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Thirteenth Annual Meeting of the ALS Users' Association

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A complement of 266 users, staff, and vendors descended upon the Ernest Orlando Lawrence Berkeley National Laboratory (Berkeley Lab) from Monday through Wednesday, October 16–18, 2000 for the thirteenth edition of the annual Advanced Light Source (ALS) users' meeting. In a departure from previous practice, the meeting featured an increased emphasis on workshops with the result that the proceedings were equally divided between oral and poster presentations and the workshops. After the traditional welcomes and facility updates on the first morning, science dominated the first day and a half comprising the formal meeting with a session of highlights from young researchers, three sessions of scientific highlights from the ALS and elsewhere, and a poster session that included a student poster competition. A set of seven workshops covering research areas of current or growing interest at the ALS rounded out the final day and a half of the meeting.

Monday morning began with the customary welcome from Berkeley Lab Director Charles Shank. Associate Director for Basic Energy Sciences (BES) Patricia Dehmer at the U.S. Department of Energy (DOE) followed with some good news from Washington. Thanks to an excellent ALS showing before a DOE Office of Basic Energy Sciences Advisory Committee review panel and a significant increase in the FY 2001 budget for BES, funding for ALS operations should soon be back on a growth track. ALS Director Daniel Chemla gave an extensive overview of the state of the facility and presented a brief look at a newly proposed Molecular Foundry, developed in response to the growing worldwide interest in nanoscience. If approved, the Molecular Foundry would include offices and laboratory space for users in a new building adjacent to the ALS. David Robin, Leader of the ALS Accelerator Physics Group, presented an update on storage-

ring operations and upgrades, including beam availability to users, beam stability, and the superconducting bend magnets (superbends) to be installed in sectors 4, 8, and 12 of the storage ring in August 2001. Outgoing Users' Executive Committee(UEC) chair Nora Berrah (Western Michigan University) then conducted a brief business meeting.

On the science side, the now traditional session of "Highlights from Young Researchers" concluded the morning session. ALS Division Deputy for Science Neville Smith, who was the session chair, smilingly suggested "junior" was a better descriptor since some of the presenters were well into their research careers but had not yet reached "senior" status. Xingjiang Zhou (Stanford Synchrotron Radiation Laboratory) started the session off with a look at high-temperature superconductors in his talk "Order-Disorder Competition in the Electronic Structure of Stripes." Christoph Bostedt (Lawrence Livermore National Laboratory and University of Hamburg) was motivated by the possibility of future applications of nanoclusters as he described the "Electronic Structure of Ge-Nanocluster Films Probed with Synchrotron Radiation."

Ted Raab (University of Colorado) switched to the application of infrared radiation to environmental science with his presentation "Notes from the Underground—Synchrotron IR Microscopy with Plant-Soil Interactions." Cynthia Morin (McMaster University) applied NEXAFS imaging to the problem of adsorption of blood proteins as she reviewed "X-Ray Spectromicroscopy of Protein-Polymer Interactions." Simon Morton (University of Missouri–Rolla) presented evidence for novel electronic properties in his presentation "Spin Polarized Photoemission Studies of Magnetite Films: Observation of Half-Metallic Effects in Real Samples." Jinghua Guo (Uppsala University ended the morning session with a talk combining emission and absorption techniques in "Soft X-Ray Spectroscopic Study of Hydrogen Bonding and Solvent-Ligand Exchange in Fe^{3+} Water Solutions."

Monday afternoon was dedicated to oral presentation of scientific highlights at the ALS and elsewhere. John Hepburn (University of Waterloo) led off the afternoon with a look at the use of four-wave mixing to produce VUV with lasers rather than synchrotron radiation for ultrahigh spectral resolution in his talk "Threshold Photodissociation

Experiments with Vacuum Ultraviolet Light." Stephen Cramer (University of California, Davis, and Berkeley Lab) summarized several photon-yield experiments at the Stanford Synchrotron Radiation Laboratory and the National Synchrotron Light Source and the benefits of a new cryogenic detector recently tested at the ALS in "Soft X-Ray Spectroscopy of Metals in Enzymes: A Piece of the Bigger Picture." Tom Baer (University of North Carolina, Chapel Hill) took a broad look at recent results at the ALS ranging from translational energy distributions to rotationally resolved spectroscopy in his presentation "From High Resolution to High Flux: Experiments at the Chemical Dynamics Beamline." Paul Morin (Université Paris-Sud) then continued with a description of results from LURE obtained using a multicoincidence detector in his talk "A Probe of Core-Excited Molecules: Auger Electron—Ion Coincidences."

After a short break, the afternoon science highlights continued with Gerrit van der Laan (CRLC Daresbury Laboratory), who pointed out the benefits of x-ray magnetic scattering for resolving features of magnetic structure in his talk "Magnetic Dichroism in X-Ray Photoemission, Absorption, and Scattering." Nobumichi Tamura (Berkeley Lab) closed out the Monday oral presentations with a review of the recently successful application of x-ray microdiffraction to study local stress/strain distribution in "Stress in Encapsulated Submicron Metal Strucures."

In another departure from past practice, the UEC, which organized the meeting, switched the poster session to Monday evening, in contrast to the former mid-day time slot. The result was a lively affair that took place on the ALS patio with a splendid view of the San Francisco Bay at sunset as a backdrop. Along with inspecting 71 posters, including those entered in the student poster competition, meeting attendees also used this time to supplement Monday and Tuesday lunch-hour visits to vendor displays. All told, the added availability of snacks and beverages made this event an instant hit that the UEC will likely include in future user meetings.

