WCCTA 12th Annual Conference

2YC3 168th Conference

October 14-16, 2004

Sleeping Lady Mountain Retreat
Leavenworth, Washington

?????????

Future Site of New WCCTA Logo
# 2004 WCCTA Fall Conference

## Conference Program

### Thursday October 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>3:00 pm - 10:00 pm</td>
<td>Check-In&lt;br&gt;Sleeping Lady Office</td>
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<tr>
<td>4:30 pm - 10:00 pm</td>
<td>Registration&lt;br&gt;Woodpecker</td>
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<tr>
<td>4:30 pm - 6:00 pm</td>
<td>Informal Gathering&lt;br&gt;Grotto Bar</td>
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<tr>
<td>6:00 pm - 7:00 pm</td>
<td>Dinner&lt;br&gt;Kingfisher Dining Hall</td>
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<tr>
<td>7:00 pm - 10:00 pm</td>
<td>Evening Social. No host bar&lt;br&gt;Woodpecker</td>
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### Sleeping Lady Conference Center Map

- **Legend**:
  - Meeting Rooms
  - Dining/Bar
  - Lodging
  - Performing Arts
  - Restrooms
  - Health & Fitness

- **Map Details**:
  - Sleeping Lady Office
  - Woodpecker
  - Grotto Bar
  - Kingfisher Dining Hall
  - Evening Social
<table>
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</table>
| 7:30 am - 8:30 am | Breakfast
Kingfisher Dining Lodge                                        |
| 8:45 am - 10:15 am | Between the Covers: Forces that Create and Change General Chemistry Texts
Steve Gammon, Western Washington University
Chapel Theater     |
| 10:15 am - 11:15 pm | Vendor Break
Chapel Theater Lobby                                                  |
| 11:15 pm - 12:00 pm | Flicker
Introducing Forensic Investigation into the Chemistry Laboratory
Karen Stevens     |
|               | Woodpecker
Cooperative Project in Liberal Arts Chemistry:
Invite a Chemist to Breakfast
George Kriz       |
|               | Chapel Theater
A New Look at Colorimetry - and Some Other Things You Can Do with Computers
John Amend         |
| 12:00 pm - 1:00 pm | Lunch
Kingfisher Dining Lodge                                                |
| 1:10 pm - 1:55 pm | Improve Comprehension in Your Chemistry Classes
Lance Mayhofer       |
|               | Using Virtual Lab Activities for Introductory Chemistry
David Yaron & Mike Karabinos                                          |
|               | A Unique Blended Program for Engineering and Science Majors
Robin Terjeson                                                   |
| 2:00 pm - 2:45 pm | Exhibits Open                                                        |
| 2:00 pm - 2:45 pm | Teaching Accuracy, Precision, and Graphing Using Rubber Bands
Ralph Morasch & Nancy Barker                                        |
|               | Solving Problems in Freshman Chemistry Labs: A Model for Interdisciplinary Collaboration
Timothy Sorey         |
| 2:45 pm - 3:30 pm | Afternoon Break                                                      |
| 3:30 pm - 4:10 pm | Undergraduate Research Experiences for Community College Students at the UW
Mary Whitfield & Hilary Loeb                                         |
|               | New Instrumentation for Undergraduate Teaching & Basic Research in Spectroscopy & Chromatography
Jerry DeMenna       |
|               | Poster Presentations
Linda Kuehnert & Karen Kreutzer                                       |
| 4:15 pm - 5:30 pm | The Write-Chem Learning Community vs. Stand-Alone Chem 100: Gains, Losses and Extras
Rachel Wang          |
|               | Real-World Hands-on Experiments with the BUCK/FUN-SCI Academics Program
Jerry DeMenna       |
|               | Using Vernier Probeware in College Chemistry
Robyn Johnson         |
| 5:30 pm - 6:30 pm | Break                                                                 |
| 6:30 pm - 7:30 pm | Dinner
Kingfisher Dining Lodge                                                |
| 8:00 pm - 9:00 pm | Chemistry Collaboration with a Developing Country: Field Study of Coffee Fermentation on Farms in Matagalpa, Nicaragua
Susan Jackets, Seattle University
Woodpecker          |
| 9:00 pm - 11:00 pm | Evening Social and No Host Bar
Woodpecker             |
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<td>Woodpecker</td>
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<tr>
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<td>Check-out</td>
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<td>11:00 am - 11:45 am</td>
<td>Undergraduate Research Discussion Group Karen Grant &amp; Tim Hubler</td>
<td>BOAF Topic TBD</td>
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<td>12:00 pm - 1:00 pm</td>
<td>Lunch</td>
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<tr>
<td>1:00 pm - 5:00 pm</td>
<td>Business Meeting</td>
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**Saturday, October 16**
FRIDAY, OCTOBER 15, MORNING SESSIONS

Keynote Address, Chapel/Theater, 8:45 am -10:15 am

Between the Covers: Forces that Create and Change General Chemistry Texts
Steve Gammon, Western Washington University, Bellingham, WA

11:15 am - NOON, Flicker

Introducing Forensic Investigations into the Chemistry Laboratory
Karen Stevens, Whitworth College, Spokane, WA

Abstract: We have attempted to introduce several forensic experiments into our chemistry laboratory curriculum, from introductory courses to upper division. One example of this is the determination if an unknown liquid is ethyl alcohol via 2 different methods. We explain the difference between "breathalyzers" and "Intoxilyzers" and how each method works. Students then create their own "breathalyzer" and test its action on a control and on an unknown. Students also test their unknown using an "Intoxilyzer" and see if their results for the unknown assigned to them concur with one another.

