

A Note From the Chair

Since it is summertime I am sure that the 2010 March Meeting is on everybody's mind. Well, it certainly is on the mind of the many volunteers that are helping GMAG to organize the magnetism sessions. Thus please assist them by sending good nominations for invited speakers in focus topic sessions as well as nominations for symposia (GMAG is allowed to sponsor five). In this newsletter you will find detailed information on how to get involved in this respect. Note that most of this information will be due by September 14th.

Additionally we encourage (i) nominations of students for the GMAG Dissertation Awards, (ii) proposals for magnetism related outreach projects, and (iii) nominations for new candidates for the GMAG Executive Committee. This newsletter contains detailed information and deadlines for these activities, which help us to maintain GMAG as one of the strongest Topical Groups of the APS.

As always, if you have additional ideas about how GMAG can support the magnetism and physics community with activities and programs, feel free to contact any member of the GMAG executive committee.

—Axel Hoffmann, GMAG Chair

**March Meeting Program**

The Chair-Elect, Berry Jonker (jonker@nrl.navy.mil), is the GMAG program chair for the 2010 March Meeting in Portland, Oregon. He is coordinating the organization of both GMAG sponsored (or co-sponsored) Focus Topics and the GMAG invited symposia.

Focus Topics – Nominations for invited speakers

For the 2010 meeting, GMAG is co-sponsoring eight focus topics. Each focus topic consists of multiple sessions of contributed talks on a common theme. Each session can also include one invited talk. Suggestions for invited speakers are welcome and

should be sent to one of the organizers of the focus topic (see below) before September 14, 2009. Contributed talks relating to a focus topic should be submitted under the focus topic sorting category (number given below) and not to a general category. The deadline for contributed talks submissions is November 20, 2009. The GMAG focus topics (co-sponsors are shown in parentheses) for 2010 are listed below, and the detailed descriptions appear on the following pages.

6.14.1 Magnetic Nanostructures: Materials and Phenomena (DMP/GMAG) – Organized by: John Cummings, University of Maryland (cummings@umd.edu), Ralph Skomski, University of Nebraska (rskomski2@unl.edu), Jan-Ulrich Thiele, Seagate (jan-ulrich.thiele@seagate.com)

6.14.2 Bulk Properties of Complex Oxides (DMP/GMAG) – Organized by: Dave Mandrus, Oak Ridge National Laboratory (mandrusdg@ornl.gov), Daniel Khomskii, Universität zu Köln (khomskii@ph2.uni-koeln.de), John Mitchell, Argonne National Laboratory (mitchell@anl.gov)

6.14.3 Complex Oxide Thin Films (DMP/GMAG) – Organized by: Darrel Schlom, Cornell University (ds636@cornell.edu), Jean-Pierre Locquet, Katholieke Universiteit Leuven (Jean-Pierre.Locquet@fys.kuleuven.be), Elbio Dagotto, Oak Ridge National Laboratory and University of Tennessee (dagottoer@ornl.gov)

6.14.4 Spin Transport & Magnetization Dynamics in Metal Based Systems (GMAG/DMP/FIAP) – Organized by: Kristen Buchanan, Colorado State University (Kristen.Buchanan@colostate.edu), Olle Heinonen, Seagate (olle.heinonen@gmail.com) or (olle.g.heinonen@seagate.com), Gerrit Bauer, Delft University of Technology (G.E.W.Bauer@tudelft.nl)

6.14.5 Spin Dependent Phenomena in Semiconductors (GMAG/DMP/FIAP) – Organized by: Alberta Bonanni, Johannes Kepler Universität, Linz (alberta.bonanni@jku.at), Paul Crowell, University of Minnesota (crowell@physics.umn.edu), Masaaki Tanaki, University of Tokyo (masaaki@ee.t.u-tokyo.ac.jp)

6.14.6 Frustrated & Low-Dimensional Magnetism (GMAG/DMP) – Organized by: Peter Schiffer, Penn State University (pes12@psu.edu), Oleg Tchernychyov, Johns Hopkins University (olegt@jhu.edu)

6.14.7 Spin Dependent Physics in Organic Materials (GMAG/DMP) – Organized by: Markus Wohlgenannt, University of Iowa (markus-wohlgenannt@uiowa.edu), Anthony Caruso, University of Missouri – Kansas City (carusoan@umkc.edu)

