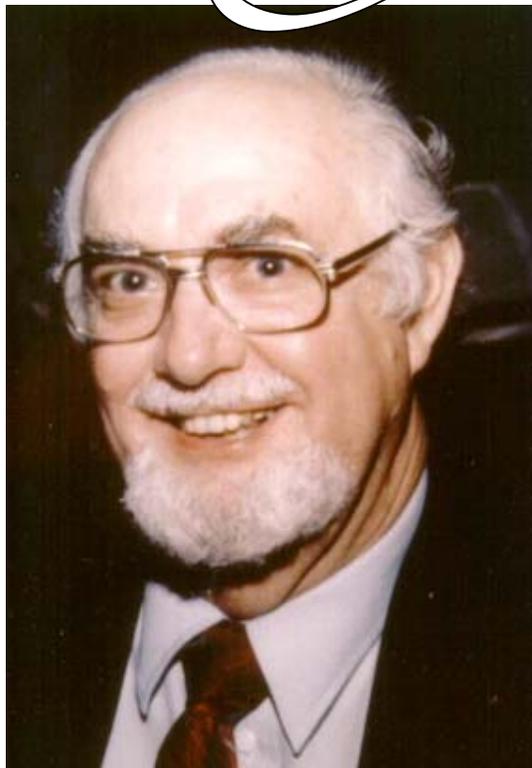




# Richland Section American Chemical Society

summer 2006

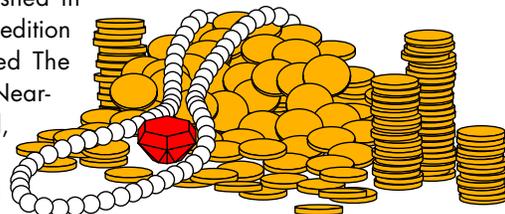


## Shedding Some Light on Counterfeiting **Catch'em with Near-IR**

**About the Talk:** A hundred years ago a prospector declared, "There's gold in them thar hills." And today chemists working in the Near-IR region can say, "there's hidden information in them thar spectra." And it's enough to identify counterfeit currency, fake turquoise, non-Cuban cigars, illegitimate drugs (e.g., Viagra), and imitation ivory (among other materials), and—get this—Iberian swine diet. It all began at Los Alamos National Laboratory when it became known that a nearly perfect counterfeit \$100 bill (known as the Supernote) was defying detection at the nation's federal reserve banks. NIR to the rescue. The author will show how NIR detected both \$20 and \$100 bills by diffuse reflectance. Then he'll show his astonishment at a method of distinguishing genuine turquoise jewelry (big business in Southwestern US) from colored plastic. It shouldn't be necessary to subject a suspect gemstone to conditions inside a red-hot crucible to identify it as real or fake. Such a display on a local television station prompted him to substitute 30-second non-invasive NIR for the torch, and it worked.

Anyone wishing to have dinner with Dr. Burns before the talk should contact Bill Samuels at 375-3857 or [bill.samuels@pnl.gov](mailto:bill.samuels@pnl.gov).

**About the Speaker:** Donald A. Burns was born and raised in Alexandria Bay, NY—the site of the Thousand Islands in the St Lawrence River bordering Canada. Education: Central College (Pella IA), Syracuse Univ - AB in chemistry, Univ of Puget Sound (Tacoma WA) - MS in organic chemistry, Purdue Univ - PhD in biochemistry. Dr. Burns has held such positions as Sr Scientist at National Cash Register Co (Dayton, OH), Research Associate at Dover Medical Research Center (Dover, DE), Manager of Scientific Instrumentation at Abbot Laboratories (N Chicago, IL), various positions at Technicon Instruments Corp (Tarrytown, NY), and Staff Scientist at Los Alamos National Laboratory. Dr. Burns has authored ten book chapters, been awarded nine patents, written dozens of journal articles, and given scores of presentations on such subjects as Near-IR, automated sample preparation, and automation/computerization of analytical schemes, many incorporating Segmented Flow Analysis (SFA) in combination with chromatography. He won an IR-100 award for FAST-LC (Fully Automated Sample Treatment for Liquid Chromatography). He is senior editor of the "Handbook of Near-Infrared Analysis," 2nd edition published in 2001 by Marcel Dekker Inc (814 pages; 3rd edition now in preparation). In 1990 he received The Eastern Analytical Symposium Award in Near-Infrared Spectroscopy. Dr. Burns is retired, but remains affiliated with Los Alamos National Lab and stays active by teaching Near-IR Workshops.



