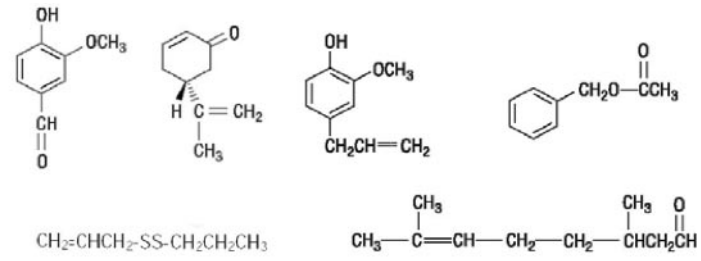
Richland Section
American Chemical Society
fall 2006

Spices & Herbs: Chemistry & Health with Dr. Carolyn Fisher

When: October 25, 2006 at 7:00 PM
Where: Battelle Auditorium, Richland, Washington



Can You Match These Flavor Structures and Pictures?

Answers on Page 2

Adapted from ChemMatters, December, 2001
www.chemistry.org

About the Talk: Dr. Fisher will present a general overview of the components of spices and herbs, along with their attributes for the food industry. Bioactivites of these components will be discussed, with emphasis on antimicrobial, antioxidant and anticarcinogenic activities.

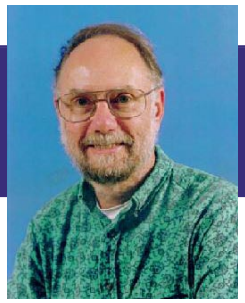
About the Speaker: Carolyn Fisher received her B.S. in 1972 from Wayne State University and Ph.D. in 1978 from Stanford University. She was engaged in the research of separations at Kalsec, Inc, from 1978 to 1991. She began with the purification and analysis of hop compounds and went on to establish HPLC separation procedures for many different spice extracts. For example, she has developed an economic process for the production of purified capsicum extracts. In collaboration with researchers at Rutgers and the University of Illinois, Urbana-Champaign, spice compounds isolated by Dr. Fisher were tested for anticarcinogenic activity. At the University of Delaware from 1992 to 1996, she continued her work on phenolic compounds isolated from plants and how they affect our food and health. During this period she wrote the book Food Flavours: Biology & Chemistry. Currently employed at McCormick & Co., her responsibilities encompass quality systems for industrial flavors, and coordinating efforts between production, product development and research groups.

Those wishing to have dinner with Dr. Fisher before the talk should contact William Samuels at (509) 375-3857, or bill.samuels@pnl.gov.

THE ERUPTION OF MT. ST. HELENS: CHEMISTRY AND ATMOSPHERIC IMPLICATIONS

with Dr. Bill Zoller

When: September 27, 2006 at 7:00 PM
Where: Huber Auditorium BH102,
Eastern Oregon University,
LaGrande, Oregon



About the Talk: The 1980 eruption of Mt. St. Helens was sampled on the day of the eruption using a NASA U2 aircraft in the stratosphere with filter collector and several weeks later using a NASA P3 aircraft loaded with instruments and scientists to collect air samples and measure chemical compounds. The initial filter samples were analyzed by Instrumental Neutron Activation Analysis to determine the trace elements present, and extracted with water and analyzed by ion chromatography for ions. When the crater cooled sufficiently, Dr. Zoller was among the scientists who landed by helicopter in the crater and conducted additional sampling. Dr. Zoller will discuss the results and implications of the chemical analyses done due to the eruption.

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ZOLLER TALK CONT'D

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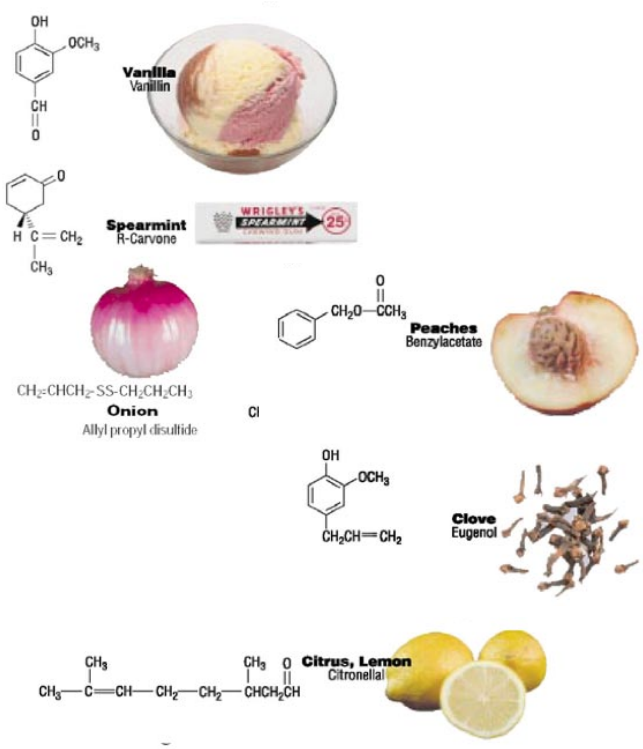
The talk will also present slides taken inside the crater in early 1980, as well as 1981 and 1982 during follow up missions, to observe the cooling trend in the volcano and decrease in out gassing of volatile compounds.

