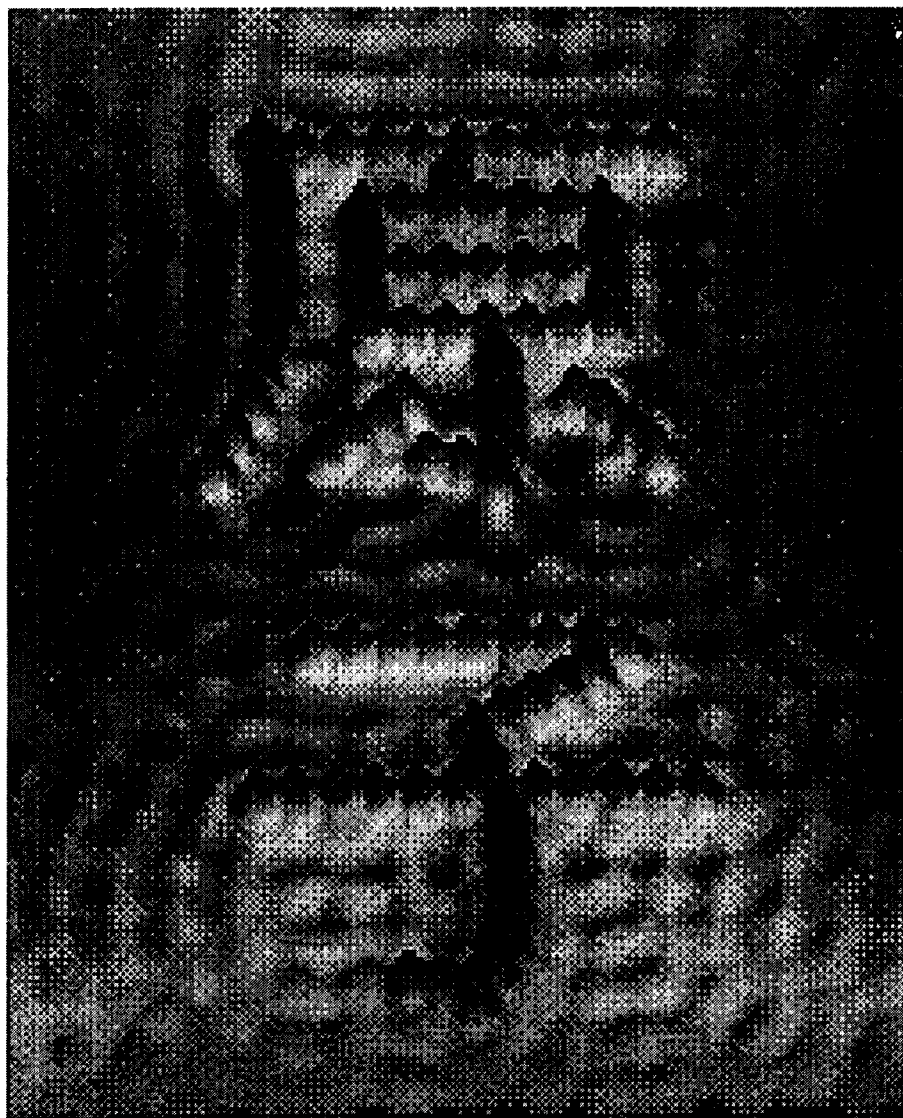


WCCTA Eighth Annual Conference



April 20-22, 2000

**Sleeping Lady Conference Center
Leavenworth, Washington**

WCCTA 8th Annual Conference Program

Thursday, April 20, 2000

Time	Event	Location
3:00-10:00	Check-in	
4:30-6:30 & 7:30-11:30	Informal Gathering in Grotto Bar	Grotto Bar
6:30-7:30	Dinner	Kingfisher Dining Hall

Friday, April 21, 2000
Morning

Time	Event	Location
7:30-8:30	Breakfast	Kingfisher
9:00-10:00	Welcome & Keynote Address: The Molecular Science Project-Something New for Everyone- Dr. Arlene Russell	Chapel Theater
10:15-Noon	Calibrated Peer Review™ –A Writing and Critical Thinking Instructional Tool-Arlene Russell	Chapel Theater
10:15-Noon	Real-World Hands-on Experiments with the FUN-SCI Program- Dr. Jerry DeMenna, Buck Scientific	Flicker
10:15-Noon	Vendors	Salmon Gallery
10:15-Noon	Break	Salmon Gallery
12:00-1:00	Lunch	Kingfisher