6.14.8 Novel Magnetic Devices (DMP/GMAG) – Organized by: Nick Rizzo, Freescale (Nick.Rizzo@freescale.com), Eric Fullerton, University of California – San Diego (efullerton@ucsd.edu), Johan Åkerman, KTH Royal Institute of Technology (akerman1@kth.se)

GMAG Symposia – Suggestions for Topics

GMAG can sponsor five invited symposia at the March Meeting. GMAG members are encouraged to recommend topics for these symposia. The nomination should include the names of the organizer(s) and a tentative list of invited speakers (usually 5 per session). Please send nominations to the GMAG program chair, Berry Jonker (jonker@nrl.navy.mil) before September 14, 2009. Hint: Your nominations will have a much higher chance of success (and greatly please the program chair) if they include the following: (1) A paragraph describing the theme of the symposium (2) A list of 5 speakers with full contact information for each and a very short tentative abstract of what they might talk about. (3) Names and contact information for a couple of “back-up” speakers in case some on your “A” list are not available.

Nominations for GMAG Officers and Members of the Executive Committee

Each year GMAG requests nominations for Vice-Chair (who succeeds to Chair-Elect, Chair, and Past Chair) and for two new at-large members of the Executive Committee. Nominations for these positions should be sent to Mike Fitzsimmons (fitz@lanl.gov), chair of Nominating Committee, before October 1, 2009.

Nominations for APS Fellowships and Prizes/Awards

The nomination deadlines for APS fellowship and most prizes have passed for this year. However, it is a good time to consider nominations for next year. GMAG nominates 3–5 people (0.5% of our membership) for APS Fellowship each year. The next deadline is June 1, 2010 and nominations should be made online at <http://www.aps.org/fellowship/>. APS prize descriptions and nomination deadlines are at <http://www.aps.org/praw/>.

Nominations for Student Dissertation Awards

In order to encourage students working in magnetism, every year GMAG sponsors Outstanding Dissertation in Magnetism Awards. GMAG will present up to three dissertation awards at the next APS March Meeting. These awards will recognize students who have conducted outstanding research leading to their dissertation and will consist of an invited talk in an appropriate session at the APS March Meeting, a \$500 prize to the student, and up to \$250 toward his/her travel expenses to the APS March Meeting. The student must be in the final year before graduating with a Ph.D., and both the student and the advisor must be current members of GMAG. Nominations will consist of: a nominating letter; an extended abstract of the research; the student’s CV and publication list; and contact information for the student, all submitted by the student’s advisor or another senior researcher who knows the student’s work well. The nominating letter must address the following issues:

- Quality and independence of the student’s work;
- Student’s speaking ability;
- Year the student began graduate school;

- Student expected completion date (must be after September 1, 2009, but before September 1, 2010 to be eligible for the 2010 APS March Meeting);
- Assessment of the student’s future potential as a research scientist.

Nominations should be sent by email as a single PDF file to Axel Hoffmann (hoffmann@anl.gov) by September 1, 2009. Evaluation of the nominations will be conducted by the GMAG Executive Committee.

Description of GMAG-sponsored/cosponsored Focus Topics, 2010 APS March Meeting

6.14.1 Magnetic Nanostructures: Materials and Phenomena (DMP/GMAG)

This topic focuses on magnetic nanostructures, including thin films, multilayers, nanoparticles, nanowires, nanorings, nanocomposites, core-shell structures, hybrid structures, molecular magnets, magnetic point contacts and self-assembled as well as patterned magnetic arrays. The sessions will cover both experimental and theoretical advances in investigating these materials. Phenomena include the following: hysteresis, proximity and structural disorder effects, AC and DC spin torque, current- and field-induced domain wall motion, microwave resonance and microwave assisted reversal, magnetic quantum confinement, interlayer magnetic coupling, exchange spring, exchange bias, magnetic anisotropy, inter-particle interactions, relaxation dynamics, thermal and quantum fluctuations, and other unusual phenomena unique to the nanoscale. Of special interest is the fabrication or characterization of nanostructures with atomic-scale precision.

