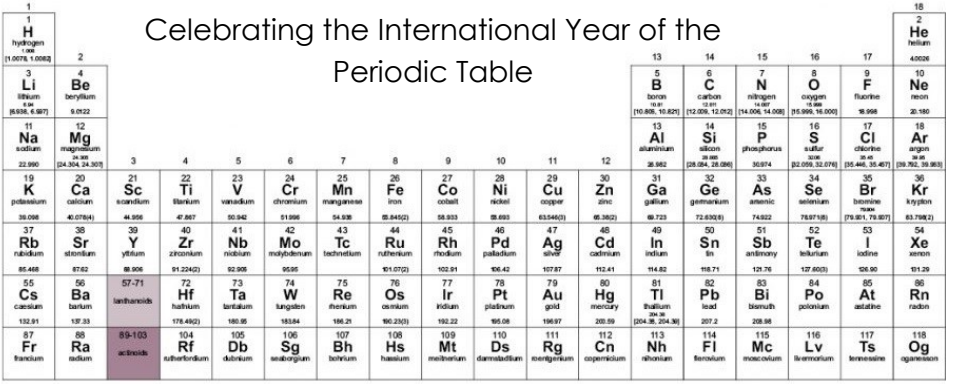
27th Annual Conference for the

Washington College Chemistry Teachers Association

October 3-5, 2019

Sleeping Lady Resort and Conference Center
Leavenworth, WA



Celebrating the International Year of the Periodic Table

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

United Nations Educational, Scientific and Cultural Organization

2019 IYPT International Year of the Periodic Table of Chemical Elements

IUPAC

Hosted by

South Puget Sound Community College and

The Evergreen State College

South Puget Sound Community College

SUCCESS — AMPLIFIED

evergreen

Organizers:

Sailaja Arungundram, Dharshi Bopegedera, James Chen, Marie Dunn

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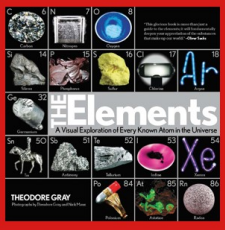
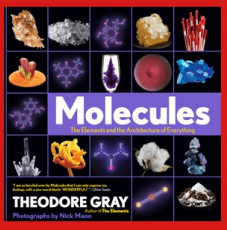
WELCOMES BESTSELLING AUTHOR

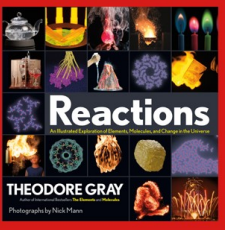
THEODORE GRAY

AND ALL WCCTA ATTENDEES

Thank you for all you do to make things work for your readers and students.







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Washington College Chemistry Teachers Association

2019 Conference Program at a Glance

Thursday, October 3, 2019

3 –10 pm Office	**Check-in**
4:30-10 pm Woodpecker	**Conference Registration**
6-7:30 pm Kingfisher Dining Lodge	**Dinner**
8-10 pm Woodpecker	**Thursday night game night** hosted by Ralph Morasch, Pierce College Since the first game night Several years ago at the WCCTA conference, The Pierce College crew has been engaging in monthly game nights. And although some people in the past might have been scared off because the games look to hard or complex, we want to invite you all to join us. We bring new people into game night almost every month, and they are all hooked as we are. The games are fun and exciting and cooperative. Please join us!
8-10 pm Woodpecker	**Fun and games with the periodic table** hosted by Sailaja Arungundram, South Puget Sound Community College Come play the periodic table jigsaw puzzle and Element O board games. Design your own element card and help build Mendeleev's periodic table wall poster. Win the periodic table jigsaw as a raffle prize."
8-10 pm Grotto Bar, hot tub, fire pit, etc.	Informal socializing

ACS Local Section
Portland

ACS Portland Section

- Your connection to the American Chemical Society and the Portland chemistry community
- Resources for chemical educators from elementary to college

Meet us at our dinner meetings!

