THE 1997 NSLS ANNUAL USERS' MEETING

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The users of the National Synchrotron Light Source (NSLS) held their annual Users' Meeting on May 20, 1997, at Brookhaven National Laboratory (BNL). This meeting serves several functions: celebrating the scientific and technical accomplishments of the previous year, obtaining the latest news on the U.S. Department of Energy's support for scientific facilities in general and the NSLS in particular, and providing an opportunity to visit with old friends and colleagues. As in past years, six workshops on scientific and technical topics (descriptions follow this article) were held the day before and the day after the main meeting.

The meeting began with a lively and humorous keynote address titled "Future Schlock" by Robert Park, Professor of Physics at the University of Maryland and author of the WWW news/opinion page "What's New". The main point of Park's address was that one cannot make accurate predictions about the future. He began by pointing out that one year ago, no one was predicting that today we would have budgets before Congress which both balance the budget by the year 2002 and give science annual funding increases. He then continued with several examples of predictions made by various futurists and concluded with the point that no one predicted that scientists would become politically active or how powerful their voice would be.

The Interim Director of BNL and President of AUI, Lyle Schwartz, was the next to address the meeting. He began his remarks by addressing recent statements in the press by DOE Assistant Secretary Tara O'Toole (see, for example, *Science News*, Vol. 151, p. 284, May 10, 1997) that the highly publicized deficiencies in Environment, Safety and Health at BNL were the fault of users. Dr. Schwartz strongly defended the users. He then solicited their comments and observations during this time of change at BNL.

The U.S. Department of Energy was represented by the Associate Director of Energy Research for the Office of Basic Energy Sciences, Patricia M. Dehmer. In light of the two previous speakers' remarks, she began her remarks by assuring the audience that during all the upheaval associated with BNL's problems there has been one constant: "the high regard" for the NSLS, its users, and the quality of their science. She then went on to outline the organizational structure of the DOE, pointing out that the Basic Energy Sciences (BES) budget is roughly equal to that of the National Science Foundation, but that BES funds three times the amount of physical science research and most of the major user facilities in the country. She urged the audience to communicate with BES (BES@oer.doe.gov) answering the question, "How has your discipline been affected by synchrotron radiation and how would it be affected by the lack of it?"

Robert L. Park (left) of the University of Maryland after his Keynote Speech "Future Schlock" talking with Denis McWhan (center), Associate BNL Director, Basic Energy Science Programs and Lyle Schwartz, Interim BNL Director and President of Associated Universities, Incorporated.

Next, Larry Dubois, director of DARPA/DSO, gave an overview of materials research from a DARPA perspective. Emphasizing the potential applications, he cited *in situ* studies of fuel cells, studies of "relaxor" piezo-electric materials, and x-ray patterning of materials as examples of areas where synchrotron x-ray techniques might be of

interest to DARPA.

The last speaker of the morning was Michael Hart, Chairman of the NSLS. His remarks were focused primarily on the BESAC review panel on synchrotron radiation facilities which would be visiting NSLS on June 25 and 26. Part of the review will be presentations by NSLS users. He requested the continued assistance of the user community during this review process.

In dramatic contrast to the morning session, the afternoon was devoted to scientific talks spanning the wavelength spectrum from the far infra-red through the ultra violet into the hard x-ray region. Albert J. Sievers led off, discussing the coherent generation of FIR and describing experiments he has performed using the LINAC at Cornell. In these experiments, he used FIR as a diagnostic probe to measure the profile of the electron bunch. As part of his presentation, he walked the audience through a very clear explanation of how one uses Kramers-Kronig relations to solve the phase problem in time/frequency Fourier transforms.

Robert Bartynski spoke next on his coincidence spectroscopy measurements of TiO_2. The basic idea of the technique is to trigger off of a core level photo-electron and then require the coincidence of a particular Auger electron associated with the death of the core hole. Requiring the coincidence gives the technique both elemental and valence sensitivity and the low background enables one to determine defect densities on the order of 2%. Data illustrating the effects of different surface preparations on the densities of point defects with particular Ti valence states were presented.

From left to right: Susan Barr, APS User Program Administrator; Constance Pittroff, APS Assistant User Program Administrator; Eva Z. Rothman, NSLS User Administrator; and Elizabeth Saucier, ALS User Administrator.

Keith Bowen (left) of the University of Warwick, UK and Bede Scientific Instruments conversing at the User Meeting Poster Session with Michael Hart, Chairman of the NSLS.

Thomas Gog discussed his recent work on Multi-Energy X-ray Holography, presenting reconstructed images of several different systems. Although the technique is still at an early stage of development, the potential to produce atomic resolution real-space images was tantalizing. He discussed several current technical challenges yet to be overcome, including developing a better understanding of the effects of wavelength filtering on the numerical Fourier transform.

The last speaker of the afternoon, Donald Weidner described his work using x-ray diffraction at high pressures and temperatures to study the phase diagram of materials found in the Earth's crust. He related that work to a self-consistent mathematical model which explains an anomaly in the frequency distribution of deep earthquakes.

Two other important features of the Users' Meeting were the scientific poster session, with a reception at the Brookhaven Center, and the equipment exhibit in the Lobby of Berkner Hall. Both were popular with the users, providing an opportunity to get a preview of some of the latest work performed at the NSLS and to see some of the new equipment available from suppliers.

The election of the NSLS UEC occurred during lunch. Paul Stevens, Barbara Illman and John Parise were elected as general members. The SPIG representatives will be elected by e-mail ballot after the meeting. On Wednesday, in executive session, the UEC chose John Parise to be its Vice-Chair (Chair-Elect). ■