These experiments provide numerous opportunities to explore many chemical phenomena such as redox reactions, limiting reagents, sample handling, and vibrational frequencies. The difficulty and number of variables used can make similar exercises relevant for first year or for junior/senior courses.

11:15 am – NOON, Woodpecker

Cooperative Project in Liberal Arts Chemistry: Invite a Chemist to Breakfast
George Kriz, Western Washington University, Bellingham, WA

Abstract: A collaborative project in liberal arts chemistry, involving faculty in chemistry and science education, will be described. The project includes various components: an introductory test to examine students' perceptions of scientists, a group library research exercise, oral and written presentation of results of the library research, a presentation by a guest scientist, and a final evaluation of the experience by the students. Planning, implementation, and evaluation of the project will be discussed. Trials of this project extend over a three-year span. This paper describes a project that was introduced at the NORM/WCCTA meeting in 2001 and continues to evolve. Ideas for other innovative projects that can be used in this type of class will be solicited as a discussion topic from the audience.
A New Look at Colorimetry - and Some Other Things You Can Do With Computers
John Amend, Montana State University, Bozeman, MT

Abstract: Laboratory time is the most costly time in education. Laboratory serves two purposes in the sciences. One is to demonstrate and confirm known principles and to apply these to solve real problems. The other is to learn to design experiments and to synthesize new ideas and concepts from experimental data. How can we develop both the skills of discovery and solid understanding of chemical principles in time and cost-limited situations that face many institutions today?

This presentation will demonstrate new computer-based tools and laboratory learning strategies that build solid understanding of chemical principles and engage students in experiment design in time-limited situations. The demonstrations will include a unique ten-wavelength scanning colorimeter that makes simultaneous measurements of transmission, absorbance, scatter, and fluorescence in less than one second.

FRIDAY, OCTOBER 15, AFTERNOON SESSIONS
1:10 pm-1:55 pm, Flicker

Improve Comprehension in Your Chemistry Classes
Lance Mayhofer, Pasco Scientific

Abstract: What if your students could perform simple chemistry experiments that improved their comprehension of challenging chemistry concepts? Learn how handheld dataloggers, sensors and software can be used to create a more meaningful chemistry learning environment. Find out how students can use a pressure and temperature sensor to study the ideal gas law, use a colorimeter to study Beer’s Law or determine the order of a reaction, or use the new high-accuracy drop counter to improve the success of titration experiments.

1:10 pm -1:55 pm, Woodpecker

Using Virtual Lab Activities for Introductory Chemistry
David Yaron & Mike Karabinos, Carnegie Mellon University, Pittsburgh, PA

Abstract: Attendees will obtain hands-on experience with Carnegie Mellon’s Virtual Chemistry Laboratory (http://lr.chem.cmu.edu/), a flexible on-line tool that allows students to choose from hundreds of standard reagents and manipulate them in a manner that resembles that of a real lab. Instructors can choose from existing activities or create their own using our authoring tools. Activity types range from pre-lab assignments that prepare students for the physical lab, to on-line homework where students perform or design their own experiments. These activities provide a bridge between the algebraic calculations of the lecture course and laboratory chemistry. Authoring an activity is similar to setting up a physical lab; the instructor simply selects the reagents and instruments to make available to the student.
A Unique Blended Program for Engineering and Science Majors
Robin Terjeson, Clark College, Vancouver, WA

A unique set of programs for bachelor’s degrees in biology, engineering and computer science now exist at WSU Vancouver Engineering and Science Institute. It is a venture with WSU Vancouver, and Clark and Lower Columbia Colleges. Many issues and concerns were addressed in the planning process, and work continues to make the Institute an exciting option for students in southwest Washington. Some of the ideas behind the project and plans for the future will be presented.

Teaching Accuracy, Precision and Graphing using Rubber Bands
Ralph Morasch & Nancy Barker, Pierce College, Fort Steilacoom, WA

Abstract: Using an inexpensive rubber band shooter, we have developed a fun and interesting project for the teaching accuracy, precision and graphing. The project makes the topics more meaningful to introductory chemistry students, in particular non-lab classes. During the session we will provide handouts and allow attendees to participate in this activity, as well as talking about its benefits.

Solving Problems in Freshman General Chemistry Labs: A Model for Interdisciplinary Collaboration
Timothy Sorey, Central Washington University, Ellensburg, WA

Abstract: A model for interdisciplinary collaboration that supports both national science education goals and Accreditation Board for Engineering and Technology (ABET) accreditation objectives will be presented. Curriculum that is based upon these goals and objectives, a newly devised learning model called The Scientist’s Research Cycle, and unique microcomputer-based laboratories (MBLs) using MicroLAB technology will also be presented that foster engineering track students’ creativity and problem solving abilities that are important within the scientific process.

