

American Chemical Society

RICHLAND SECTION

spring 2002

Perspectives of Chemistry at Hanford Series



A Hanford chemist performs an analysis in this 1955 file photo.

The building of the Hanford Engineering Works certainly ranks as one of the greatest scientific and engineering feats of the twentieth century. The challenges of developing the chemistry needed for everything from fuel fabrication through isotope separations were met by the talented and dedicated chemists of the 40's, 50's, and 60's. We here in the Tri-Cities area have a unique opportunity to experience this history first hand. In fact, there are still a number of chemists around who were part of making that history!

The Richland Section is sponsoring a series of four sessions on chemistry at Hanford. The purpose of the first two sessions will be to acquaint chemists (and the public) with early Hanford chemistry. The last two sessions will focus on the challenges being met by the talented and dedicated chemists of the

present. We will also take advantage of these gatherings to host receptions for our 2001 Chemist of the Year, and our section's 50 year members.

The first session will take place from 5:30 to 7:30 pm April 16, 2002 at the CREHST Museum located at 95 Lee Blvd, Richland. (CREHST is located behind the old community house and just south of the Allied Arts Gallery.)

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April Meeting

to Feature the Chemistry of Semiconductor Manufacturing

Speaker:

Mr. Robert K. Lowry

Talk:

Chemistry of Microelectronics

Date/Time:

April 23, 2002, 7:30 PM

Place:

Ackerman Hall, Room 210
Eastern Oregon University
LaGrande, Oregon

Do you ever think about chemistry when you use your computer? The next time you sit down at the keyboard, pause and think not about the chemical computations you do or the molecules you manipulate but about the chemistry it took to make the semiconductor devices inside the computer. Semiconductors are the engines driving the information age into the next millennium. They are the heart and brains of modern electronics. It takes

electrical engineering to conceive and design them and to connect them into working systems. But making the chips themselves is a unique, miniaturized chemical process industry, from growing single crystal sub states to doping for electrical conductivity, depositing ultra-thin films, patterning via photolithography, and packaging the finished chip. Chemistry is crucial. Building semiconductors relies on engineers with thorough backgrounds in chemistry and materials science. This talk

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Hanford Cont'd

Highlights of the first session include group tours conducted through the museum, a reception for the 2001 Richland Chemist of the Year, James Campbell, and five poster presentations featuring the early Hanford chemical processes:

Bismuth Phosphate Processes,
Uranium Recovery &
Ferrocyanide Scavenging

Jack Ryan (PNNL)

- Redox Process
- Purex Process
- Z-Plant Chemical Processes
- Fission Product Recovery Processes

Steve Buckingham (retired)
Milt Campbell (retired)
Thurman Cooper (FH)
Bill Winters (NHC)

The second session of the series will take place at the same location on May 14th from 5:30 to 7:30 pm. Highlights include group tours conducted through the museum, a reception honoring the Richland Section 50 year ACS members and five poster sessions featuring chemistry developments at Hanford in support of the early chemical processes:

- Fuel Element Cladding Removal
- Selected Fission Product Recovery Using Ion Exchange
- Volatile Radionuclide Control at Hanford
- Trans-Uranium Recovery by Ion Exchange
- Selected Analytical Processes at Hanford

John Swanson (PNNL)
Lane Bray (PNNL)

Randy Scheele (PNNL)
Jack Ryan (PNNL)
Dave Dodd (BH)

The third session (Chemistry of Cleanup) and fourth session (Chemistry Spinoffs) will be held in the fall. There will be no charge for section members or their guests for any of these activities.

It is our section's hope that by learning about Hanford's past we can be better prepared for the future.

Meeting Cont'd

focuses on chemistry in semiconductor manufacturing. It describes the wide range of materials it takes to build complex microchips. Chemistry of some basic chip manufacturing steps is discussed. The supporting role of analytical chemistry in sustaining manufacturing processes and assuring product quality is also described.

Robert K. Lowry received B.S. and M.S. degrees in chemistry in 1966 and 1969, respectively. He has 27 years experience at Harris Semiconductor, a major business segment of Harris Corporation and the eighth-largest domestic manufacturer of semiconductor devices. Mr. Lowry is currently a senior scientist and manager of the Harris Analytical Service Laboratories. He leads the laboratory team in microbeam and analytical chemical characterization of semiconductor materials, processes, and products, supporting device and process development activities, manufacturing methods improvements and process control, and

product quality and reliability studies. His areas of expertise include effects of trace contaminants in semiconductor process materials on device and package performance and trace microanalytical methods applied to thin films and devices. He holds 7 patents and has 50 publications in the area of semiconductor process materials, materials microanalysis, and contamination identification and control.

Dinner with the speaker before the meeting will be at the Ten Depot restaurant in LaGrande. Please contact Anna Cavinato at cavinato@eou.edu or at (541) 962-3561 if you are interested in attending the dinner. Steve Krogsrud is coordinating a ride-share pool for anyone wishing to get a ride, or provide a ride, to LaGrande. Steve may be reached at 372-2302 or skrogs@aol.com. A map showing the location of the Ackerman Hall is provided at the website <http://www2.eou.edu/visitors/mapflash1.html>, or may be obtained from Steve.

