DMP NEWSLETTER
Division of Materials Physics
A Division of The American Physical Society • www.aps.org/units/dmp/ Winter 2004

Our 2004 March Meeting of the American Physical Society takes on an international flair in traveling to Montreal, Quebec, Canada. Many veterans of past March Meetings speculated that the number of submitted abstracts might decline for a meeting outside the United States. They were wrong. The number of abstracts submitted for the March meeting exceeded 6,000, making it the largest to date. This number speaks well to the health of physics, despite current economic and security concerns.

Our program chair, Sam Bader, did a marvelous job in organizing the Focus Topics. The DMP will have 30 Focus Topic sessions at the Montreal meeting. Many of the Focus Topics are in collaboration with other divisions such as GMAG, DCOMP, DPOLY, DAMOP and FIAP. As per the March meeting at large, the DMP membership has retained its great enthusiasm for supporting the March meeting and its Focus Topics sessions. A special thanks is due to all the organizers and contributors.

The DMP will sponsor a number of **special activities** at the Montreal meeting. The DMP will have a **session on Monday afternoon**, March 22nd starting at 2:30 pm to recognize the winners of the McGroddy Prize and David Adler Lectureship Award. Loren Pfeiffer receives the James C. McGroddy Prize in New Materials, which is endowed by IBM, for his work in molecular beam epitaxy technology and semiconductor materials design. Chia-Ling Chien receives the David Adler Lectureship Award, which is endowed by friends of David Adler, for research in magnetic nanostructures and lecturing in materials physics. Loren Pfeiffer will give a talk on "The role of MBE in the physics of lower dimensional systems," and Chia-Ling Chien will give a talk on "Half-metals, spin torque, and nano-rings." Two other speakers invited by the DMP will participate in the session: Aron Pinczuk will speak on "Shining light on electron liquids in two-dimensional quantum structures" and Jack Bass will speak on "Current-driven excitations in magnetic multilayers." The winner of the Isakson Prize, James Wolfe, will also participate in this session.

The awarding of Fellowship remains highly competitive. Our Fellows represent some of the most outstanding materials physicists within the APS. As those who have served on Fellowship Committees will tell you, making the final selections from many deserving candidates is extraordinarily difficult. On **Tuesday evening** from 6:30 pm to 7:30 pm **joint**

DATES TO REMEMBER:

March 22-26, 2004
Meeting in Montreal

March 22, 2004
Prize-winners Session
Session D4, Room 517C,
Palais des Congres

March 23, 2004
DMP/DCMP Town Meeting
Awards Reception & Business Meeting,
Queen Elizabeth

March 24, 2004
Special DMP Symposium on the Grand Challenges in Nanomaterials
Session P5, Room 524AB
Palais des Congres

In this Issue ...

Our Award Winners are...

Loren Pfeiffer (Lucent Technologies)

James C. McGroddy Prize in New Materials (endowed by IBM)
Citation: "In recognition of his outstanding innovations in molecular beam epitaxy technology and semiconductor materials design that have changed our understanding of the physics of lower dimensional electron systems."

Chia-Ling Chien (John Hopkins University)

David Adler Lectureship Award (endowed by friends of David Adler)
Citation: "For his path-breaking research in magnetic nanostructures and for his outstanding mentoring and lecturing in materials physics."

reception with DCMP and DCOMP will honor prize winners and new APS Fellows—listed separately at the end of this newsletter. A **brief DMP business meeting** will be held at the end of the reception, primarily to vote on the proposed amendment to our bylaws and to hear the treasurer's report.

Prior to the reception at 5:30 pm on Tuesday, the DMP and DCMP will hold a "**Town Meeting**." This meeting will mark the beginning of a series of regional town meetings to engage the community in discussions on various issues important to the materials physics community. The primary motivation for such meetings is to address the upcoming Decadal Study of Solid State Sciences Committee of the National Research Council. Our initial town meeting should serve as the beginning of a broader conversation among materials physicists concerning many of the important issues in the field. Selecting and defining the issues should be one of the outcomes of our public discussions. For example: How do we more effectively explain what we do and why it's important? How should we increase our chances to get the exciting work in our field covered by the media (television, newspapers, popular magazines, etc.)? How can we frame a message that balances the fundamental and applied approaches to materials?

Given the breadth and richness of materials physics, which is a major strength of materials physics, can we nevertheless agree on a set of exciting basic questions that would form the basis for our public outreach?