6.14.2 Bulk Properties of Complex Oxides (DMP/GMAG)

Transition metal oxides exhibit a wide range of novel phenomena, which originate from the complexity induced by competing interactions and the presence of multiple ground states. Associated with this complexity is a tendency for short range order such as the formation of stripes, ladders, checkerboards, or phase separation, and an enhanced response to external fields that gives rise to giant and colossal effects with potential for applications. This Focus Topic explores the nature of the various ground states observed in bulk specimens of complex oxides and their competing interactions, the ways in which the spin, lattice, charge and orbital degrees of freedom respond on a variety of length scales, and how they interact and compete with each other to produce novel phenomena. It provides a forum to discuss recent developments and results covering basic aspects (new materials synthesis, experiment, theory and simulation) of bulk systems, including 3-, 4-, and 5-d transition metal complex oxides.

6.14.3 Complex Oxide Thin Films (DMP/GMAG)

A rich variety of intriguing behaviors has been observed in complex oxides, many of which remain far from understood.

High T_c superconductivity, ferroelectricity, metal-insulator transitions, or colossal magnetoresistance are just a few of them. When grown in the form of thin films, heterostructures, or nanostructured systems, they often exhibit additional effects resulting from epitaxial strain, reduced dimensionality, charge transfer, proximity effects or phase competition across interfaces. New effects can emerge at such interfaces including two-dimensional electron gases or ferromagnetism. This Focus Topic is dedicated to fundamental advances in the growth, characterization, and experimental as well as theoretical understanding of the physical properties of complex oxides in thin-film, superlattice, and nanostructured forms, paying special attention to the role of interfaces. It also will focus on understanding the impact of defects on their properties, growth conditions on film microstructure, and the mechanisms by which the macroscopic properties are affected, which may include strain, electronic phase separation, charge transfer or localization, etc. These mechanisms often play an important role in the interaction between spin, charge, lattice, and orbital degrees of freedom in thin films of these complex oxides.

6.14.4 Spin Transport & Magnetization Dynamics in Metal Based Systems (GMAG/DMP/FIAP)

Spin-related effects in metals and in (ferromagnetic) heterostructures are generally robust and readily observed at room temperature. Fundamental discoveries such as the Giant and Tunnel Magnetoresistance and the current-induced spin-transfer torque have moved from discovery to applications in remarkably short times, and this whole field of research is rapidly expanding. This Focus Topic covers the new developments in this field, including experimental and theoretical aspects of spin transport and magnetization dynamics in metal-based systems, such as ultrathin films, lateral nanostructures, perpendicular nanopillars, and tunnel junctions.

In particular, contributions describing new results in the following areas are solicited:

- The interplay between spin currents and magnetization dynamics in magnetic nanostructures; spin-transfer, spin pumping and related phenomena, including current-induced magnetization dynamics in heterostructures and domain wall motion in magnetic wires.
- Effects of the spin-orbit interaction on steady-state and dynamical properties of nanostructures; intrinsic and extrinsic spin orbit interactions causing the (inverse) spin and anomalous Hall effects; microscopic mechanisms of magnetization (Gilbert) damping; out-of-plane spin-transfer torques in magnetization textures.
- Ultrafast magnetization response to (and reversal by) intense laser pulses.
- Thermoelectric spin phenomena such as giant-magneto thermopower and Peltier effects, spin-Seebeck effect, spin and anomalous Nernst and Ettingshausen effects (spin caloritronics).
- Magnetization dynamics in (composite) nanostructures including spin wave excitation, propagation, and detection (magnonics), as well as vortices.

- Coupling between magnetic and elastic degrees of freedom, such as the spin-current induced Einstein-de Haas effect in nanoscale mechanical systems.