**WHO:**  
Dr. Donald A. Burns

**WHAT:**  
Counterfeiting –  
Catch'em with Near-IR

**WHEN:**  
May 2, 7:00 pm

**WHERE:**  
Columbia Basin College  
Library Building Auditorium

[http://www.columbiabasin.edu/docs/cbc\\_pasco\\_map\\_new.pdf](http://www.columbiabasin.edu/docs/cbc_pasco_map_new.pdf)

**April 21** Details Inside  
**50 Year Member Reception**

# Section Event 50 Year Members

**WHO: All Section Members and Their Guests**

**WHAT: Recognize Our 50 Year Members and Student Chemists**

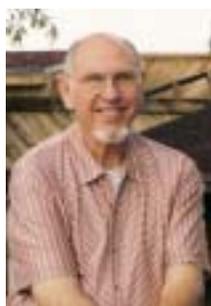
**WHEN: 5 – 7 pm, Friday April 21**

**WHERE: WSU Richland Campus,  
West Building Atrium (next to Patio)**

Both ends of the career experience spectrum will be celebrated at a reception to be held April 21, 2006, from 5 to 7 PM at the Washington State University campus in Richland. (Go north on George Washington Way. Turn right on Sprout Road. Turn left into the auditorium parking lot. The reception will be in the atrium of the West Building, next to the patio). At this social we will be presenting 50-year membership awards to Paul M. Gruzensky and Peter O. Jackson. In addition, students from the Eastern Oregon University (EOU) Chemistry Department and also from Columbia Basin College (CBC) will be on hand to discuss their research projects. Refreshments will be served.



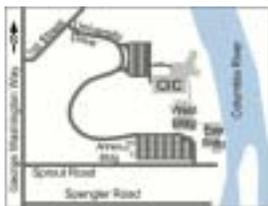
**Paul Gruzensky** grew up in Oregon and earned a bachelor's degree in chemistry from Walla Walla College in 1948. He then went on to receive a PhD from Oregon State University. He was employed at National Bureau of Standards in Boulder, Colorado until 1977, when he became head of product development for Great Western Inorganics in Golden, Colorado. He now lives in Walla Walla. He is married and has four grown children.



**Peter Jackson** is a native of San Francisco. He studied chemistry at the University of California, Berkeley, where his interest in radiochemistry was stimulated by the professor of one of his classes, Glen Seaborg. After graduating from Berkeley in 1952, Jackson worked for a time at Livermore and then started here at Hanford with General Electric in 1954. Jackson lives in Pasco, is married, and has three grown children.

The students from EOU will bring poster presentations of their research projects and are looking forward to discussing them informally. The student ACS affiliate at EOU is quite an award winning group (see picture to the right).

Washington State University TriCities  
<http://www.tricity.wsu.edu/kiosk/MainMap.htm>



## Students to Present Posters

The students and their projects are:

### Meaghan Hammers

Detecting deep muscle bruising in salmon by near infrared spectroscopy.

### Tara Boethin

Nonlethal screening method for detection of bacterial kidney disease in Pacific salmon.

### Amanda Justesen

Rapid near infrared spectroscopic method for the detection of spoilage in rainbow trout filet.

### Melanie Brook

Structural elucidation of the pyrazoline alkaloids from *Heliotropium convolvulaceum*.

### Ashley Jones and Danielle Kelley

Determination and comparison of pyrrolizidine alkaloids from Pacific Northwest *Seneciod* taxa.

### Matt Bechaver and Julia Deutsch

Inner-sphere redox reactions of cytochrome c'.

### Arianne Tiwari and Amy Servid

Heme coordination chemistry of ferric cytochromes c'.

### Zach Goude

The Fourier Grid Hamiltonian method for calculation of vibrational frequencies in nitromalonamide.

### Erika Zink and Ryan Clark

A study of the volatile constituents of noble fir needle oil.

## EOU Students Honored in Atlanta



The EOU student affiliate chapter was honored at the ACS national meeting in Atlanta with a commendable award for activities performed during the previous year. From left to right: Ricard Tache, Amanda Justesen, Julia Deutsch, Tara Boethin, Jeff Woodford, Anna Cavinato and Matt Bechaver.



## 2006 National Chemistry Week

### Your Home – It's All Built on Chemistry

October seems far away, but it and National Chemistry Week (NCW) will be here before we know it. Each year the American Chemical Society's NCW campaign reaches millions of people with positive messages about the contributions of chemistry to their daily lives. It is the one time during the year that chemists unite with the common goal of spreading the word that chemistry is good for our economy, our health, and our well-being. The celebration dates for 2006 are October 22 – 28 with the theme, "Your Home—It's All Built on Chemistry".