Tuesday morning saw the final session of science highlights, beginning with the meeting keynote address by Keith Moffat (University of Chicago), who reviewed Laue white-

light experiments conducted at the European Synchrotron Radiation Facility and future prospects for “Ultrafast Time-Resolved Macromolecular Crystallography.” Roger Faclone (University of California, Berkeley) followed with a description of an x-ray streak camera with a 1-picosecond time resolution and its application to time-resolved studies of phase transitions in his talk “Laser-Induced Material Dynamics.” Dan Dessau (University of Colorado, Boulder) called attention to the importance of fluctuations and the competition between different types of ordering in his review of “The Electronic Structure of CMR Oxides: A High-Resolution ARPES Study.” Andreas Scholl (ALS) described the use of the photoemission electron microscope (PEEM) to image magnetic materials with magnetic circular dichroism and magnetic linear dichroism in his presentation “”Magnetic Structure at Ferromagnet–Antiferromagnet Interfaces.” Concluding the session, organizers of the seven workshops gave brief overviews of the agendas and goals of their programs.

.As noted earlier, the workshops played a larger role in this year’s users’ meeting. In all, seven workshops spread themselves over Tuesday afternoon and all day Wednesday. The workshop titles and organizers were (1) Future Directions for Far-Infrared Sources, Michael Martin and Wayne McKinney (ALS); (2) Femtosecond X-Ray Science, Roger Falcone (UC Berkeley) and Robert Schoenlein (Berkeley Lab); (3) Forum on Detectors for Synchrotron Radiation, Al Thompson (ALS), Charles Fadley (UC Santa Cruz and Berkeley Lab), Thomas Earnest (Berkeley Lab), and Howard. Padmore (ALS); (4) Correlated Materials Systems, Dessau, Z.X. Shen (Stanford University), Zahid Hussain (ALS), James Tobin (Lawrence Livermore National Laboratory), and David. Shuh (ALS); (5) Frontier Research in Atomic, Molecular, and Chemical Physics Using Third-Generation Synchrotron Radiation, Cheuk Ng (Iowa State University and Ames Laboratory) and Nora Berrah (Western Michigan University); (6) Hard X-Ray Spectroscopy and Holography, Heinz Frei (Berkley Lab) and Fadley; and (7) X-Ray Microdiffraction and Its Application to Problems in Materials Science, Nobumichi Tamura (ALS), Jim. Patel (Stanford Synchrotron Radiation Laboratory and ALS) , and Sean Brennan (Stanford Synchrotron Radiation Laboratory).

One of the workshops, the Forum on Detectors for Synchrotron Radiation was one of several activities nationwide in preparation for the national "Workshop on Detectors for Synchrotron Radiation Research," which was subsequently held in Washington, DC, on October 30-31, 2000 (see pp. xx-yy). The Workshop on X-ray Microdiffraction and its Application to Problems in Materials Science was sponsored jointly with the Stanford Synchrotron Radiation Laboratory whose user meeting immediately followed that of the ALS.

At the meeting banquet, held on Tuesday evening at the University of California, Berkeley (UC Berkeley), men's faculty club, Berrah and incoming UEC chair Harald Ade (North Carolina State University) presented awards for science and service. Two groups shared the Halbach Award for Outstanding Instrumentation at the ALS. One team, led by Falcone, developed streak-camera techniques in combination with x-ray diffraction to study the dynamics of structural phase transformations at picosecond time resolution. The other team, led by Schoenlein, developed time-slicing techniques to produce subpicosecond synchrotron radiation pulses. Phil Heimann (ALS) and Schoenlein accepted the award on behalf of both teams.

The David A. Shirley Award for Science was accepted by Thomas Earnest (Berkeley Lab) representing a team led by Harry F. Noller (UC Santa Cruz), which was cited for the structural solution of the complete ribosome at a resolution that allowed determination of many of the component parts of this complex structure. Greg J. Kusinski (UC Berkeley) won the student poster competition for his poster entitled "Imaging Magnetic Domains on a Nanometer Scale with Magnetic Transmission Microscopy." Art Robinson of the ALS Technical Information Section took home the Tim Renner User Services Award for his work with user groups and ALS staff in developing scientific proposals and for contributions promoting the ALS in general. And Lori Tamura, also from the ALS Technical Information Section, submitted the winning design for the user meeting logo that appeared on the program and the souvenir brief case.

The banquet also provided an opportunity to recognize Daniel Weiss (Georg August University, Göttingen, Germany) and Jianwei Miao (State University of New York, Stony Brook) as the inaugural winners of the Werner Meyer-Ilse Award, established at last year's International Conference on X-Ray Microscopy (XRM99, see SRN 12.6, pp. 39-40) and to be given in the future at the triennial XRM conferences to a young scientist for contributions to the development of x-ray microscopy. A medallion was presented to Miao (Weiss was not present) by the international award committee chair, David Attwood (Berkeley Lab).

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[figure captions]

[figure 1 - XBD200010-01565-29.TIF]
David Robin, ALS Accelerator Physics Group Leader, reviews measures taken to insure maximum beam availability and stability to users.

[figure 2 - XBD200010-01566-23.TIF]
The evening poster session was an instant hit.

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Incoming and outgoing Users' Executive Committee chairs, Harald Ade (North Carolina State University) and Nora Berrah (Western Michigan University) present the Halbach Award for Outstanding Instrumentation to Phil Heimann (ALS) and Robert Schoenlein (Berkley Lab),who accepted for the two research teams that were cited as co-winners.