



# Richland Section American Chemical Society

spring 2006

**WHO:** Dr. Glen Fryxell  
**WHAT:** Environmental Research: From Laboratory to Manufacturing  
**WHEN:** February 16, 5:00 pm  
**WHERE:** Battelle Auditorium, Richland, WA

**About the talk:** The most important factor in determining quality of life in human society is the availability of pure, clean drinking water. Wars have been fought, and will continue to be fought, over access and control of clean water. Dr. Fryxell will speak on the work he has done on developing and commercializing sorbents which can remove heavy metal contamination from water. The sorbents are called "Self-Assembled Monolayers on Mesoporous Supports" (SAMMS), a powerful new class of sorbent materials for the selective sequestration of heavy metals and radionuclides.

Starting with a simple ceramic oxide backbone, Dr. Fryxell has been able to chemically modify the ceramic surface with self-assembling monolayers that are terminated with chemically selective ligands. The result is a sorbent with high surface area ( $1000 \text{ m}^2/\text{g}$ ) and high selectivity. Covalent chelation provides a strong driving force for sequestering a specific metal ion, and the close proximity of these ligands to one another allows for multiple metal-ligand interactions, further enhancing the ligand's affinity for a specific metal ion. By tailoring the nature of this interfacial ligand field, he was able to selectively remove different classes of metal ions and radionuclides.

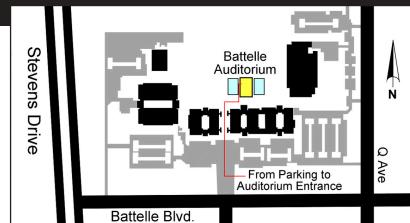
The SAMMS technology is quite versatile, and can be applied to a wide variety of potential applications in industry (e.g. "green" chemistry, "nanoreactors", catalyst recovery, etc.), medicine (controlled release, medical diagnostics, etc.), as well as enhancing sensing/detection (electrochemical, radiochemical, spectroscopic, etc.) and environmental cleanup. Dr. Fryxell will discuss commercialization of the SAMMS materials to remove mercury from waste streams and arsenic from drinking water.

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## SPRING DOUBLE FEATURE DOUBLE

As you will note on the calendar on the last page, this will be a busy year. This spring we start with two speaker meetings, the first by Dr. Glen Fryxell of PNNL, who will speak on the advancements he has made in creating selective absorbing materials. The second will be by ACS tour speaker Dr. Jim O'Brien, who will speak on chemistry in the Sherlock Holmes stories. If you wish to join either speaker at a no-host dinner after the talk, please contact William Samuels at 375-3857, bill.samuels@pnl.gov



**WHO:** Dr. Jim O'Brien  
**WHAT:** Chemistry in the Sherlock Holmes Stories  
**WHEN:** March 20, 5:00 pm  
**WHERE:** Battelle Auditorium, Richland, WA

**About the talk:** "Madam, you must stop painting your child's crib." These were the first words spoken by Sir Arthur Conan Doyle to a woman who had brought her listless infant daughter to the Edinburgh Medical School in 1912. Doyle, like his creation Sherlock Holmes, had acute deductive powers. His diagnosis of lead poisoning proved to be correct. Conan Doyle's first published medical article, in the British Medical Journal in



1879, dealt with poisons. His interest in chemistry is apparent in his fictional writings as well. Poisons, for example, are mentioned in 22 of the 60 Holmes tales. Numerous other chemicals are mentioned as well. Sherlock Holmes had a chemical "table" in his Baker Street quarters. Here he would relax by doing chemical analyses or syntheses. There is, in fact, so much chemistry in the Sherlock Holmes stories that practically every story has some, whether it be poisons, gems, brandy, acids, or even the famous 7% solution of cocaine. This lecture will discuss the scientific Holmes with quotes from the master himself as well as a few cartoons to illustrate that Asimov's assessment of Holmes as a "blundering chemist" is incorrect.