6.14.5 Spin Dependent Phenomena in Semiconductors (GMAG/DMP/FIAP)

The field of spin-dependent phenomena in semiconductors is developing rapidly, with significant advances and challenges in a widening range of material systems (e.g., pnictides, oxides, silicon, diamond, carbon nanotubes, graphene), in semiconductor nanostructures (e.g., self-assembled and lithographically-defined quantum dots), and in hybrid ferromagnetic/semiconductor device structures. This series of Focus Sessions solicits contributions aimed at understanding spin-dependent processes in magnetic and non-magnetic structures incorporating semiconducting materials. Topics include: (i) growth, characterization, electrical, optical and magnetic properties of (ferro-)magnetic semiconductors, nanocomposite and hybrid ferromagnet-semiconductor structures including quantum dots, nanocrystals, and nano wires; (ii) high temperature ferromagnetism in semiconductors and semiconductor oxides (iii) transport and dynamical effects in semiconductors with or without spin-orbit interactions; (iv) electrical and optical spin injection, spin Hall effects, spin interference, spin filtering, spin lifetime effects, spin dependent scattering, and spin torque; (v) manipulation, detection, and entanglement of electrical and nuclear spins in quantum systems such as dots, impurities and point defects; and (vi) spin-dependent devices and device proposals involving ferromagnets and semiconductors.

6.14.6 Frustrated & Low-Dimensional Magnetism (GMAG/DMP)

There is a robust framework for describing the low temperature structures, phase transitions, and excitations of conventional three dimensional magnetic materials. However, when fluctuations are enhanced by low dimensionality or competing interactions, qualitatively new behavior can emerge. This is well established in one and two dimensions where controlled theory and experiment have uncovered phases lacking long-range magnetic order but exhibiting novel statistical and quantum phenomena. Such phenomena include valence bond solids and various forms of spin liquid and spin ice phases. This Focus Topic solicits abstracts for presentations that explore both theoretical and experimental aspects of the field. Topics of interest include: one dimensional quantum magnetism, geometrical frustration and associated effects of quantum spin liquid and spin ice, magnetism in frustrated or low dimensional artificial structures, order by disorder, the role of magnetoelastic coupling, quantum critical two dimensional spin systems and magnon Bose condensation. Also of interest are the effects of strongly fluctuating spins on properties beyond magnetism including transport, thermal transport and ferroelectricity.

6.14.7 Spin Dependent Physics in Organic-based Materials (GMAG/DMP)

This focus topic is on spin transport and exchange in organic- and molecular solids including all-carbon systems, transition-

metal with and without organic radical systems, as well as π -conjugated polymeric systems. Research at the intersection of several forefront areas in condensed matter and material physics are of interest: spin injection at the inorganic to organic interface, the degree of spin polarization attainable by organic-based solids, understanding and demonstrating the low Z attributes to spin transport including hyperfine interaction between the electronic spin and nuclear magnetic moments, and novel forms of magnetic exchange that may be adapted to inorganic dilute magnetic semiconductors. Phenomena and materials of interest include hybrid ferromagnetic/organic structures, spin transport in graphene, Kondo effect, spin qubits in diamond, quantum tunneling, triplet states and coherence in molecular nanomagnetism, organic magnetoresistance and magnetic field effects and all related topics.

6.14.8 Novel Magnetic Devices (DMP/GMAG)

This topic focuses on novel magnetic devices of all kinds, with a special interest in devices that make use of the spin torque effect. Of particular interest are spin torque switching of magnetic nanobits --which could be used in an advanced magnetoresistive random access memory (MRAM) -- and spin torque nano-oscillators, both theoretically and experimentally. Other devices of interest include magnetic tunnel junctions, or spin valves with special properties that can enable advanced magnetic technologies such as thermal assisted MRAM, toggle MRAM, high density magnetic recording, or magnetic sensors for field detection and biological sensing. Less mature devices are also of interest, including semiconductor devices that make use of electron spin or that use magnetic semiconductors, as well as negative resistance magnetic devices to achieve power gain. Also of interest are the results of novel metrology techniques that have been applied to examine the underlying physics of the above devices. Examples of interest include high frequency/high speed electrical or optical measurements to examine magnetodynamics, and imaging techniques such as XMCD.

Request for Magnetism Outreach Proposals

For several years GMAG has made funds available to its members to support outreach activities. Funds up to \$2500 per project are available to cover supplies and expenses associated with activities, which aim to educate non-scientists about magnetism and its applications. Preference will be given to innovative activities that will be documented so that they can be reproduced elsewhere. The outcome of the activities are then disseminated to the GMAG membership through the GMAG Newsletter and to the broader magnetism community through the GMAG website. Interested GMAG members should prepare a 1-2 page summary of the proposed activity (including expected duration and outcome) along with a 1 page CV and a list of anticipated expenses. These should be mailed as a single file in PDF format to the GMAG Chair, Axel Hoffmann (hoffmann@anl.gov). The GMAG Executive Board will review proposals on an on-going basis.

