

# DMP NEWSLETTER

Division of Material Physics

Winter, 2005

A Division of the American Physical Society, <http://www.aps.org/units/dmp>

2005 is the World Year of Physics commemorating the pioneering contributions of Albert Einstein in 1905 - <http://www.physics2005.org/>

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## Special Events at the March Meeting...

### Monday, March 21, 2005:

Session B3: DCMP/DMP Joint Prize Session  
11:15 AM–2:15 PM, LACC - 515B

Session D4: The New DOE Centers for Nanoscale Science  
2:30 PM–5:30 PM, LACC - 515A Co-sponsored by GIMS and DMP

### Tuesday, March 22, 2005:

DCMP/DMP/DCOMP PRIZE RECEPTION  
5:30 PM–6:30 PM, Westin Hotel - Hollywood room

Session M46: DMP Business Meeting  
Approval of DMP By-Laws Revisions  
6:30 PM–7:30 PM, Westin Hotel - La Brea

Public Lecture - World Year of Physics  
Douglas Osheroff, Stanford University  
7:30 PM–9:30 PM, Westin Hotel, Catalina Ballroom

### Wednesday, March 23, 2005:

Session T1: Einstein and Condensed Matter Physics  
7:30 PM–9:00 PM, Westin Hotel, San Francisco Room

## Our award winners are...

### **DAVID ADLER LECTURESHIP AWARD:**

**Ramamoorthy Ramesh**, University of California, Berkeley

“For his contributions to materials physics that have enabled a deeper understanding of ferroelectric materials, the discovery of colossal magnetoresistance, and leadership in communicating the excitement of materials physics to a broad audience.”

### **McGRODDY PRIZE:**

**Yoshinori Tokura**, University of Tokyo

“For pioneering work in the synthesis and characterization of transition metal oxides having unusual charge and spin order.”

Lectures by both of our awardees will be presented at our Awards Session at the March Meeting in Los Angeles, which will take place on Monday, March 21 at 11:15 am in Room 515B of the L.A. Convention Center. It is session B3: DCMP/DMP Joint Prize Session. The Invited Speakers are: Souza, Suzuki, Bauer, Ramesh, Tokura

## **New APS Fellows Sponsored by DMP:**

### **Ulrike Diebold**

For groundbreaking research on the role of defects in the interplay between bulk and surface properties of transition-metal oxides and on STM imaging of their surface structure

### **Bengt I. Lundqvist**

For his contribution to the fundamentals and methods of density-functional theory and its application to the study of materials and their surfaces

### **Zhifeng Ren**

For pioneering contributions to the synthesis of carbon nanotube and semiconductor nanowire arrays, and high-quality films enabling investigations of d-wave pairing in high-temperature superconductors

### **Caroline Anne Ross**

For innovative research into the magnetic properties of thin film and nanoscale structures, and for the development of novel lithographic and self-assembly methods for nanostructure fabrication

### **Angel Rubio**

For his original contribution to the theory and the computational modeling of the electronic properties of solids, clusters and nanostructures, especially their response to external electromagnetic fields

### **John Campbell Scott**

For contributions to the understanding and application of organic electronic materials and devices

### **Mark David Stiles**

For his creative and skillful use of first principles calculations and phenomenological models that have substantially contributed to our understanding of the physics of magnetic heterostructures

### **Louis J. Terminello**

For his innovative use of synchrotron radiation spectroscopy in revealing the electronic and atomic structure of new materials

**David Tomanek**

For contributions towards theoretical understanding of structural and electronic properties of atomic clusters and low-dimensional systems

**Michael M.J. Treacy**

For the development of novel electron microscopy techniques and applications to advanced materials including catalysts, zeolites, carbon nanotubes and disordered structures

**Peter Willis Voorhees**

For fundamental contributions to the theory of kinetics and thermodynamics of morphological change

**DMP Election Results:**

The DMP thanks all who participated in the election. The new officers and members-at-large of the DMP Executive Committee assume office following the March Meeting, except the Councilor to the APS who assumed office at the start of the calendar year:

Vice Chair – Jeff Lynn  
Sec./Treasurer – Ted Einstein  
Councilor – Len Feldman

Member at Large - Steve Louie  
Member at Large - David Cahill

The current roster of the DMP Executive Committee is posted at <http://www.aps.org/units/dmp/dmpcommittee.cfm>.