About the Speaker: Bill Zoller was born in Cedar Rapids, Iowa, but grew up in Alaska during the 1950's and 60's. He earned an undergraduate degree in chemistry from the University of Alaska in 1965 and a Ph.D. in nuclear chemistry from Massachusetts Institute of Technology in 1969. After a brief post doc at the University of Hawaii, he joined the faculty at the University of Maryland in 1970. While at Maryland he published numerous research papers and led research programs in urban air pollution, volcanic chemistry, and atmospheric chemistry in Antartica. His research also covered the measurement of radioisotopes in the environment from atmospheric weapons testing and reactor accidents, such as Chernobyl in the former Soviet Union. In 1984 he moved to the University of Washington in Seattle, where he is presently Professor of Chemistry.

Those wishing to have dinner with Dr. Zoller before the talk should contact Jeff Woodford at (541) 962-3321, or jwoodfor@eou.edu

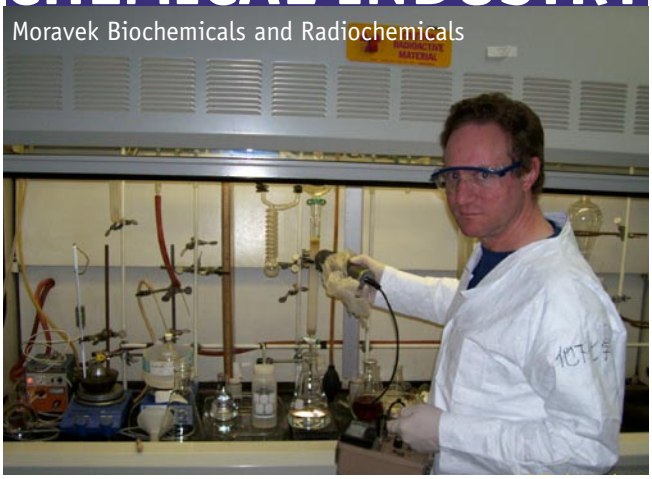
PUZZLE ANSWERS

from page 1



FOCUS ON LOCAL CHEMICAL INDUSTRY

Moravek Biochemicals and Radiochemicals



Lab director John Heaney demonstrates detecting labled compounds on a column.

When you think of chemistry in the Tri-Cities, you probably don't think of Moravek Biochemicals and Radiochemicals in Richland. Although not a household name, Moravek is certainly doing some interesting chemistry. Based in Brea, California, Moravek is in the business of providing radiologically labeled compounds using ^{13}C, ^{14}C, ^{3}H (tritium), ^{15}N, and ^{35}S. The branch lab in Richland, which employs three chemists and has been in operation since 1998, specializes in compounds with tritium and ^{14}C.

Recently staff from the Richland Section Newsletter visited Moravek and spoke with laboratory director John Heaney. Besides being lab director, Heaney also does the ^{14}C syntheses.

Newsletter: ***Why did Moravek choose Richland for a branch lab? Was there a Hanford connection?***

Heaney: No, no Hanford connection. The company that disposes of our rad waste has an office here, but I don't think that was a major factor. I think it was the overall business climate and the good deal from the Port of Benton. We don't depend on any local supplier for our starting materials. Our carbon comes from Russia as barium carbonate, $Ba^{14}CO_3$, which we convert to carbon dioxide with acid. Our tritium comes from Canada as uranium hydride, which either absorbs or gives off hydrogen depending on the temperature.

Newsletter: ***Who are your customers and why do they want labeled compounds?***

Heaney: We have a world-wide client base that is pretty varied, but I would say that 70% of our business is with pharmaceutical companies. The thing that makes labeled compounds so useful is that they are so easy to detect at extremely low levels with simple monitoring equipment. For example, suppose you are an agri-chemical company that is developing a new pesticide. Before it is licensed, the government will want to know how much of the pesticide will remain on the crop after harvest. So you would use radioactively labeled pesticide on a test plot just as a farmer would. At harvest the crop can be homogenized to get a representative sample and the amount of pesticide remaining determined with a radiation detector. This is far simpler than trying to isolate and identify a compound at the parts per billion level in a complex organic matrix. Also, the fate of the compound can be determined by following where the radiation goes. This is particularly useful for pharmaceutical companies, who need to know where a drug may accumulate and what the metabolites are.

Newsletter: ***Are there many companies in this business?***

Heaney: There are only a handful of companies world-wide that do what we do. I think that's because to do this work you have to be adept at several different disciplines. We do classical organic synthesis, but at the millimole or micromole level. Additionally, you need to be a good radiochemist and analytical chemist too!

Newsletter: ***Thanks for letting us know something about your company and the work you are doing.***

Heaney: My pleasure.