**About the Speaker:** Jim O'Brien was born on July 4, in Philadelphia, PA. He received a BS in Chemistry with honors from Villanova University and a Ph.D. in Chemistry from the University of Minnesota. Following postdoctoral work at the Los Alamos Scientific Laboratory in New Mexico, he joined the faculty at Southwest Missouri State University. Dr. O'Brien has received Southwest Missouri State University awards for Excellence in Research in 1989, 1994, and 1998. He has received Southwest Missouri State University awards for Excellence in Teaching in 1992 and 2001. In 2001 he also received the Governor of Missouri's Award for Teaching Excellence. In 2002 the university named him Distinguished Professor. He is now retired and devoting himself to the History of Chemistry, Golf, Bridge, Sherlock Holmes, Civil War History, and Walking (formerly running).

# Section Chair William Samuels



First and foremost, I would like to welcome everyone for another activities filled year. I would also like to thank outgoing Chair Tom Jones for guiding us through 2005, a year filled with many changes for the Richland Section.

For years, our Section's major community outreach activity has been an interactive display at Family-A-Fair. Family-A-Fair was a public exhibition at Pasco's TRAC building that attracted thousands of visitors, and our table was always a favorite. This year's cancellation of Family-A-Fair was filled in with our support of the Friends of the Richland Public Library's Sunday opening campaign. In honor of Mole Day, on October 22, 2005, the Section ran an open house at the library, and through donations, was able to pay for the library's Sunday operation for that day.

Another major change occurred in the way the Section supports college students wishing to attend a regional or national ACS meeting. In the past, financial support had been provided on a school-by-school basis. Now, however, support is provided to the students, through their school, based on a summary provided by the student of the paper or poster they wish to present at the meeting. This will potentially allow the section to support students at more schools. Eight applications for support were received under the new format, all from Eastern Oregon University (EOU). The students will bring their posters to our April 21<sup>st</sup> meeting where the

Section members will be able to discuss their research with the students. At the April 21<sup>st</sup> meeting the Section will also honor chemists who have attained 50 year membership in the society.

On a financial note, the Section in March voted to move our assets from CD's to the ACS Investment Pool. The result was a substantial increase in investment income for 2005 compared to 2004. This, plus lower than planned spending, resulted in a small (preliminary) surplus for the past year.

To reward treasurer Jeff Woodford for the first operating surplus in recent memory, he has been elected to Chair-elect (or was it that he ran unopposed?). Sam Bryan, thinking that he could retire after being past-chair last year, has taken over from Jeff as the Treasurer. Bruce McNamara, Dick Hermes, Anna Cavinato, and Tim Hubler will continue in their same capacity on the Section's Board. Therese Clauss has joined the board and will be working as our membership chair, with the intent of not only increasing membership but improving our data base of members' snail mail and E-Mail addresses. There is a short description of what she needs for the membership on the last page of the newsletter. Steve Krogstrup has agreed to continue to lead our publicity and quarterly newsletter efforts. Those of you who attended the section's volunteer night at the Ice Harbor Brewery in December know that Steve received an ACS Salute for Excellence Award for his past service. Let me not be the last to thank Steve for the monumental task of generating our newsletter and to say how happy I am that he is continuing on with this effort.

The proposed budget for CY-2006 is shown on the insert and will be up for approval at our Meeting on February

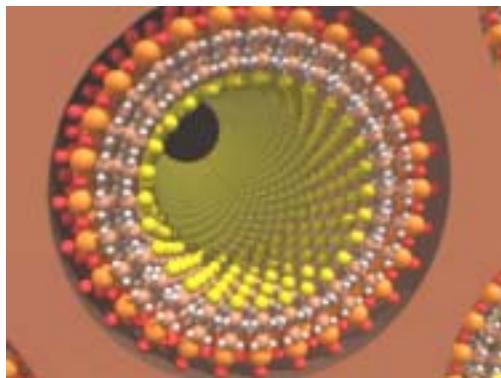
16, 2006. The section's total income is projected to be approximately \$12,000. Approximately three quarters of the budget comes from National ACS annual allotment and voluntary Section dues. The remaining income is derived primarily from our funds in the ACS investment pool and reimbursement of Councilor travel by the National ACS. The Section's expenses do not differ greatly from year to year, but this year with four ACS tour Speakers and our projected donation to the National High School Teachers Fund being started this year will increase our projected expenses.