Picnic

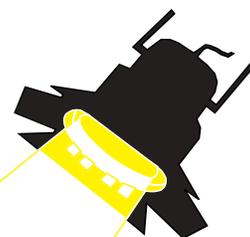
June 14th
Leslie Groves Park
Grilling at 5:30

Annual Membership Picnic

Please mark this upcoming annual event on your calendar! Come and bring the family to the Richland Section's picnic. Enjoy some burgers, play some volleyball or croquet, and meet some old and new friends. As we have done the past few years, the picnic will be co-hosted with the Columbia Valley Section of the American Institute of Chemical Engineers (AIChE). The picnic will be held in Leslie Groves Park, at the pavilion at the end of Park Street in Richland. Grilling will commence at 5:30 PM. Burgers, etc. will be provided. Please bring a dessert or side dish to share.



Emmett and Diane Moore visit with Suzanne Lomax, National Gallery of Art, at the reception following her talk at last month's meeting, while Elias Anastos pours Lee Burger a glass of wine.



News

James A. Campbell to Receive Chemist of the Year Award

James A. Campbell, who won the Richland Section's Chemist of the Year Award for 2001, will be presented with the award at a reception to be held at the CREHST museum on April 16th at 5:30 PM. The presentation and reception in Dr. Campbell's honor will be held in during the Perspectives of Chemistry at Hanford session, which is highlighted separately in this issue.



Dr. Campbell is employed at PNNL as a Senior Staff Scientist, where his research interests are in the area of trace organic analysis in difficult matrices (biological and environmental) using gas chromatography/mass spectrometry and liquid chromatography/mass spectrometry. He has supported the local section by organizing symposia at several of Northwest Regional meetings, Program Chair at the NORM meeting in La Grande in 1991, Exhibits Chair for the NORM in Pasco in 1998, coordinating efforts to promote chemistry to

high school students, and serving as section Chair in 1994. Dr. Campbell received his B.S. degree in chemistry from Montana State University in 1970 and then attended the University of Heidelberg, Heidelberg, West Germany under the Fulbright Scholarship Program. After working several years at PNNL, he returned to Montana State University and obtained his Ph.D. in 1983 in analytical chemistry. He has been employed at PNNL for 21 years.

Dr. Campbell, a native of Montana, resides in West Richland with his wife, Marty, and son, Lachlan. Please join us in recognizing Dr. Campbell on April 16th.

Recognition for 50 Year Members

On May 14th the Richland Section will recognize its 50-year members:

Richard E. Brandt
Edwin D. McClanahan
Bruce Griggs
William Y. Matsumoto

A reception will be held at 5:30 PM, the Richland CREHST museum, in conjunction with the "Perspectives of Chemistry at Hanford" series.

Hail & Farewell

We would like to welcome the following new members of the Richland Section: Phil Baird, Chunshe Cao, Dale O Connell, Robert Elkins, April Getty, Kelly Sullivan, Janos Szanyi, Stuart Arm, So Hirata, Jun Li, Xin Tan, Yu Long Xie, Hai Feng Zhang, Robert Harrison, Thomas Squier, and John Swope. We look forward to seeing each of you at future Richland Section Functions!

To the following members leaving the section, we wish the best of luck in their future endeavors: Hugh Ewart, Gary Gottfried, Amy Kimzey, Yal Su, Roy Mc Broom, Hai Luo, Nicolas Angell, Beverly Crawford, and John Darab.

Member Benefit

The popular, new ACS Salary Comparator is posted on the ACS Department of Career Services website <http://center.acs.org/applications/acskomparator/page01.cfm> and is available for ACS members only. It can provide answers to your salary-related questions by providing current information applicable to specific employment situations.

This new tool reports the complete range of full-time base salaries being paid to ACS members in a variety of jobs. The comparator gives attention to many specific factors that influence pay, including experience, level of education, professional specialties, job functions, types of employers, and geographic location. You can define an employment situation, and test potential effects of such things as getting an advanced degree or changes in your duties!

Coming Events

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| April 16 | Historical Perspectives of Chemistry at Hanford • Chemist of the Year Award and Reception |
| April 23 | Tour Speaker, Robert Lowry, Jr – Chemistry of Microelectronics |
| May 14 | Historical Perspectives of Chemistry at Hanford • 50 Year Member Reception |
| June 14 | Annual Picnic |
| June 19–22 | ACS Northwest Regional Meeting (NORM) http://www.gonzaga.edu/inlandacs/norm/norm.htm |
| September 24 | Tour Speaker, Dr. R. Bruce King – An Oxygen-17 NMR Study of Uranyl Hydrolysis & Gelation |
| November 4–9 | National Chemistry Week |

Richland Section Home Page

www.pnl.gov/acs/



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Point To Ponder

Nothing's perfect, but maybe if I aim for perfect, I'll end up with really good. —Lynn Johnston, cartoonist (*For Better for Worse*)