Web-Based Homework and Assessment
John Holdcroft, BrooksCole/Thomson Learning

Abstract: OWL – Online Web-Based Learning. The only system designed by chemists to teach freshman chemistry. OWL incorporates a home work system, tutorial, and course management functions. It incorporates a Mastery learning approach and is the only system available that generates problems and also generates specific feedback to those problems.
Undergraduate Research Experiences for Community College Students
Hilary Loeb, Program Assistant, Educational Partnership Program, University of Washington
Mary Whitfield, Edmonds Community College, Lynnwood, WA

Abstract: This past summer, several local community college students completed paid research internships at the University of Washington as part of a major NSF-funded research center in photonics. Though community college students are always welcome to apply for summer research internships, their inclusion in this program was part of a targeted effort to create a gateway experience for transfer students. We will share the successes and challenges of the program, discuss the importance of these opportunities for transfer students, and share plans for similar opportunities in summer 2005.

3:30 pm - 4:10 pm, Woodpecker

New Instrumentation for Undergraduate Teaching & Basic Research in Spectroscopy & Chromatography: Real-World Hands-on Experiments with the BUCK/ FUN-SCI Academics Program
Jerry DeMenna, BUCK Scientific

Abstract: In addition to the instruments noted below, example of the unique academic program, called the "FUN-SCI" experiments developed by Chem-Chek will be demonstrated. These "turnkey" projects can be modified & altered to meet the specific needs of your class curriculum & expanded to encompass a dedicated discipline such as biology / biochemistry, physics, environmental science, geology, forensics, food technology, marine science, material engineering, etc.

As an established company & a manufacturer of quality, low-cost, small-sized, yet high-performance analytical instrumentation that has seen productive use in simple QC & sophisticated research applications; BUCK has all the primary support services of the "name brands" manufacturers for approximately half the price! Toll-free access to the sales office in CT, the applications lab in NJ & a North American pager network provide round-the-clock help for ANY questions you have.

Here is just a brief overview few of the "fun" & "interesting" (aka: non-boring!) experiments that you will be involved with in this session for undergraduate teaching of analytical instrumentation and entry-level research. They focus on topics that the students deal with or are concerned with everyday, & thus inspire a real & continuing interest to remember what they did during the experiment. We will have copies of our condensed lecture (depending on background of attendees) on the FUNdamentals of analytical chemistry, spectroscopy & chromatography; to hand out to any teacher & student.
3:30 pm - 4:10 pm, Chapel/Theater

**Poster Presentations**
Karen Kreutzer and Linda Kuehnert, Shoreline Community College, Shoreline, WA

**Abstract:** Student presentations are powerful teaching mechanisms that encourage deeper understanding of scientific topics while developing oral communication and group work skills. This workshop will focus on the significance of incorporating poster projects into the third quarter of both General Chemistry and Organic Chemistry courses. Simple strategies for increasing students’ effectiveness and confidence in sharing chemistry topics in larger group settings will be included. Three years of data and analysis will be examined and collaborative communication skills essential to the process will be discussed. Evaluation methods include student self-assessment, peer and faculty evaluation, contracts, and journals.

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4:15 pm -5:30 pm, Flicker

**The Write-Chem Learning Community vs. Stand-alone Chem 100: Gains, Losses and Extras**
Rachel Wang, Spokane Falls Community College, Spokane, WA

Since 2002, I have been teaching the “Write Chem” learning community (LC) with an English instructor at SFCC every fall quarter. In this LC, we integrate traditional course contents in Chemistry 100 and English Composition 101/201 with an added emphasis on personal and civil responsibilities to the environment. I will report a comparative study of the chemistry portion of this combined course versus other stand-alone Chem 100 courses offered in fall quarters. Areas compared include student retention and learning outcomes assessment, curriculum, cost-effectiveness, instructor issues, and some unexpected extras.

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4:15 pm -5:30 pm, Woodpecker

**New Instrumentation for Undergraduate Teaching & Basic Research in Spectroscopy & Chromatography: Real-World Hands-on Experiments with the BUCK/ FUN-SCI Academics Program**
Jerry DeMenna, BUCK Scientific

Continuation of program from 3:30 pm

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4:15 pm -5:30 pm, Chapel/Theater

**Using Vernier Probesware in College Chemistry**
Robyn Johnson, Vernier Software and Technology

**Abstract:** This presentation will demonstrate the use of the Vernier probeware, LabPro interface, and Logger Pro software in college chemistry courses. See how this versatile system can be used to conveniently collect data using computers, TI graphing calculators, and Palm OS handhelds. Data will be collected using sensors such as our new ORP sensor, Vernier drop counter, temperature, pressure, pH, conductivity, colorimeters, and radiation monitors. All
experiments are excerpts from our popular series of chemistry lab books or from our newest book, Advanced Chemistry with Vernier.

FRIDAY, OCTOBER 15, EVENING PROGRAM

8:00 pm, Woodpecker

Chemistry Collaboration with a Developing Country: Field Study of Coffee Fermentation on Farms in Matagalpa, Nicaragua

Susan Jackels, Seattle University
SATURDAY, OCTOBER 16, MORNING SESSIONS
9:00 am-9:40 am, Flicker

Birds of a Feather

Abstract: If you have a topic that does not appear in this program, but is worthy of discussion, contact Mary O’Brien, Sara Selfe, or Mary Whitfield by breakfast on Friday morning so that we can announce it to the group.