Planning for NCW is starting now. Contact Ms. Kayte Denslow, 375-2232 or [kayte.denslow@pnl.gov](mailto:kayte.denslow@pnl.gov) for more information. Please join the celebration!

## Science Fair Honors

### Richland Section Honors Student Science Fair Projects

Each year the Richland Section presents its own awards to the students with the best chemistry related projects at the Mid-Columbia Science Fair. This year the Section presented awards to three students for their projects at the Fair held March 19, 2006, at the Columbia Center Mall. The clear winner of the middle school classification was Ms. Caroline Exarhos of Christ the King with her entry: "Can Different Foods Act as Natural pH Indicators?" In the senior high classification the judges felt that there were two outstanding entries: Naomi Velasco of Sunnyside HS for her project "Chromatography of Food Dyes in Candy" and Shruthi Baskaran of Kennewick HS for "Synthesis and Characterization of Biodiesels." The winners received a copy of either the Handbook of Chemistry and Physics or a Merck Index from the Section. In addition, the section recognized four individuals with Honorable Mention in the middle school classification and three students in the senior high school classification. Ms. Baskaran was the overall winner for the entire Science Fair competition. Both Ms. Baskaran and Ms. Velasco will take their projects to the State competition.

Judging for the Section were Tom Jones, Bruce McNamara, Therese Clauss, Lee Burger, Charles Soderquist, Heather Mottaz and William Samuels.

## Councilor Report ACS National Meeting

By Richard Hermens,  
Richland Section Councilor

12,546 people attended the ACS national meeting in Atlanta, Georgia, as of 11:00 AM Wednesday, March 29. Three major items of business took place at this meeting.

1. Two nominees for President Elect were selected by the council from the four submitted by the Committee on Nominations and Elections. The two that were voted to appear on the fall ballot are Bruce E. Bursten and Bassam Z. Shakhshiri. The ACS membership will vote for one of these in the fall. There are hints that there will be petition candidates placing their name on the ballot if they get a sufficient number of folks signing their petitions.

2. The dues for 2007 will be \$132 per member. This is in an increase due to the CPI index.

3. A year after the tragedy of 9-11, the Board of Directors placed a special assessment of \$8.00 per member due to the decrease in revenues of the Society. It has been decreased to \$4.00 per member for the next year. It has a sunset clause that will terminate this special assessment at the end of 2007.

There were 1164 papers/posters presented by undergraduate student affiliates. This is the largest number ever by this group. For job searches, there were 1247 applicants interviewing for 197 positions. Only 72 employers took part and scheduled 1180 interviews. The number of applicants stays about the same but the number employers and positions seem to be decreasing.

Currently, there are 158,433 members in the Society.

The Board considered an opportunity to participate in a community building activity in the San Francisco Bay Area while attending the fall 2006 ACS National Meeting September 10-14, 2006, in San Francisco. The activity, to be planned by local section organizers, focuses on the National Chemistry Week theme: "Your Home: It's all Built on Chemistry." The Board plans to readjust its schedule to allow for participation by its members.

## Hail & Farewell

We would like to welcome the following new members of the Richland Section: **Weigang Lu, Jason Merriman, Jon Schwantes, Erin Baker, and Dunyou Wang.**

We wish departing members **Theodore Richerzhagen, Susan Tao, and Tykhon Zubkov** the best of luck in their future endeavors.

## June 9 Member Picnic



**Don't forget to mark the annual Section picnic on your calendar! It will be on Friday evening, June 9, at Leslie Groves Park in Richland. Details will be provided as the date draws near.**

## Coming Events

- April 21** Recognition of 50 Year Members and Student Posters
- May 2** Donald Burns – ACS Speaker Meeting – Counterfeiting – Catch ‘em with Near-IR
- June 9** Annual Section Picnic with AIChE
- September 21** William Zoller – ACS Speaker Meeting – The Eruption of Mt. St. Helens: Chemistry and Atmospheric Implications
- October 23** Carolyn Fisher – ACS Speaker Meeting – Spices & Herbs: Chemistry & Health
- December 7** Volunteer Appreciation Night

**Richland Section  
Home Page**

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



Richland Section  
American Chemical Society  
c/o Editor: Steve Krogsrud  
4816 W. Irving  
Pasco, WA 99301

## Point To Ponder

Set your goals, stay focused and you will succeed. – Ted Williams