**Friday, April 21, 2000
Afternoon**

1:15-2:00	Saturn 2000: The Ideal Mass Analyzer- Christina Bagwell, Varian	Chapel Theater
1:15-2:00	Excitement in Organic Chemistry- Carole Berg	Flicker
2:00-2:30	Break	Salmon Gallery
2:30-3:30	Sharing Chemistry Resources via Distance Technologies- J.DeLuca, J.DiBari, M.Dunn, R.Logan, J.Gerdes	Chapel Theater
2:30-3:00	Your Erroneous Zones: Teaching Practical Applications of Error Analysis- Dave Reichgott	Flicker
3:00-3:30	NSF Project Teach- Mary Whitfield	Flicker
3:30-4:30	Video/Multimedia Presentation- Marilyn Jacoby, McGraw Hill	Chapel Theater
3:30-4:15	The Efficiency and Effectiveness of Learning When Using Computers to Acquire and Analyze Data in General Chemistry Labs- M. Kurtz	Flicker
4:30-	GOB/Liberal Arts Discussion	Flicker
5:00	General Chemistry Discussion	Flicker
6:30-7:30	Dinner	Kingfisher

Saturday, April 22, 2000

8:00-9:00	Breakfast	Kingfisher
9:00-9:30	Disentangling the World: Linking English and Chemistry- P. Sandhu, V.Dills-Parker	Flicker
9:00-10:00	Enhancing the Undergraduate Laboratory Experience in Chemistry Through a Collaborative Research Partnership- K.Grant,T.Hubler	Chapel Theater
10:00-10:45	Two-Year School Discussion	Chapel Theater
10:00-10:45	Four-Year School Discussion	Flicker
10:30-11:00	Break/Check-out (complete by 11 a.m.)	Salmon Gallery
11:15-Noon	Organic Chemistry Discussion	Flicker
Noon-1:30	Lunch/Business Meeting	Kingfisher

WCCTA EIGHTH ANNUAL CONFERENCE ABSTRACTS

Keynote Address:

The Molecular Science Project-Something New for Everyone

Arlene Russell
9:00-10:00 a.m.

University of California-Los Angeles
Chapel Theater

The Molecular Science project, one of five NSF-funded systemic reform initiatives, is comprised of a consortium of faculty from UCLA, California State University Fullerton, Mt. San Antonio College, and Crossroads School.

The goal of the Molecular Science project is to develop network-deliverable materials for lower-division chemistry courses framed around two kinds of learning units:

- guided **exploration** of databases and data sets,
- Calibrated Peer ReviewTM **applications**, which assess through writing students' understanding of the concepts and principles intrinsic in the explorations and the topics in the courses.

Over 100 learning units (explorations, applications) have been published or are in "press". Although there is a logical progression of learning from exploration to application, the units stand alone. Instructors can easily select any or all of the units in any topic, using the learning units as a supplement to traditional instruction or as the sole source of instruction in electronic classrooms.

At CSUF, the electronic classroom has led to a complete rethinking and restructuring of the curriculum taking advantage of server-based instruction. Fundamental changes have occurred in how the curriculum is presented, what students do in class, and how student assessment occurs. Rather than giving a serial set of lectures on the fundamental concepts that underpin our Molecular Science resources, the active-learning environment of the new classroom allows parallel development of the themes of the course. Short instructional activities facilitate the introduction and development of several curricular threads, which are reinforced throughout the semester. Students have time to gain and refine their knowledge of each of the concepts. (Based on our planning retreats, our original proposals identified nine fundamental chemical concepts: composition, structure, molecular bonding, intermolecular bonding, kinetics, energetics, reactivity, measurement and analysis, separation and purification.) The well-documented and effective pedagogy, espoused by the National Standards, which advocates spiraling concepts and principles in a strategy for learning, has seldom been used in higher education. The electronic classroom and the Molecular Science materials remove the barriers to its implementation in undergraduate science classes.