9:00 am - 9:40 am, Woodpecker

WCCTA Advocacy

Abstract: The Washington College Chemistry Teachers Association is the only organization in the state that represents chemistry teachers and, therefore, should act as a voice in issues related to chemistry and chemistry teaching in this state. This session will discuss how we can become a more influential force in the state and will consider some specific issues that need to be addressed. We will also consider a logo and official stationery.

9:00 am – 5 pm, Tadpole

POGIL Workshop (pre-registration was required)

9:45 am-10:30 am, Flicker

Journal Paper Discussion
Mary Whitfield, Edmonds Community College, Lynnwood, WA
Martha Kurtz, Central Washington University, Ellensburg, WA

Abstract: We will gather to discuss some recent articles from the literature. This year’s articles are by Eric Scerri on topics related to philosophy and chemistry. The first article was controversial enough to generate two printed responses and an author’s reply to each, which should make it an engaging topic for discussion. It always helps if participants have read the articles ahead of time (they’re short!). If you forgot your copies, check for extras at registration or at dinner on Friday.
9:45 am -10:30 am, Woodpecker

Issues Related to Requirements for Washington State Nursing Programs
Kathy Ashworth, Yakima Valley Community College, Yakima, WA
Sara Selfe, Edmonds Community College, Lynnwood, WA

Abstract: Two issues regarding requirements for state nursing programs will be discussed. 1. A state-wide committee of 4 yr public and private 4 yr nursing schools plus several community colleges is developing a state-wide direct transfer agreement for pre-nursing for students going directly to BSN programs. 2. The UW nursing program has changed the chemistry requirement for admission to their program. This change and how it will impact community college transfer students will be discussed.

We will have late breaking news on both of these topics!

11:00 am -11:45 am, Flicker

Undergraduate Research Discussion
Karen Grant, Columbia Basin College, Pasco, WA
Tim Hubler, Pacific Northwest Labs

This session will be devoted to issues related to undergraduate research, including ways in which community college students can get involved in research before transferring to a four-year institution.

11:00 am – 11:45 am, Woodpecker

Birds of a Feather

Abstract: If you have a topic that does not appear in this program, but is worthy of discussion, contact Mary O’Brien, Sara Selfe, or Mary Whitfield by breakfast on Friday morning so that we can announce it to the group.
## WCCTA Fall 04 Registrants

