin and charge excitations, *Averitt*, (Cooper) Tuesday 11:00

Transport properties (Ramirez) Tuesday 14:30

Phase separation 2, *Ogale, Berger*, (Adams) Wednesday 8:00

Magnetic oxides, *Lumsden*, (Rhyne) Wednesday 11:00

Cobaltates and ruthenates, *Ikeda*, (Mitchell) Wednesday 14:30

Structure property relations, *Rosseinsky*, (Egami) Thursday 8:00

Charge and orbital ordering 2, *Raveau*, (Cheong) Thursday 11:00

Novel magnetic oxides and other chalcogenides (Fernandez-Baca) Thursday 14:30

Contributed Sessions

Room 109

Low dimensional spin systems, *Jungwirth*, (Broholm) Monday 8:00

Room 110

Antiferromagnetism: low dimensional and Heisenberg models (Greven) Monday 8:00

Antiferromagnetism: pyrochlores and frustrated systems, *Mandrus*, (Zaliznyak) Monday 11:00

Spin glasses and random anisotropy systems (Snyder) Monday 14:30

Magnetic properties, anisotropy and thermodynamics (Crawford) Tuesday 8:00

Non-linear magnetization processes: Hysteresis and Barkhausen, *Jiang*, (Jiles) Tuesday 11:00

Molecular magnets (Harmon) Tuesday 14:30

Molecular based magnets (Kmety-Stevenson) Wednesday 8:00

Novel magnetic alloys and spin systems (Rao) Friday 8:00

Room: Wabash

Magnetism Poster Session (No chair) Tuesday 14:00

Board of Trustees Meeting of the Federation of Materials Societies

Slade Cargill and Jeff Lynn represented the APS at the Trustees meeting that convened at the Army and Navy Club in Washington. The meeting was held on Dec. 5—postponed from September 11. There was a large turnout from all the societies (see list at end of article), with Lyle Swartz (President of FMS) presiding and Betsy Houston (Executive Secretary) attending. There were several very interesting presentations by outside speakers, while the afternoon entailed discussions about the FMS business plan.

Presentations:

National Materials Advisory Board – Activities and Opportunities for Society Interaction: Toni Marechaux, NMAB Director. The organization and activities of the National Academy of Science were described; National Academy of Engineering, Institute of Medicine, and the National Research Council in general, and NMAB in particular as her Board has direct responsibility for Materials issues.

Congressional Fellows Panel: Richard Sachleben, House Energy Subcommittee (ACS sponsored fellow) Jon Epstein, Office of Senator Bingaman (AWS sponsored fellow) Sharon Hays, House Science Committee (past AAAS sponsored fellow). The three congressional fellows relayed their experiences and viewpoints. This was very interesting and informative, and it is clear that this Fellows program has a very important and valuable impact on the societies in general. One of the surprising things was that the fellows did not utilize their technical expertise to any great extent, contrary to their initial expectations; rather, they were there to learn how the congressional system works, to then (presumably) take this information back to the technical community, or to pursue further government-related jobs. Some Fellows of course stay on in the system, and this was the case for Sharon Hays (Biochemist by training) who is now the Staff Director for the House Science subcommittee for Research.

Henry S. Scharpenberg, Former Director, US Commission on National Security/21st Century. Mr. Scharpenberg discussed national security concerns, which his panel detailed well before 9/11. Their report is available in full at <http://www.nssg.gov>

FMS Business Plan Implementation. FMS is organizing a workshop on "Materials Education: Opportunities over a Lifetime", which will be held at the University of Maryland, May 20-21. The University Materials Council is a co-organizer of the workshop, and the steering committee consists of Iver Anderson, Kathy Faber, and Slade Cargill. The purpose is to promote interactions between educational efforts of member societies at all academic levels, to target awareness about and enrollment in materials related fields. Attendance of about 150 is expected. It is anticipated that this workshop may be held annually, and FMS will look into forming a standing committee to organize

this as an annual FMS event.

Materials Education Award. Discussion ensued about the possibility of establishing a Materials Education Award, to be administered by FMS. If such an award is established then this workshop would be the logical place to award it. FMS will look into the various options of initiating such an award, what it would entail, criteria for the award and how the selection would be administered, and the amount of funding (if there is any cash award) that would be needed.

