

Interfacial and Processing Sciences
News Notes

April 1999

**Environmental and Molecular Sciences Laboratory
Pacific Northwest National Laboratory**
www.emsl.pnl.gov

News Notes, established to help keep our Users and others who have had a connection with us up-to-date on activities, events, capabilities, and interesting results, including short summaries of the work of users.

If you receive this message directly, you are on our address list. If you want to receive the Notes, you need to do nothing. If you would like to be removed from the list, please respond by email to terry.law@pnl.gov. If this message has been forwarded to you, please contact Terry if you want to be added to the email list.

EMSL USERS Meeting-REVISED DATES-July 21-24

Come learn about EMSL, learn about the vision of EMSL and, if you are already a user, share your results.

As mentioned last month, the first EMSL Users Meeting is coming up. The dates have been moved, however, be sure to *update your calendars*. There will be a few plenary lectures, 4 mini-symposia, a couple of poster sessions, a User's Organization Meeting and several tutorials/short courses. All of this will be designed to encourage new users and to show the activity already occurring in EMSL.

July 19-24 Tutorials

- Hands-On Surface Analysis: Bring your own samples to run on EMSL instrumentation
- Getting Started with EMSL's Collaboratory Tools
- Using EMSL's Instrument Development Laboratory
- Desktop, Benchtop, and Laptop Computing in the EMSL; plus, Archiving Data in the EMSL
- Ecce (Extensible Computational Chemistry Environment) and NWChem (Northwest Computational Chemistry Software). These will be *2-day tutorials starting on July 19*.

July 21

Morning	Plenary Lectures (speakers will include <i>Rene Schwarzenbach, ETH, Zurich, and Victor Henrich, Yale University</i>).
Afternoon	Symposia Sessions <ul style="list-style-type: none">• Environmental Chemistry and Transport• Massively Parallel Computing in the Environmental Molecular Sciences
Evening	Poster Session and Reception

July 22

All Day	Symposia Sessions continue
Afternoon	User Organization Meeting

This meeting, to be held in the late afternoon, will feature presentations about the EMSL, discussion of the role of the User Organization, and formation of a User Organization Steering Committee.

Evening Meeting) Salmon Dinner (served at the EMSL after the User Organization

July 23

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| Morning | Plenary Lectures |
| Afternoon | Symposia Sessions |
- Physics and Chemistry of Oxide Surfaces (Invited speakers: John Yates, University of Pittsburgh; Uli Diebold, Tulane University; and Werner Weiss, Fritz Haber Institute, Berlin)
 - Structural and Functional Proteomics
- | | |
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| Evening | Poster Session and Reception |
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July 24

All Day Symposia Sessions on Oxides continue

Interfacial and Processing Science User Activity

The number of uses of I&PS capabilities has been consistently high. In addition, over the first quarter of the fiscal year, there were 35 new users from outside of PNNL and 23 users from non-EMSL parts of PNNL. Although we usually have a significant number of users and students in the summer, we learned that because of semester changes, school breaks, and different schedules in other parts of the world January may become our second busiest time of the year.

The EMSL continues to see a broad spectrum of research and an international user response. In just the last few months, we have had users from as far away as Italy, Korea, and Australia, and research has ranged from examination of ancient brass fragments from Greece to examination of the skins of damaged fruit. In addition, results from research conducted at the EMSL appeared on the December cover of *Analytical Chemistry*. A few of the users are listed below.

Ann Grant, a graduate student in the Department of Chemistry, University of Washington, is performing STM studies of model catalysts consisting of small metal clusters on oxide surfaces.

Li-Qiong Wang, a PNNL staff member in the Materials Sciences Department, is using the EMSL UHV/TPD (temperature-programmed desorption) instrumentation to study the interaction of water with a strontium titanate single crystal surface.

Professor Ace Baty and graduate student Callie Eastburn of Montana State University are examining pure chitin films using a surface profilometer and x-ray diffraction.

Professor Yoram Cohen and student Wayne Yoshida from UCLA have been using the AFM to examine surfaces prepared by a graft-polymerization method. This work is part of an EMSP program.

Eric Curry from the USDA/ARS Tree Fruit Research Laboratory has been using AFM and SEM to examine environmentally induced changes in the structure of fruit cuticle.

Cleveland Dodge and AJ Francis of Brookhaven National Laboratory have been looking at the characterization of iron minerals and complexes using mass spectrometric and other methods.

Hinrich Hargarter, a scientist with Johnson-Matthey Electronics, is looking at copper metallization

issues using electron microscopy.

Yong J. Kim, a professor at Taejon National University of Technology in Korea and *Saranavanamuthu Maheswaran* from the University of Western Sydney Nepean have been studying pure and Zr-Doped CeO₂ made by oxygen-plasma assisted MBE using XPS, ion channeling, and RBS.

Rich Ozanich and *Scott Waltari* of Berkeley Instruments have been developing analysis procedures for environmental contaminants using a magnetic trap within the EMSL flow analysis system.

Charles Shawley, a student at Pomeroy High School, is developing methods to use optical profilometry to measure the index of refraction of materials.

Peter Sheldon, *Larry Kazmerski*, *Brent Nelson*, and *Sally Asher*, a group of scientists from the National Renewable Energy Laboratory (NREL), visited the EMSL to consult on vacuum transfer devices. They were particularly interested in the EMSL vacuum suitcase design.

Gary Siuzdak and *Jing Wei* of Scripps Research have been working with Mike Alexander to develop new surfaces for laser desorption/ionization MS.

Susie Stenkamp, as student at the University of Washington, is using XPS, SFA and other tools to determine PEO Ion Binding.

Maggie Taylor, a postdoc at NASA/JPL, is working to develop methods for laser ablation sampling of Mars rocks. She is testing approaches and methods of quantification using XPS, RBS and other methods.

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