**Grand Challenges in Materials Physics**

Marc Kastner, who is Chair of Solid State Sciences Committee, recently sent out the important message that we reiterate below. The proposed study that he describes could have significant impact on the level of funding that our field will receive in the future. DMP is pleased to participate in the process of defining the grand challenges in condensed matter and materials physics. We started the process at the last March Meeting and continued it throughout the year with e-mailings to and from our members. The ten questions posted on a website listed below, attributed to Sam Bader, DMP Chair, represent part of the collective effort by the DMP to define our field.

“The Solid State Sciences Committee is beginning to prepare for the next survey of Condensed Matter and Materials Physics (CMMP2010), which will be one component of the study of all of physics, carried out by the National Academy of Sciences every decade. The Board on Physics and Astronomy of the National Research Council, as well as sources within the federal agencies, have told us that CMMP2010 is likely to have significant impact only if it contains a list of great problems and challenges our field hopes to address in the coming years. This strategy is what the cosmologists and particle physicists have done so effectively. We therefore plan to generate such a list in the next year, and we invite you to help us. The list will be provided to the CMMP2010 committee, which will be charged with choosing the most important problems and enunciating them in a way that will be easily accessible by the public.

Please send us the problems you think are most important, with two or three

sentences explaining why you think so. To show you the kind of questions that might be included, we direct you to any of the following websites:

\* Questions from a workshop of the Institute for Complex Adaptive Matter  
<http://frontiers.physics.rutgers.edu>

\* Questions developed by Sam Bader and others for the March 2004 meeting of the American Physical Society  
[http://www7.nationalacademies.org/bpa/Bader\\_CMMP2010\\_Challenges.pdf](http://www7.nationalacademies.org/bpa/Bader_CMMP2010_Challenges.pdf)

\* Questions developed by a National Academies committee examining the interface of physics and astronomy  
[http://books.nap.edu/execsumm\\_pdf/10079.pdf](http://books.nap.edu/execsumm_pdf/10079.pdf)

\* Questions proposed by Tony Leggett from the SSSC9s October, 2004 CMMP2010 Roundtable Discussion  
[http://www7.nationalacademies.org/bpa/SSSC\\_CMMP2010\\_Leggett\\_Questions.html](http://www7.nationalacademies.org/bpa/SSSC_CMMP2010_Leggett_Questions.html)

Please send your ideas to [cmmp2010-input@nas.edu](mailto:cmmp2010-input@nas.edu)

Thank you for your help in this exciting endeavor.” – Marc Kastner

## **Student Lunch with the Experts at the March Meeting**

“Lunch with the Experts” will again be featured at the March Meeting on Wednesday, March 23 from 1:00 pm - 2:30 pm in the Los Angeles Convention Center, PETREEC. DMP will sponsor four tables featuring Alex Zettl (UC Berkeley), Richard Haglund (Vanderbilt Univ), George Samara (Sandia Nat’l Lab- Albuquerque), and Jeff Lynn (NIST). Sign-up for students wishing to participate will take place beginning on Monday, March 21 at 1:00 pm at the APS registration desk, and will be on a first-come, first-served basis. This event consists of a complimentary box lunch while participating in an informal discussion with an expert on a topic of interest that will be listed on the APS March Meeting web page. Attendance is limited to eight students per topic/expert.

## **Recruit New DMP Members**

Encourage a colleague or friend to affiliate with DMP. The annual cost is \$7 added to the regular APS membership dues. As we build our membership base, we increase the visibility of the materials physics presence as a vibrant part of APS, and we also strengthen the impact of our numerous outreach efforts, such as to Washington and to related Societies. Instructions on how to become a member of DMP (or any other APS unit) appear on our homepage, or simply call (301) 209- 3280 with your APS membership number (from the mailing label of a recent publication sent to you) and a credit card for the \$7/year dues. Or fax (301) 209-0867 or mail the information to APS at:

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