Ask your colleagues to Join GMAG

For only \$7 additional dues APS members can become GMAG Members with these benefits (students are free for one year):

- Quarterly GMAG newsletter.
- Eligibility for GMAG graduate student awards and sponsorship.
- Potential to increase the number of APS Fellows sponsored by GMAG.
- Potential to increase the number of invited talks on Magnetism at the March Meeting.
- Opportunity to help shape the voice and future of the Magnetism community (your community) in the US.

See the GMAG website: <http://www.aps.org/units/gmag>. TO JOIN: Go to the APS page for "Membership Units" (<http://www.aps.org/membership/units/join-unit.cfm>) and follow instructions for adding a unit to your membership. Or call the APS at 301-209-3280 and tell a Membership Rep that you want to join topical group GMAG.

GMAG Executive Committee

Chair: Axel Hoffmann (hoffmann@anl.gov)

Chair-Elect: Berend Jonker (jonker@nrl.navy.mil)

Vice-Chair: Andrew Kent (adk1@nyu.edu)

Past Chair: William Butler (wbutler@mint.ua.edu)

Secretary-Treasurer: Maria Varela (mvarela@ornl.gov)

Members-at-Large

Peter Fischer

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Michael Fitzsimmons

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Upcoming Conferences

European School on Magnetism 2009 | September 1–10, 2009
Timisoara, Romania | <http://esm.neel.cnrs.fr/2009/>

19th Soft Magnetic Materials Conference | September 6–9, 2009
Torino, Italy | <http://www.smm19.eu>

EUROMAT 2009 | September 7–10, 2009
Glasgow, United Kingdom, | <http://www.euromat2009.fems.eu/>

11th International Conference on Advanced Materials, Symposium on “Magnetic Materials at the Nanoscale”
September 20–25, 2009 | Rio de Janeiro, Brazil | <http://www.icam2009.com/>

Nano 2009 | September 28–30, 2009
Donostia – San Sebastian, Spain | <http://atombyatom.nanogune.eu/>

16th International Workshop on Oxide Electronics | October 4–7, 2009
Tarragona, Spain | <http://www.icmab.es/woe16/>

Advances in Magnetic Nanostructures | October 4–9, 2009
Vail, CO | <http://www.engconfintl.org/9bd.html>

The Magnetic Recording Conference | October 5–7, 2009
Tuscaloosa, AL | <http://www.mint.ua.edu/tmrc2009/>

AVS International Symposium and Exhibition | November 8–13, 2009
San Jose, CA | <http://www.avs.org/>

Workshop on Nanomagnetism, Spin-Electronics and Quantum Optics | November 11–13, 2009
Rio de Janeiro, Brazil | <http://www.compumag2009.com/>

Compumag 2009 | November 22–26, 2009
Florianópolis, Brazil | <http://www.compumag2009.com/>

Materials Research Society (MRS) 2009 Fall Meeting | November 30–December 4, 2009
Boston, MA | <http://www.mrs.org>

Joint MMM/Intermag Conference | January 18–22, 2010
Washington, DC | <http://www.magnetism.org/>

APS March Meeting 2010 | March 15–19, 2010
Portland, OR | <http://www.aps.org/meetings/march/index.cfm>

A more detailed list of magnetism related conferences can be found on the GMAG website:
<http://www.aps.org/units/gmag/meetings/index.cfm>

Important Deadlines

<i>Date</i>	<i>Reason</i>	<i>Contact</i>
Sept 1	Dissertation Award Nomination	Axel Hoffmann hoffmann@anl.gov
Sept 14	Symposia Nomination for March Meeting	Berry Jonker jonker@nrl.navy.mil
Sept 14	Focus Topic Invited Speakers	Focus Topic Organizers (see above)
Oct 1	Nominations for Executive Committee	Mike Fitzsimmons fitz@lanl.gov
Nov 20	March Meeting Contributed Abstracts	http://www.aps.org/meetings/march
June 1	Fellowship Nomination	http://fellowship.aps.org/
Ongoing	Outreach Proposals	Axel Hoffmann hoffmann@anl.gov

Thanks for being involved with GMAG and please get actively involved in the many activities described above.