We hope to have a number of leading spokespeople for our field who will initiate the discussions on this topic with some brief remarks. However, they will only serve to stimulate a broad ranging discussion from the membership of both the DMP and DCMP. We encourage you to come to the town meeting and voice your opinions on this important matter.

Another important activity for the DMP is our **continuing effort to support more Federal funding for materials physics**. On February 2, President Bush released his budget request, confirming concerns that this will be a difficult year for science. With the federal budget deficit expected to reach $521 billion and spending increasing for national defense and homeland security, scientific research programs are feeling the squeeze.

The president's proposed budget cuts funding to the DOE Office of Science by 2.0%, increases the NSF budget by just 3.0% despite the inclusion of much steeper increases in recent NSF authorization legislation, cuts science and technology programs at the Department of Defense by 15.5%, and increases total funding for basic research across the federal government by just 0.6% (below the rate of inflation).

Over the next few months, Congress will begin crafting appropriations bills using the president's budget as a starting point. Tell your representatives in Congress that a strong investment in science is worth the cost. **Check the "Write Congress" section of the APS Web site** (www.aps.org/public_affairs) in the coming weeks for updated alerts, and **look for the "Write Congress" kiosk** at the March Meeting in Montreal.

The March Meeting will also mark a change in the governance of the DMP. We welcome our new vice president, David Vanderbilt, and two new members at large: Art Hebard and Julia Hsu. We want to thank Denis McWhan, who is our past chair, and to thank our outgoing members at large: Chris Van de Walle and Roberto Car, for their service and contributions in making the DMP work. The DMP's switch to web balloting worked smoothly, with minimal kinks, and resulted in well over double the number of members voting. The DMP is grateful to all those who participated in our election.

Proposed Amendment of DMP Bylaws:

The Executive Committee of the DMP would like to amend its bylaws. Specifically, we would like the duties of the DMP officers to be changed as follows. The bylaws currently state: "*Program Committee. The Chair shall be Chairperson of the Program Committee.*" We would like to modify the bylaws to read: "*Program Committee. The Chair-elect shall be Chairperson of the Program Committee.*"

This change would make the DMP consistent with other divisions and even out the workload of the DMP officers. The APS Council has approved the proposed change, but it must be approved by the membership before the bylaws can be changed.

This issue will be discussed at the business meeting of the DMP and will be put to a vote at that time.

2004 Division of Materials Physics Fellows:

Peter A. Bennett *(Arizona State):*

For the illumination of fundamental issues concerning the atomic structure and surface kinetics of metal-silicon systems and their surfaces.

David Alan Drabold *(Ohio U.):*

For fundamental contributions to the physics of non-crystalline materials and the development of efficient first-principles electronic structure methods.

Chang-Beom Eom *(Wisconsin-Madison):*

For pioneering contributions in the heteroepitaxy of novel complex oxide thin films and experimental materials physics in superconductivity, magnetism, and ferroelectricity.

Jörg Fink *(IFW-Dresden):*

For his eminent work on the electron spectroscopy of novel materials, in particular of cuprate superconductors, fullerenes, nanotubes, and conducting polymers.

Mark Brian Johnson *(Naval Research Lab):*

For his pioneering achievements demonstrating electrical spin injection and detection in ferromagnetic-nonmagnetic-ferromagnetic metal structures and for discovering long electron-spin diffusion lengths in bulk and thin-film metals.

Efthimios Kaxiras *(Harvard):*

For contributions to understanding the properties of materials through simulations and the development of new first-principles, empirical and multi-scale computational methods.

Anupam Madhukar *(Southern Cal.):*

For contributions to the understanding and development of semiconductor epitaxy and stress-driven self-organized epitaxial quantum dots.

Christian Mailhiot *(Lawrence Livermore Nat'l Lab):*

For outstanding contributions and scientific leadership in theoretical and computational condensed matter and materials physics, with particular emphasis on innovative discoveries related to quantum-confined semiconductors and high-pressure research.

Nitin Samarth *(Penn State):*

For contributions to the fundamental understanding of spin dynamics and transport in low dimensional semiconductors, enabled by the development of novel magnetic quantum structures.:

Darrell G. Schlom *(Penn State):*

For pioneering contributions to the science of crystalline multicomponent oxide thin films on semiconductors.

Bruce Warren Wessels *(Northwestern):*

For seminal contributions to the understanding of defect structure and dopant behavior in epitaxial semiconductor and ferroelectric oxide thin films and heterostructures.