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Angie Kantola</td>
<td>Edmonds Community College</td>
<td><a href="mailto:KANTOLA@DRIZZLE.com">KANTOLA@DRIZZLE.com</a></td>
</tr>
<tr>
<td>Anne Brackett</td>
<td>Everett Community College</td>
<td><a href="mailto:abracket@everettcc.edu">abracket@everettcc.edu</a></td>
</tr>
<tr>
<td>April Mixon</td>
<td>Clark College</td>
<td><a href="mailto:amixon@clark.edu">amixon@clark.edu</a></td>
</tr>
<tr>
<td>Asya Starosta</td>
<td>Edmonds Community College</td>
<td><a href="mailto:astarost@edcc.edu">astarost@edcc.edu</a></td>
</tr>
<tr>
<td>Bob Kieburz</td>
<td>Olympic College</td>
<td><a href="mailto:rkieburz@oc.ctc.edu">rkieburz@oc.ctc.edu</a></td>
</tr>
<tr>
<td>Bob Schmitt</td>
<td>Tacoma Community College</td>
<td><a href="mailto:rschmitt@tcc.ctc.edu">rschmitt@tcc.ctc.edu</a></td>
</tr>
<tr>
<td>Carol Handy</td>
<td>Portland Community College</td>
<td><a href="mailto:chandy@ccc.edu">chandy@ccc.edu</a></td>
</tr>
<tr>
<td>Carole Berg</td>
<td>Bellevue Community College</td>
<td><a href="mailto:cberg@bcc.ctc.edu">cberg@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Cathy Lyle</td>
<td>Bellevue Community College</td>
<td><a href="mailto:clyle@bcc.ctc.edu">clyle@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Clarita Bhat</td>
<td>Shoreline Community College</td>
<td><a href="mailto:ocbhat@aol.com">ocbhat@aol.com</a></td>
</tr>
<tr>
<td>Craig Fryhle</td>
<td>Pacific Lutheran University</td>
<td><a href="mailto:fryhle@chem.plu.edu">fryhle@chem.plu.edu</a></td>
</tr>
<tr>
<td>David Thorsell</td>
<td>Seattle University</td>
<td><a href="mailto:dlt@seattleu.edu">dlt@seattleu.edu</a></td>
</tr>
<tr>
<td>David Yaron</td>
<td>Carnegie Mellon University</td>
<td><a href="mailto:yaron@cmu.edu">yaron@cmu.edu</a></td>
</tr>
<tr>
<td>Dean Waldow</td>
<td>Pacific Lutheran University</td>
<td><a href="mailto:waldowda@plu.edu">waldowda@plu.edu</a></td>
</tr>
<tr>
<td>Ed Kremer</td>
<td>Kansas City Kansas Community College</td>
<td><a href="mailto:ekremer@toto.net">ekremer@toto.net</a></td>
</tr>
<tr>
<td>Eden Francis</td>
<td>Clackamas Community College</td>
<td><a href="mailto:edenf@clackamas.edu">edenf@clackamas.edu</a></td>
</tr>
<tr>
<td>Elissa Bell</td>
<td>Bellevue Community College</td>
<td><a href="mailto:bell@bcc.ctc.edu">bell@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>George S. Kriz</td>
<td>Western Washington University</td>
<td><a href="mailto:George.Kriz@wwu.edu">George.Kriz@wwu.edu</a></td>
</tr>
<tr>
<td>Guzel Khakimova</td>
<td>Bellevue Community College</td>
<td><a href="mailto:gkhakimo@bcc.ctc.edu">gkhakimo@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Hilary Loeb</td>
<td>University of Washington</td>
<td><a href="mailto:hilaryloeb@hotmail.com">hilaryloeb@hotmail.com</a></td>
</tr>
<tr>
<td>Jack Surendranath</td>
<td>Bellevue Community College</td>
<td><a href="mailto:jsurendr@bcc.ctc.edu">jsurendr@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Jackie Hong</td>
<td>North Seattle Community College</td>
<td><a href="mailto:jhong@sccollege.ctc.edu">jhong@sccollege.ctc.edu</a></td>
</tr>
<tr>
<td>Jeff Dial</td>
<td>Olympic College</td>
<td><a href="mailto:jdial@oc.ctc.edu">jdial@oc.ctc.edu</a></td>
</tr>
<tr>
<td>Jeff Owens</td>
<td>Shoreline Community College</td>
<td><a href="mailto:jeffowens2003@yahoo.com">jeffowens2003@yahoo.com</a></td>
</tr>
<tr>
<td>Jenny Mayer</td>
<td>Edmonds Community College</td>
<td><a href="mailto:jennie.mayer@edcc.edu">jennie.mayer@edcc.edu</a></td>
</tr>
<tr>
<td>Joann Chickering</td>
<td>Bellevue Community College</td>
<td><a href="mailto:jchicker@bcc.ctc.edu">jchicker@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>JoAnn DeLuca</td>
<td>Central Washington University</td>
<td><a href="mailto:jdeluca@cwu.edu">jdeluca@cwu.edu</a></td>
</tr>
<tr>
<td>John Amend</td>
<td>Montana State University</td>
<td><a href="mailto:jamend@bridgeband.com">jamend@bridgeband.com</a></td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
<td>e-mail</td>
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<tr>
<td>John DiBari</td>
<td>Yakima Valley Community College</td>
<td><a href="mailto:jdbari@yvcc.edu">jdbari@yvcc.edu</a></td>
</tr>
<tr>
<td>John Pellock</td>
<td>Olympic College</td>
<td><a href="mailto:jpellock@oc.ctc.edu">jpellock@oc.ctc.edu</a></td>
</tr>
<tr>
<td>John Peterson</td>
<td>Big Bend Community College</td>
<td><a href="mailto:johnp@bbcc.ctc.edu">johnp@bbcc.ctc.edu</a></td>
</tr>
<tr>
<td>John Pfeffer</td>
<td>Highline Community College</td>
<td><a href="mailto:jfpfeffer@highline.edu">jfpfeffer@highline.edu</a></td>
</tr>
<tr>
<td>Karen E. Stevens</td>
<td>Whitworth College</td>
<td><a href="mailto:kstevens@whitworth.edu">kstevens@whitworth.edu</a></td>
</tr>
<tr>
<td>Karen Grant</td>
<td>Columbia Basin College</td>
<td><a href="mailto:Karen.Grant@columbiabasin.e">Karen.Grant@columbiabasin.e</a></td>
</tr>
<tr>
<td>Karen Harding</td>
<td>Pierce College</td>
<td><a href="mailto:kharding@pierce.ctc.edu">kharding@pierce.ctc.edu</a></td>
</tr>
<tr>
<td>Karen Kreutzer</td>
<td>Shoreline Community College</td>
<td><a href="mailto:kkreutzer@shoreline.edu">kkreutzer@shoreline.edu</a></td>
</tr>
<tr>
<td>Karl Bailey</td>
<td>Everett Community College</td>
<td><a href="mailto:kbailey@everettcc.edu">kbailey@everettcc.edu</a></td>
</tr>
<tr>
<td>Kathy Ashworth</td>
<td>Yakima Valley Community College</td>
<td><a href="mailto:kashworth@yvcc.cc.wa.us">kashworth@yvcc.cc.wa.us</a></td>
</tr>
<tr>
<td>Kathy Carrigan</td>
<td>Portland Community College</td>
<td><a href="mailto:kcarriga@pcc.edu">kcarriga@pcc.edu</a></td>
</tr>
<tr>
<td>Katie Gulliford</td>
<td>Highline Community College</td>