There are five scheduled speaker meetings this year. The first speaker is Dr. Glen Fryxell of PNNL, who will be speaking February 16<sup>th</sup> on his research on the modification of surfaces to selectively remove hazardous/toxic chemicals and the process of industrialization of this technology for environmental cleanup. Further, we have four ACS Tour speakers planned this year. The speakers, topics, and dates are on the calendar on the last page. The speakers are nationally recognized members in their field and the talks should be of interest to a wide spectrum of our membership and community. I encourage each of you to attend these talks and the dinners after the talks. The section has planned two social functions, our annual picnic with the Chemical Engineers and the December Volunteers Recognition evening.

The Section continues to be involved in a number of educational and other activities throughout our area. Everything that is known at this time is listed on the calendar on the last page.

As always the Section and the activities we support need your help, so expect that there will be continuing requests for you to volunteer.

## Fryxell Talk from page 1



Close-up of a functionalized pore in SAMMS.

**About the Speaker:** Dr. Fryxell, a native of Texas, earned a PhD in organic chemistry at the University of North Carolina. He has been at Pacific Northwest National Laboratory (PNNL) for the last 17 years, working primarily in the area of nanostructured materials, surface chemistry, silane chemistry, the interfacial elaboration of self-assembled monolayers, and organic synthesis. His work has been reported in front line journals such as Science, Journal of the American Chemical Society, Langmuir, Chemistry of Materials, and Environmental Science & Technology; as well as being highlighted in Chemical and Engineering News, Popular Science, Business Week, Discover Magazine, Environmental Health Perspectives, and Scientific American. His work has been recognized in part with an Environmental Business Journal Technology Merit Award (2004), R&D 100 Award for SAMMS (1998), Key Contributor Awards in 2000, 2001 and 2002, multiple Outstanding Performance Awards for technical achievement and mentoring, and the PNNL Director's Award for Excellence (1994). He is named as inventor in 11 patents, and has more than 100 publications.

# Bob Moore In Memorium



**Robert Lee Moore  
1920 – 2006**

Members of the Richland Section lost a coworker, mentor, and friend and the Section lost its founder with the death of Robert Lee "Bob" Moore on January 21<sup>st</sup>. He was 85.

Moore grew up in the small Texas town of Saint Jo. He earned Bachelors degrees in both chemistry and mathematics from North Texas State Teachers College. Then it was on to the University of Texas, Austin, where he completed his Ph.D. in Physical Chemistry in 1947. Upon graduation, Moore accepted a job with General Electric at Hanford, where plutonium production was increasing due to the coming Cold War. At that time, the Tri-Cities had changed little from the war years. There was little commercial entertainment, but there were lots of clubs and activities. Quoting from Moore's autobiography, As I Knew Him, "There was a club for almost any hobby or activity... There was one group though that was missing, a local chapter of the American Chemical Society. I had joined the ACS while a student at the University of Texas, ... and was shocked that there wasn't a local section in Richland, particularly considering the large number of chemists and chemical engineers on site." Moore organized the chemists, filed the paperwork, and in 1948 the Richland Section was born. The members promptly elected Moore as the Section's first Chairman.

While at Hanford Moore worked on many projects, but the one he was most proud of was his role in developing the PUREX process (Plutonium Uranium Recovery by EXtraction). This process used tributyl phosphate as a solvent for the separation of Pu and U from fission products and was more efficient and produced less waste than the earlier processes. The process was still in use when Hanford ended Pu production in 1989.