Friday Morning, April 21, 2000

Calibrated Peer Review™ -A Writing and Critical Thinking Instructional Tool

Arlene Russell, UCLA

10:15-NOON

Chapel Theater

Calibrated Peer Review™ (CPR), a new instructional management tool which has been developed under grants from NSF and HHMI, has become the framework for learning units in the Molecular Science Project instructional system. CPR enables an instructor to make frequent writing assignments that prove student understanding of concepts without increasing the instructor "grading" load. CPR instructors can choose learning units from the growing library of field-tested assignments or create their own assignments. In a Calibrated Peer Review assignment, students write short essays on a specific topic. Guiding questions focus both the direction that students should take in organizing their thoughts for the essay and encourage critical thinking about the topic. After electronic submission of the essays, students review "calibration" essays that are exemplary, contain misconceptions, or include common errors. When students demonstrate they are competent reviewers, they review three anonymous essays written by their peers (or the instructor) and finally their own essays. To launch a "CPR Assignment", an instructor selects an assignment, creates a class list, and sets the due dates for essay submission and assignment completion. A rich set of feedback information on group or individual student progress and performance is available at an instructor's fingertips. Well-designed CPR assignments promote the Molecular Science student achievement goals of a deep understanding of chemistry (or another discipline), honed scientific problem-solving skills, facility using technology, good scientific writing skills, and the ability to collaborate with peers.

CPR has been used to introduce writing and critical thinking in 15 different lower division courses within the Molecular Science consortium schools, and in courses in over a dozen other Chemistry Departments in institutions across the country. In addition it has been adapted to biology, microbiology, liberal arts, and geography courses at UCLA, to biology courses in two California State Universities, to English and ESL courses at City College of San Francisco, and adopted broadly by the Department of Economics at Cal State Northridge.

Real-World Hands-on Experiments with the FUN-SCI Program

Jerry DeMenna Buck Scientific

10:15-NOON Flicker

Just a few “fun” and “interesting (aka: non-boring!) experiments that you will be involved with in this session for the undergraduate teaching of analytical instrumentation. They focus on topics that the students deal with or are concerned with everyday, and thus inspire them to remember what they did during the experiment. This presentation includes a brief lecture on the FUNDamentals of analytical chemistry, spectroscopy and chromatography followed by a hands-on workshop to show examples of primary tools for analytical measurements.

Experiments include:

- atomic absorption spectroscopy: determination of minerals in vitamin tablets
- infra-red spectrometry: oils well that ends well, is it natural or “fake” engine oil?
- ultraviolet-visible spectrophotometry: examination of sun-screen lotions and SPF
- gas chromatography: measurement of alcohols from consumer products
- liquid chromatography: sodas and drinks, how much caffeine can be seen?
- fluorometry: the chemical “highlights” of fluorescent markers
- colorimetry: check your M & M candies for “true colors”

Friday Afternoon, April 21, 2000

Saturn 2000: The Ideal Mass Analyzer

Christina Bagwill Varian Inc.

1:15-2:00 Chapel Theater

The Saturn 2000 GC-MS is an excellent mass analyzer, offering ease of use, minimal maintenance, and flexibility to meet all of your needs. During this presentation the need for GC-MS will be defined as well as the unique problem solving features of the Saturn 2000. Some features include the ability to perform EI, CI, and MSⁿ within the same analysis, without any hardware changes. If you currently use GC-MS or are looking for a GC-MS, this presentation is for you.

Excitement in Organic Chemistry

Carole Berg Bellevue Community College

1:15-2:00 Flicker

Undergraduates in organic chemistry often need a topic in organic chemistry to grab their attention. The one project that I have found which seems to most profoundly excite them is a pharmaceutical drug poster and speech. They all select their own topic, which often becomes quite personal as they choose a drug taken by themselves or a family member. We host an all campus poster seminar where the students discuss their work with the public and many choose to give their speeches at this time. Examples of their work will be presented along with requirements and grading. We can also sing organic synthesis songs if the group so desires.