<td><a href="mailto:kgullifo@highline.edu">kgullifo@highline.edu</a></td>
</tr>
<tr>
<td>Kaylin Owens</td>
<td>North Seattle Community College</td>
<td><a href="mailto:KOwens@scdd.ctc.edu">KOwens@scdd.ctc.edu</a></td>
</tr>
<tr>
<td>Kerry Cotter</td>
<td>Clackamas CC</td>
<td><a href="mailto:kerrycc@clackamas.edu">kerrycc@clackamas.edu</a></td>
</tr>
<tr>
<td>Kristen Skogerboe</td>
<td>Seattle University</td>
<td><a href="mailto:skogerbo@seattle.edu">skogerbo@seattle.edu</a></td>
</tr>
<tr>
<td>Linda Kuehner</td>
<td>Shoreline Community College</td>
<td><a href="mailto:lkuehner@shore.ctc.edu">lkuehner@shore.ctc.edu</a></td>
</tr>
<tr>
<td>Marci J. Bailey</td>
<td>Clark College</td>
<td><a href="mailto:mbailey@clark.edu">mbailey@clark.edu</a></td>
</tr>
<tr>
<td>Marie Nguyen</td>
<td>Highline Community College</td>
<td><a href="mailto:mnguyen@highline.edu">mnguyen@highline.edu</a></td>
</tr>
<tr>
<td>Mark Kontulis</td>
<td>Everett Community College</td>
<td><a href="mailto:mkontulis@everettcc.edu">mkontulis@everettcc.edu</a></td>
</tr>
<tr>
<td>Martha Kurtz</td>
<td>Central Washington University</td>
<td><a href="mailto:kurtzm@cwu.edu">kurtzm@cwu.edu</a></td>
</tr>
<tr>
<td>Mary O'Brien</td>
<td>Edmonds Community College</td>
<td><a href="mailto:mobrien@edcc.edu">mobrien@edcc.edu</a></td>
</tr>
<tr>
<td>Mary Whitfield</td>
<td>Edmonds Community College</td>
<td><a href="mailto:mary.whitfield@edcc.edu">mary.whitfield@edcc.edu</a></td>
</tr>
<tr>
<td>Melodye Gold</td>
<td>Bellevue Community College</td>
<td><a href="mailto:mgold@bcc.ctc.edu">mgold@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Michael Melvin</td>
<td>Bellevue Community College</td>
<td><a href="mailto:mmelvin@bcc.ctc.edu">mmelvin@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Michaeleneen Lee</td>
<td>Bucks County CC</td>
<td><a href="mailto:leem@bucks.edu">leem@bucks.edu</a></td>
</tr>
<tr>
<td>Mike Karabinos</td>
<td>Carnegie Mellon University</td>
<td><a href="mailto:mkk@andrew.cmu.edu">mkk@andrew.cmu.edu</a></td>
</tr>
<tr>
<td>Mina Heydari</td>
<td>Bellevue Community College</td>
<td><a href="mailto:mheydari@bcc.ctc.edu">mheydari@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Nadine Fatteleh</td>
<td>Clark College</td>
<td><a href="mailto:nfatteleh@clark.edu">nfatteleh@clark.edu</a></td>
</tr>
<tr>
<td>Nancy Barker</td>
<td>Pierce College</td>
<td><a href="mailto:nbarker@pierce.ctc.edu">nbarker@pierce.ctc.edu</a></td>
</tr>
<tr>
<td>Perminder Sandhu</td>
<td>Bellevue Community College</td>
<td><a href="mailto:psandhu@bcc.ctc.edu">psandhu@bcc.ctc.edu</a></td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
<td>e-mail</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Rachel Wang</td>
<td>Spokane Falls Community College</td>
<td><a href="mailto:RachelW@spokanofalls.edu">RachelW@spokanofalls.edu</a></td>
</tr>
<tr>
<td>Ralph Morasch</td>
<td>Pierce College</td>
<td><a href="mailto:rmorasch@pierce.ctc.edu">rmorasch@pierce.ctc.edu</a></td>
</tr>
<tr>
<td>Renee Cole</td>
<td>Central Missouri State University</td>
<td><a href="mailto:rcole@socket.net">rcole@socket.net</a></td>
</tr>
<tr>
<td>Richard Logan</td>
<td>Wenatchee Valley College</td>
<td><a href="mailto:rlogan@wvc.edu">rlogan@wvc.edu</a></td>
</tr>
<tr>
<td>Robert Rittenhouse</td>
<td>Walla Walla College</td>
<td><a href="mailto:rittro@wvc.edu">rittro@wvc.edu</a></td>
</tr>
<tr>
<td>Robin Terjeson</td>
<td>Clark College</td>
<td><a href="mailto:rterjeson@clark.edu">rterjeson@clark.edu</a></td>
</tr>
<tr>
<td>Roger Knutsen</td>
<td>Green River Community College</td>
<td><a href="mailto:rknutsen@greenriver.edu">rknutsen@greenriver.edu</a></td>
</tr>
<tr>
<td>Ron Budhram</td>
<td>Kansas City Kansas Community College</td>
<td><a href="mailto:rbudhram@toto.net">rbudhram@toto.net</a></td>
</tr>
<tr>
<td>Sara Seife</td>
<td>Edmonds Community College</td>
<td><a href="mailto:sara.seife@edoc.edu">sara.seife@edoc.edu</a></td>
</tr>
<tr>
<td>Shane Hendricksen</td>
<td>Washington State University</td>
<td><a href="mailto:hendrics@wsu.edu">hendrics@wsu.edu</a></td>
</tr>
<tr>
<td>Sonja Davidson</td>
<td>Tarrant County College</td>
<td><a href="mailto:sonjadavison@tccd.edu">sonjadavison@tccd.edu</a></td>
</tr>
<tr>
<td>Steve Gammon</td>
<td>Western Washington University</td>
<td><a href="mailto:gammon@chem.wwu.edu">gammon@chem.wwu.edu</a></td>
</tr>
<tr>
<td>Sue Critchlow</td>
<td>University of Puget Sound</td>
<td><a href="mailto:scritchlow@mail.ups.edu">scritchlow@mail.ups.edu</a></td>
</tr>
<tr>
<td>Sue Egging</td>
<td>Clackamas CC</td>
<td><a href="mailto:suee@clackamas.edu">suee@clackamas.edu</a></td>
</tr>
<tr>
<td>Sue Jackals</td>
<td>Seattle University</td>
<td><a href="mailto:sjackels@seattleu.edu">sjackels@seattleu.edu</a></td>
</tr>
<tr>
<td>Tamis Root</td>
<td>Clark College</td>
<td><a href="mailto:troot@Clark.edu">troot@Clark.edu</a></td>
</tr>
<tr>
<td>Ted Baldwin</td>
<td>Olympic College</td>
<td><a href="mailto:tbdawlin@oc.ctc.edu">tbdawlin@oc.ctc.edu</a></td>
</tr>
<tr>
<td>Ted Wood</td>
<td>Pierce College</td>
<td><a href="mailto:TWood@pierce.ctc.edu">TWood@pierce.ctc.edu</a></td>
</tr>
<tr>
<td>Timothy Sorey</td>
<td>Central Washington University</td>
<td><a href="mailto:soreyl@yahoo.com">soreyl@yahoo.com</a></td>
</tr>
<tr>
<td>Tristan Jenkins</td>
<td>Clark College</td>
<td><a href="mailto:tjenkins@clark.edu">tjenkins@clark.edu</a></td>
</tr>
<tr>
<td>Vicky Minderhout Thorsell</td>
<td>Seattle University</td>
<td><a href="mailto:vicky@seattleu.edu">vicky@seattleu.edu</a></td>
</tr>
<tr>
<td>Wally Orchard</td>
<td>Tacoma Community College</td>
<td><a href="mailto:worchard@toc.ctc.edu">worchard@toc.ctc.edu</a></td>
</tr>
</tbody>
</table>
# WCCTA F04 Registrants by Institution

