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**NCR-174**  
**Synchrotron X-Ray Sources in Soil Science Research**  
**2001 MEETING**

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**Monday, August 13, 2001**

Welcome and Introductions            3:00 - 3:10 p.m.  
Darrell Schulze

Technical Presentations    3:10 - 5:10 p.m.

3:10 p.m.

Synchrotron radiation for detecting movement of a volatile soil liquid  
Lyle Prunty  
North Dakota State University, Fargo, ND

3:30 p.m.

Application of industrial and synchrotron x-ray CT for characterization of flow and transport in variably saturated porous media.  
Jan W. Hopmans, D. Wildenschild and V. Clausnitzer  
University of California, Davis, CA

3:50 p.m.

Cs coordination environments in clay minerals as elucidated by XAFS spectroscopy  
Paul Bertsch  
University of Georgia, Aiken, SC

4:10 p.m.

The XAFS spectra of  $\text{Hg}^{2+}$  and methyl- $\text{Hg}^+$  complexes at low Hg/S  
Paul Bloom  
University of Minnesota, St. Paul, MN

4:30 p.m.

Synchrotron X-ray microdiffraction of soil materials: Initial results.  
D. G. Schulze, C. A. Guest, and A. Lanzirotti  
Purdue University, West Lafayette, IN

4:50 p.m.

Segmentation and Internal Porosity Feature Extractions  
Paul Albee, Alvin Smucker, George Stockman and Mark Rivers  
Michigan State University and University of Chicago, Advanced Photon Source

Break for Dinner                    5:10 - 7:00 p.m.

**NCR-174 Business Meeting            7:00 - 9:00 p.m.**

1. The group discussed at length NCR-174's possible participation in the proposed EnviroCAT initiative. EnviroCAT plans to develop additional beamlines that would focus on environmental research at the Advanced Photon Source, as well as at other synchrotron facilities such as the Synchrotron Radiation Center at the University of Wisconsin and the National Synchrotron Light Source at Brookhaven National Laboratory. This initiative is still in the relatively early planning stages, and the group felt that NCR-174 should wait before deciding to make a formal commitment to EnviroCAT.

2. The group discussed things that it could do collectively to enhance existing beamlines at the National Synchrotron Light Source to make them more useful for soil science research. It was pointed out that soil scientists are now viewed as an established group within the synchrotron research community and that that we may be able to do things now that we could not do 5 or 6 years ago. Possible activities included proposals to purchase detector or computer upgrades for beamlines frequently used by soil scientists.

3. Darrell Schulze announced that since he had been chairperson of NCR-174 since its inception, it was time that he relinquish his responsibilities as chair. Will Bleam agreed to stand as chairperson, and he was elected by acclamation. With the additional responsibilities, Will asked to be relieved of his responsibilities as one of the two CARS board representatives. Since Lyle Prunty and Jan Hopmans have become very active synchrotron users, the group felt that it was appropriate that someone from the soil physics community serve as one of the representatives to the CARS board. Neither Prunty nor Hopmans were ready to commit until they had time to learn more about the responsibilities of the job, but Lyle Prunty later agreed to serve as representative to the CARS board. Paul Bertsch agreed to continue as vice-chair of NCR-174 for the coming year. Michael Thompson, who could not attend the meeting, volunteered *in absentia* to serve an additional year as secretary of the committee.

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**Tuesday, August 14**

Introduction to the Synchrotron Radiation Center 8:30 a.m.

General description of the facility and user issues

Joe Bisognano, Executive Director of SRC

Current synchrotron capabilities and possible future developments

Franz Himpsel, Research Director of SRC

Existing "end-station" facilities at the SRC

Mark Bissen, Leader, SRC Optics Group

Microspectroscopic capabilities on the HERMON beamline

Gelsomina "Pupa" De Stasio, Visiting Professor, Physics Dept., Univ. Wisconsin - Madison

Break 10:00 a.m.

SRC Tour 10:15 a.m.

Discussions with SRC staff about soils/environmental research employing synchrotron radiation  
11:15 a.m.

Lunch 12:15 p.m.

GEMCAT: Organization and Funding 1:30 p.m.  
Chris Reilly, Joe Smith, Steve Sutton

Break 2:45 p.m.

Discussions with APS/GEMCAT team about future research projects and needs 3:00 p.m.

Adjourn 5:00 p.m.

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Respectfully submitted (with THANKS to Darrell Schulze),  
Michael Thompson  
NCR-174 Secretary