Sharing Chemistry Resources via Distance Technologies

JoAnn DeLuca (Central Washington University), John DiBari (Yakima Valley Community College), Richard Logan (Wenatchee Valley College), John Gerdes

2:30-3:30 Chapel Theater

We are now in our third year of delivering organic chemistry as distance collaboration among instructors at CWU, YVCC, WVC, and the WSU Tree Fruit Program. We will describe our experiences, assess our successes and short-comings, and present our plans for the future, including sharing of instrumentation via remote access. The organic chemistry efforts have recently been linked to plans for improving science advising in the central Washington region. These plans include the development of a website, maintained on a CWU server, that will provide information for students and their advisors about requirements and pre-requisites for various degrees and majors. Communications among faculty and advisors at two-year and four-year colleges and high schools will be facilitated through a workshop/meeting to be held on the CWU campus very early in the fall of 2000.

Your Erroneous Zones: Teaching Practical Applications of Error Analysis

Dave Reichgott Edmonds Community College

2:30-3:00 Flicker

“I measured 40 mL of solution A in a beaker and made a quantitative transfer to a 250 mL volumetric flask.” Why is this procedure unreasonable? In the General Chemistry laboratory sequence at Edmonds Community College, we teach and make use of practical applications of error analysis. The principal learning objectives include how to select glassware and other equipment for making measurements, how to determine which step in a sequence of measurements most severely impacts the outcome of an experiment and which steps do not, and how to communicate results with “confidence”. In order to accomplish this we teach how to estimate errors in measurements, how to determine and apply relative errors, how to calculate errors in answers, and how to express answers concurrently with their errors. Our teaching techniques have evolved over several years to introduce and repeat concepts in a context that assists students in “getting it”.

NSF Project Teach

Mary Whitfield Green River Community College

3:00-3:30 Flicker

GRCC has recently received a \$450,000 NSF grant to develop a 2 year degree program for pre-teachers. Part of the grant includes the development of an interdisciplinary science class especially targeted at future education majors. I'll share the details of the project and solicit input and advice from those of you who have been involved with similar projects.

Video/Multimedia Presentation

Marilyn Jacoby McGraw-Hill Publishers

3:30-4:30 Chapel Theater

Video on the “Evolution of a General Chemistry Text” by Dr. Martin Silberberg and on “The Impact of Multimedia on Introductory Chemistry Courses” by Dr. Scott Perry of the University of Houston will be shown. This presentation will also include a demonstration of Animations integrated with the General Chemistry text, and, if time permits, organic chemistry technology and the use of the learning by modeling CD-ROM.

The Efficiency and Effectiveness of Learning When Using Computers to Acquire and Analyze Data in General Chemistry Labs

Martha Kurtz Central Washington University

3:30-4:15 Flicker

Many schools, including Central Washington University, have begun using computer interfaces in general and introductory chemistry labs to aid students in acquiring and analyzing data. Few studies have been conducted to verify that using computers in this way actually benefits students. In this study students in a majors chemistry course who used the computers were compared with students who did not use the computers for the same experiments. Quiz and exam scores were analyzed along with attitude surveys and time factors to determine whether there were differences between the groups. Specific labs developed and tested will be presented and results of the efficiency and effectiveness analysis will be discussed.

Saturday Morning, April 22, 2000

Disentangling the World: Linking English and Chemistry

Perminder Sandhu and Vivian Dills-Parker Skagit Valley College

9:00-9:30 Flicker

This presentation will describe our experience and student outcomes as we collaborated in teaching college composition linked to Introduction to Chemistry. This paper will be reflective and based on our observations of student learning.

Enhancing the Undergraduate Laboratory Experience in Chemistry Through a Collaborative Research Partnership

Karen Grant (Columbia Basin College) and Tim Hubler (Pacific Northwest National Laboratory)

9:00-10:00

This presentation will discuss a novel approach to undergraduate science instruction. Specifically, we will discuss an ongoing collaborative approach to undergraduate research in chemistry conducted as a partnership between Columbia Basic College (CBC) and Pacific Northwest National Laboratory (PNNL). Students participating in this "Collaboratory" have been able to participate in high priority research activities conducted at a Department of Energy National Laboratory. The benefits to the students have been access to state-of-the-art instrumentation and enhanced understanding and performance in their college chemistry courses.

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April 20-22, 2000

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April 21, 2000

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