**Bellevue Community College**
- Carole Berg  
  cberg@bcc.ctc.edu
- Cathy Lyle  
  clyle@bcc.ctc.edu
- Elissa Bell  
  bell@bcc.ctc.edu
- Guzel Khakimova  
  gkhakimo@bcc.ctc.edu
- Jack Surendranath  
  jsurendr@bcc.ctc.edu
- Joann Chickering  
  jchicker@bcc.ctc.edu
- Melodye Gold  
  mgold@bcc.ctc.edu
- Michael Melvin  
  mmelvin@bcc.ctc.edu
- Mina Heydari  
  mheydari@bcc.ctc.edu
- Peminder Sandhu  
  psandhu@bcc.ctc.edu

**Big Bend Community College**
- John Peterson  
  johnp@bbcc.ctc.edu

**Bucks County Community College**
- Michaelleen Lee  
  leem@bucks.edu

**Carnegie Mellon University**
- David Yaron  
  yaron@cmu.edu
- Mike Karabinos  
  mk7@andrew.cmu.edu

**Central Missouri State University**
- Renee Cole  
  rcole@socket.net

**Central Washington University**
- JoAnn DeLuca  
  jdeluca@cwu.edu
- Martha Kurtz  
  kurtzm@cwu.edu
- Timothy Sorey  
  soreyt@yahoo.com

**Clackamas Community College**
- Eden Francis  
  edenf@clackamas.edu
- Kerry Cotter  
  kerry@clackamas.edu
- Sue Eggling  
  suee@clackamas.edu
Clark College
April Mixon
Marci J. Bailey
Nadine Fatteleh
Robin Terjeson
Tamis Root
Tristan Jenkins
amixon@clark.edu
mbailey@clark.edu
Nfatteleh@clark.edu
rterjeson@clark.edu
troot@clark.edu
tjenkins@clark.edu

Columbia Basin College
Karen Grant
Karen.Grant@columbiabasin.e

Edmonds Community College
Angie Kantola
Asya Starosta
Jenny Mayer
Mary O'Brien
Mary Whitfield
Sara Selfe
KANTOLA@DRIZZLE.com
astarosta@edcc.edu
jennio.mayer@edcc.edu
mobrien@edcc.edu
mary.whitfield@edcc.edu
sara.selfe@edcc.edu

Everett Community College
Anne Brackett
Karl Bailey
Mark Kontulis
abacket@everettcc.edu
kbailey@everettcc.edu
mkontulis@everettcc.edu

Green River Community College
Roger Knutsen
rknutsen@greenriver.edu

Highline Community College
John Pfeffer
Katie Guilfoil
Marie Nguyen
jpfeffer@highline.edu
kguillifo@highline.edu
mnguyen@highline.edu

Kansas City Kansas Community College
Ed Kremer
Ron Budhram
ekremer@toto.net
rbudhram@toto.net

Montana State University
John Amend
jamend@bridgeband.com
North Seattle Community College
  Jackie Hong   jhong@sccd.ctc.edu
  Kaylin Owens  KOwens@sccd.ctc.edu