Advocacy/ASTRA. Merrilea Mayo and Betsy Houston described the status of ASTRA (Alliance for Science & Technology Research in America), the organization being formed over the last year to argue for increased funding of research in the physical and mathematical sciences and engineering. Mary Good was the initial driving force behind ASTRA. There were approximately 60 "Hill visits" during the last summer by unpaid industrial supporters of ASTRA. The ASTRA board meets about every six weeks, plus conference calls as needed. ASTRA has had more difficulty than expected in getting financially-supporting industrial members. Current annual dues levels are \$10,000 for R&D organizations and \$5,000/year for professional societies. FMS is currently a member, providing focused representation for materials societies. APS, ACS, MRS and TMS are also direct members, but ECS, ASM, AWS, AACG, and AVS are represented at ASTRA only through FMS.

Communication. Lyle Schwarz pointed out difficulties faced by FMS in meeting needs of all member societies. For example, alerts through FMS of materials-related Washington issues and activities may be important for smaller member societies which lack their own Washington representation, but not important for larger societies, like MRS, APS, and ACS, which have direct Washington contacts. The challenge is for FMS to identify and pursue a spectrum of activities which include some that meet the needs of all FMS-member societies, and to communicate effectively with the member societies so they are aware of and benefit from these activities. Betsy Houston reported on metrics of FMS activities in 2001, including the following: She made contacts with over 30 House and Senate offices in setting up and conducting Congressional Visits Days, May 1-2, 2001, resulting in 23 actual visits. She represented FMS at ASTRA Board meetings, Research Task Force meetings, five AAES related meetings, numerous meetings of Science, Engineering and Technology working Groups setting up Congressional Visits Days, four meetings of Coalition for National Security Research, five AAU-related meetings, and monthly meetings of the Washington Representatives Breakfast Group. She also provided numerous "alerts to members" emails about Washington activities. As a member of the FMS/UMC Education Meeting steering committee, she has made local arrangements and participated in steering/program committee conference calls, and has coordinated proposal submissions for agency financial support of the meeting.

Public Awareness--Materials Week. Proposals were made for FMS to encourage and by FMS-member societies to have state-by-state designation of a chosen week each year as "Materials Week", and to sponsor materials-related events during this week to increase public awareness of "materials." This has been done in Pennsylvania with support and

encouragement by ASM. A committee will be appointed to consider this matter, including the possibility of organizing materials-related activities in connection with already existing National Science and Technology Week, or with National Engineering Week.

Business Plan. The Trustees voted to increase dues for 2002 by 50% over the 2001 dues, rather than the 100% increase which had been discussed earlier. The 2001 dues were the same as dues for several preceding years, except for a 25% special assessment in May to provide funds for FMS to become a supporting member of ASTRA. Two societies, IEEE and ACerS, have notified FMS that they will not continue their FMS memberships. With the remaining member societies (AACG, ACS, APS, ASM, AVS, AWS, ECS, MRS, TMS) the 50% dues increase will provide an additional \$19,000 per year. \$5,000 is needed for ASTRA dues, and the remainder will be available to support other FMS activities.

National Materials Advancement Award Reception (National Press Club).
Presentation of Award to Dr. Bhakta B. Rath.

Members of the Federation of Materials Societies:

American Association for Crystal Growth
American Ceramic Society, Inc.
American Chemical Society
American Ceramic Society
American Physical Society
ASM International
American Vacuum Society
American Welding Society
Electrochemical Society, Inc.
Institute of Electrical and Electronics Engineers
Materials Research Society
Minerals, Metals, and Materials Society
University Materials Council

Students Lunch with the Experts

Wednesday, March 20
12:30pm - 2:00pm
Convention Center

Students can sign up on-site to enjoy complimentary box-lunch while participating in an informal discussion with an expert on a topic of interest to them. Topics will be identified in January and listed on the March Meeting web page. Sign-up will take place beginning on Monday, March 18 at 1:00pm at the APS registration desk, and will be on a first-

come, first-served basis. Attendance is limited to ten students per topic/expert.

GMAG is hosting two lunch tables at this year's March APS meeting in Indianapolis. Our topics and experts are: "Physics of Magnetic Recording" with Barbara Jones of the IBM Almaden Research Center, and "Physics of Magnetoelectronic Devices" with Chia-Ling Chien of Johns Hopkins University.