Besides science, flying (mainly gliders) was a major love in Moore's life. He build a flyable glider while still in high school, and over his lifetime logged more than 5,000 hours of flight time. He won many soaring competitions and set several records. Also an accomplished photographer, dramatic photos of sailplanes in flight taken in the air by Moore have appeared in several magazines.

## 2006 Richland Officers

Listed below are the newly elected section officers. As their job is to make the section's activities of more value to you, please contact them with your ideas!

### **Chair**

William Samuels, (509) 375-3857  
email: bill.samuels@pnl.gov

### **Chair-Elect**

Jeff Woodford, (541) 962-3321  
email: jwoodfor@eou.edu

### **Secretary**

Bruce McNamara, (509) 376-1408  
email: Burce.McNamara@pnl.gov

### **Treasurer**

Samuel Bryan, (509) 376-6949  
email: sam.bryan@pnl.gov

### **Councilor**

Richard Hermens, (541) 963-6716  
email: rhermens@granderonde.com

### **Alt Councilor**

Tim Hubler, (509) 373-0249  
email: tim.hubler@pnl.gov

Later in life, Moore decided to give back to the community by supporting the educational infrastructure in the Tri-Cities. Students can learn about astronomy "hands-on" at Columbia Basin College's (CBC) observatory funded by Moore and named for him and his late wife, Elisabeth. Moore also donated over \$1 million to CBC for their Institute for Science Education program.

Again quoting from Moore's autobiography, "I feel that our only claims to immortality are the consequences of the things we did while alive, the expanding waves we made while living." The waves made by Moore's life will be visible for some time to come.

# [www.pnl.gov/acs](http://www.pnl.gov/acs)

Have you visited our Section website lately? There you can find more detailed information on the calendar items listed below, newsletter archives, as well as a manifold of other information.

## How To Update Your Address

Happy New Year! Since this is the first newsletter of 2006 we thought this would be a great time to update our ACS contact information. If you have a new mailing address, phone number, or email address, please send your corrections to the section membership chair, Therese Clauss at: ACS\_Richland\_Section@rl.gov, so that we can keep our mailing list current.

Also, if you haven't checked out the ACS web site, it's a great place to visit [www.acs.org](http://www.acs.org). While you're there, you can update your information on the national ACS roster. The roster is updated monthly and is our main source of information for local section members. Thanks for your help. This will help ensure that every member receives important announcements and the local section newsletter.

## Coming Events

- |                     |  |
|---------------------|--|
| <b>February 6</b>   | <b>Glen Fryxell – ACS Speaker Meeting – Environmental Research: From Laboratory to Manufacturing</b>   |
| <b>February 24</b>  | <b>Bonnie Dunbar (Former NASA Astronaut and CEO, Museum of Flight) Dinner talk hosted by Society of Women Engineers –</b><br>Contact Dennis Wester (376-7195, dennis.wester@pnl.gov) for details and tickets |
| <b>March 9–11</b>   | <b>51<sup>st</sup> annual Mid-Columbia Regional Science and Engineering Fair –</b><br>Judges needed for chemistry exhibits, Contact Bill Samuels (375-3857, bill.samuels@pnl.gov)                            |
| <b>March 20</b>     | <b>James O'Brien – ACS Speaker Meeting – Chemistry in the Sherlock Holmes Stories</b>  |
| <b>April 21</b>     | <b>Recognition of 50 Year Members and Student Posters</b>  |
| <b>May 2</b>        | <b>Donald Burns – ACS Speaker Meeting – Counterfeiting – Catch 'em with Near-IR</b>  |
| <b>June 9</b>       | <b>Annual Section Picnic with AIChE</b>  |
| <b>September 21</b> | <b>William Zoller – ACS Speaker Meeting – The Eruption of Mt. St. Helens: Chemistry and Atmospheric Implications</b>   |
| <b>October 23</b>   | <b>Carolyn Fisher – ACS Speaker Meeting – Spices &amp; Herbs: Chemistry &amp; Health</b>   |
| <b>December 7</b>   | <b>Volunteer Appreciation Night</b>  |