Olympic College
  Bob Kiebritz  rkiebritz@oc.ctc.edu
  Jeff Dial     jdial@oc.ctc.edu
  John Pellock  jpellock@oc.ctc.edu
  Ted Baldwin   tbaldwin@oc.ctc.edu

Pacific Lutheran University
  Craig Fryhle  fryhle@chem.plu.edu
  Dean Waldow   waldowda@plu.edu

Pierce College
  Karen Harding kharding@pierce.ctc.edu
  Nancy Barker  nbarker@pierce.ctc.edu
  Ralph Morasch rmorasch@pierce.ctc.edu
  Ted Wood      TWood@pierce.ctc.edu

Portland Community College
  Carol Handy   chandy@pcc.edu
  Kathy Carrigan kcarriga@pcc.edu

Seattle University
  David Thorsell dlt@seattlou.edu
  Kristen Skogarbo skogarbo@seattlou.edu
  Sue Jackals    sjackals@seattlou.edu
  Vicky Minderhout Thorsell vicky@seattlou.edu

Shoreline Community College
  Clarita Bhat  ccbhat@aol.com
  Jeff Owens    jeffowens2003@yahoo.com
  Karen Kreutzer kkreutze@shoreline.edu
  Linda Kuehnert lkuehner@shore.ctc.edu

Spokane Falls Community College
  Rachel Wang   RachelW@spokanefalls.edu
Tacoma Community College
Bob Schmitt
rschmitt@tcc.ctc.edu
Wally Orchard
worchard@tcc.ctc.edu

Tarrant County College
Sonja Davidson
sonjadavison@tccd.edu

University of Puget Sound
Sue Critchlow
scritchlow@mail.ups.edu

University of Washington
Hilary Loeb
hilaryloeb@hotmail.com

Walla Walla College
Robert Rittenhouse
rittro@wwc.edu

Washington State University
Shane Hendrickson
hendrics@wsu.edu

Wenatchee Valley College
Richard Logan
rlogan@wvc.edu

Western Washington University
George S. Kriz
George.Kriz@wwu.edu
Steve Gammon
gammon@chem.wwu.edu

Whitworth College
Karen E. Stevens
kstevens@whitworth.edu

Yakima Valley Community College
John DiBari
jdbari@yvcc.edu
Kathy Ashworth
kashworth@yvcc.cc.wa.us
### WCCTA Fall Conference - Vendor List

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randee Toler</td>
<td>Addison Wesley &amp; Benjamin Cummings</td>
<td><a href="mailto:Randee.Toler@aw.com">Randee.Toler@aw.com</a></td>
</tr>
<tr>
<td>Agnes Klich</td>
<td>Hayden-McNeil Specialty Products</td>
<td><a href="mailto:Klich@hmpublishing.com">Klich@hmpublishing.com</a></td>
</tr>
<tr>
<td>Laura Roberts</td>
<td>McGraw-Hill</td>
<td><a href="mailto:laura_roberts@mcgraw-hill.com">laura_roberts@mcgraw-hill.com</a></td>
</tr>
<tr>
<td>Lance Mayhofer</td>
<td>Pasco Scientific</td>
<td><a href="mailto:most@pasco.com">most@pasco.com</a></td>
</tr>
<tr>
<td>John Yost</td>
<td>Sargent-Welch Scientific</td>
<td><a href="mailto:john_yost@vwr.com">john_yost@vwr.com</a></td>
</tr>
<tr>
<td>Robyn Johnson</td>
<td>Vernier Software and Technology</td>
<td><a href="mailto:rjohnson@vernier.com">rjohnson@vernier.com</a></td>
</tr>
<tr>
<td>Bill May</td>
<td>Wiley</td>
<td><a href="mailto:bmay@wiley.com">bmay@wiley.com</a></td>
</tr>
<tr>
<td>Jerry DeMenna &amp; Gordon Fromm</td>
<td>Buck Scientific</td>
<td><a href="mailto:ChemChek@aol.com">ChemChek@aol.com</a>, <a href="mailto:gfromm@teleport.com">gfromm@teleport.com</a></td>
</tr>
<tr>
<td>Karen Lipyanik-Geagan</td>
<td>Houghton Mifflin</td>
<td><a href="mailto:Karen_Lipyanik-Geagan@hmco.com">Karen_Lipyanik-Geagan@hmco.com</a></td>
</tr>
<tr>
<td>John Amend</td>
<td>Microlab Inc.</td>
<td><a href="mailto:jamend@microlabinfo.com">jamend@microlabinfo.com</a></td>
</tr>
<tr>
<td>Julie Bermeier</td>
<td>Prentice-Hall</td>
<td><a href="mailto:julie_burgmeier@prenhall.com">julie_burgmeier@prenhall.com</a></td>
</tr>
<tr>
<td>Tom Swift</td>
<td>Varian</td>
<td><a href="mailto:tom.swift@varianinc.com">tom.swift@varianinc.com</a></td>
</tr>
<tr>
<td>William Davis</td>
<td>W.H. Freeman</td>
<td><a href="mailto:wdavis@bfwpub.com">wdavis@bfwpub.com</a></td>
</tr>
</tbody>
</table>