Newsletter: For our reader's information, Moravek's website is **www.moravek.com**.

MEETINGS local, regional & national

Last April's meeting to recognize our Section's 50 year members was well attended. In addition to honoring the 50 year members, attendees were able to meet and talk with chemistry students from Eastern Oregon U., who came with posters of their research projects.

At the Northwest Regional Meeting (NORM) held in Reno, Nevada, last June, PNNL chemist Glen Fryxell received the Regional Industrial Innovation Award for developing and commercializing Self-Assembled Monolayers on Mesoporous Supports (SAMMS), a powerful new class of sorbent materials for the selective sequestration of heavy metals and radionuclides . Dr. Fryxell gave a talk on his work to the Richland Section last February. At the Reno meeting, the Richland Section also had a booth to build interest for the June 2007 NORM to be held in Boise, ID which will be co-located with the Regional AAAS (American Association for the Advancement of Science Pacific Division) meeting, expanding members' participation to both strong technical programs.

As this newsletter goes to press, final arrangements are underway for the ACS national meeting in San Francisco (Sept 10 – 14). News from the meeting of local interest will be reported in the next newsletter. It should be noted that the Richland Section has been selected as a finalist for a ChemLuninary Award for our section's work last year demonstrating outstanding advocacy on behalf of women and minorities in the chemical sciences.

NCW 2006

NATIONAL CHEMISTRY WEEK

OCTOBER 22-28

"YOUR HOME-IT'S ALL BUILT ON CHEMISTRY"

Each year National Chemistry Week reaches millions of people with positive messages about the contributions of chemistry.

This fall the Richland Section will conduct an array of educational and promotional activities. This year's National Chemistry Week Coordinator for the Richland Section is Kayte Denslow (375-2232, Kayte.denslow@pnl.gov).

One activity the Richland Section will sponsor this fall is training for Boy and Girl Scouts for the Chemistry merit badge. Tentative plans are for the Chemistry merit badge to be offered two weekends in November. If you would like to help with this outreach, or would like more information, please contact Steve Krogsrud (372-2302, laroy_s_steve_krogsrud@rl.gov.

We also plan to coordinate with local schools for outreach activities. The more volunteers we have, the more impact we can have! Please contact Kayte Denslow to volunteer and join in the celebration of NCW 2006!

TOP LEFT: *Members and student affiliates at the Richland Section's April meeting.*

MIDDLE LEFT: *Glen Fryxell receives the 2006 Northwest Regional Industrial Innovation Award from Howard Peters, ACS Board of Directors.*

BELOW: *Fifty year members present at the April meeting are from left, Fred Brauer, Lee Burger, Joseph Soldat, Peter Jackson, Paul Gruzensky, and Jack Ryan.*

50 YEAR MEMBERS

HAIL AND FAREWELL

The Richland Section would like to welcome the following new members: **Eddie Baker, David Beaver, Amy Bjerke, James Blanchard, Brienne Bottens, Jie Ding, Latifa Douali, Bryan Ham, David Heldebrant, Dean Hicks, Gregory Jungclaus, Bruce Kaiser, Ryan Kelly, Greg Kimmel, Alexander Laskin, Yigal Lilach, Roberto Lins, Yong Liu, Jun Liu, Angie Melville, Carl Meyer, Karen Noyes, Daniel Orton, Shane Peper, Anthony Scott, Younsoon Shin, Thereza Soares, Terri Stweart, James Strohm, Cornelius Swift, Mingkang Tsai, Xianqin Wang, Jun Wang, Xiao-Ying yu, Hua Zhai,** and **Zongchao Zhang**. We look forward to seeing each of you at future Section functions.

We wish departing members **Eric Ackerman, Mikhail Alnajjar, Andrea Choiniere, Greg Coffey, Matthew Edwards, Mark Englemann, James Fredrickson, Matthew Henry, Yehia Ibrahim, Loren Lund, Janice Owens, Ying Peng, Ashley Stowe,** and **Theresa Windus** the best of luck in their future endeavors.

CHEMISTRY CLUB

High School Chemistry Club for your local school?

The High School office at ACS is interested in hearing from high school chemistry departments that might be interested in sponsoring ACS-Sponsored High School Chemistry Club. We would also like to speak to any local section members interested in helping an area high school establish an ACS-Sponsored High School Chemistry Club. Want to learn more? We would enjoy hearing from you at **education@acs.org**

COMING EVENTS

SEPTEMBER 27	**William Zoller** - ACS Speaker Meeting - The Eruption of Mr. St. Helens: Chemistry and Atmospheric Implications
OCTOBER 25	**Carolyn Fisher** - ACS Speaker Meeting - Spices & Herbs: Chemistry & Health
DECEMBER 7	**Volunteer Appreciation Night**

Richland Section Home Page **www.pnl.gov/acs/**

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American Chemical Society
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Point to Ponder

Who is wise? He that learns from everyone. Who is powerful? He that governs his passions. Who is rich? He who is content. Who is that? Nobody.
– Benjamin Franklin