**Richland Section  
Home Page**

[www.pnl.gov/acs/](http://www.pnl.gov/acs/)



Richland Section  
American Chemical Society  
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## Point To Ponder

When choosing between two evils, I always like to try the one I've never tried before – Mae West, American Actress

	<b>2006 Budget Proposed</b>	<b>2005 Budget</b>	<b>2005 Actual</b>
			<b>Total</b>
<b>INCOME</b>			
Annual ACS Allotment	6400	\$6,150.00	\$6,327.00
New Member/Affiliates Commissions		\$0.00	\$0.00
Interest: Checking & Savings (Banner)	100	\$40.00	\$152.16
CDs (Yakima FS&L)	0	\$320.00	\$78.13
ACS Investment Pool	2000	\$0.00	\$678.14
Newsletter (advertising)		\$0.00	\$0.00
Misc. (refunds, events, e.g., NCW)	1700	\$1,700.00	\$2,108.67
Northwest Regional Meeting		\$0.00	\$0.00
Fund Raising / Donations		\$0.00	\$0.00
Voluntary Section Dues	1800	\$1,750.00	\$1,772.50
<b>TOTAL INCOME</b>	<b>12000</b>	<b>\$9,960.00</b>	<b>\$11,116.60</b>
<b>EXPENSES</b>			
Administrative	50	\$50.00	\$0.00
Local Meetings			
Speakers	1200	\$900.00	\$600.00
Arrangements	500	\$500.00	\$87.42
Regional Meeting (NORM)		\$0.00	\$0.00
Awards	200	\$230.00	\$156.28
TCTC Dues	45	\$45.00	\$45.00
TCTC Teacher Grants	300	\$0.00	\$0.00
Newsletter	1300	\$1,200.00	\$1,161.38
Education			
NCW, Family-a-Fair, K-12 outreach	1000	\$1,000.00	\$624.57
Olympiad	50	\$50.00	\$25.00
Science Fair	200	\$200.00	\$200.00
<b>HS Teacher Endowment Fund</b>	<b>500</b>	<b>\$0.00</b>	<b>\$0.00</b>
Travel			
Councilors	3500	\$3,500.00	\$3,106.04
Section Officers	750	\$650.00	\$647.41
Student Affiliate Travel	1600	\$2,500.00	\$2,500.00
Other			
ACS Picnic	200	\$200.00	\$162.50
ACS Annual meeting pizza social	300	\$0.00	\$562.95
50-Year Celebration/National Award	350	\$300.00	\$334.15
Mini-Symposium		\$0.00	\$0.00
Public Relations	150	\$50.00	\$156.95
Women and Minority Affairs Cmte	500	\$500.00	\$500.00
Project SEED		\$0.00	\$0.00
<b>TOTAL EXPENSES</b>	<b>12695</b>	<b>\$11,875.00</b>	<b>\$10,869.65</b>
<b>NET GAIN (LOSS)</b>	<b>(\$695.00)</b>	<b>(\$1,915.00)</b>	<b>\$246.95</b>
<b>ASSETS/LIABILITIES</b>	<b>2006Final</b>	<b>2005 Final</b>	<b>2004 Final</b>
CD1 (Yakima FS&L) 03-90026042	0	\$0.00	\$22,795.78
Savings (Banner Bank) 326094011	9200	\$8,262.83	\$1,498.11
Checking (Banner Bank) 300122713	350	\$762.04	\$162.17
ACS Investment Pool	16000	\$15,678.14	\$0.00
Liabilities			
<b>TOTAL ASSETS</b>		<b>\$24,703.01</b>	<b>\$24,456.06</b>