- Oct. 10, Reed College Vollum Lounge
- Nov. 14, Reed College Vollum Lounge

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Friday October 4, 2019

7:15-8:15 am Kingfisher	**Breakfast**
8:30-8:45 am Chapel Theater	**Welcome**
8:45-9:45 am Chapel Theater	**Keynote Address** ***Tailpipes to Toilets: An environmental chemist's path measuring emissions from two very different sources*** Dr. Daniel Burgard, professor chemistry, University of Puget Sound
9:45-10:30 am Salmon Gallery	**Vendor Break**
10:30-10:55 am Chapel	***Teaching students to teach themselves - "Nuclear Chemistry Self-Study" in the first-year chemistry curriculum*** Dharshi Bopegedera ;The Evergreen State College
10:30-10:55 am Flicker	***Project-Based Laboratory Experiments for Teaching Instrumental Methods of Analysis*** Frank Dunnivant; Whitman College
10:30-10:55 am Woodpecker	***On-line, environmental, collaborative: revision of a liberal arts chemistry course*** JoAnn Peters, Timothy Sorey, and Alex Soto ; Central Washington University
11-11:45 am Chapel Theater	***Periodic Tales, Tiles & Trends: An Assessment Project to Improve Student Understanding of the Periodic Table*** Ted Baldwin & Cameon Geyer; Olympic College
11-11:45 am Flicker	***Statistical Study of Grit in STEM and Non-STEM College Students*** Jim Chen; South Puget Sound Community College and Harvard Extension School
11-11:45 am Woodpecker	***Integrate Climate Justice Into Your Course*** Sonya Doucette; Bellevue College

Friday October 4, 2019

11:45 am- 1:00 pm Kingfisher Dining Lodge	**Lunch**
1-1:45 pm Chapel Theater	***National Science Foundation programs that support undergraduate chemistry education*** Thomas B. Higgins; National Science Foundation
1-1:45 pm Flicker	***Online Proctored Testing for Online Classes*** Kathy Carrigan & Stephanie Bryan; Portland Community College
1-1:45 pm Woodpecker	***Is POGIL dead?*** Suki Smaglik; Yakima Valley College
1:55-2:40 pm Chapel Theater	***Biochemistry is not chemistry. Biochemistry is biology.*** Dinara Storfer; Washington State University
1:55-2:40 pm Flicker	***Transparent Assignment Design*** Wendy Lundquist ; Green River College
1:55-2:40 pm Woodpecker	***Food for Thought: What I learned creating a chemistry of cooking course for non-majors.*** Joan Vea Bleecker ; University of Washington Tacoma
2:40-3:15 pm Salmon Gallery	**Vendor Break with cake and coffee**
3:15-4:00 pm Chapel Theater	***A Visit with Madame Curie*** Carole Berg; Bellevue College

Friday October 4, 2019

4:10– 4:55 pm Chapel Theater	***Rapid Fire*** Hosted by Morgan Stock, South Puget Sound Community College Karen Stevens; Outreach Ann McNally; Mastering Organic Mechanisms Emily Sprafka Coleman; Student Prep for Flipped Classrooms Sonya Doucette; Ocean Acidification Dharshi Bopegedera; Equilibrium Experiment Dharshi Bopegedera ; Mole Concepts and Stoichiometry
4:10– 4:55 pm Woodpecker	**Practical Examples of Climate Science in Chemistry** Heather Price, North Seattle College
4:55– 5:30 pm	**Break**
5:30-6:45 Kingfisher Dining Lodge	**Dinner**
7-8:00 pm Woodpecker	**Keynote Address** ***The Periodic Table: A Work of Ages*** Theodore Gray
8-9:00 pm Woodpecker	**Book Signing with Theodore Gray**
8-10 pm Grotto Bar, hot tub, fire pit, etc.	**Informal socializing**

A no-host bar will be available from 7-9 pm in Woodpecker. Your purchases directly benefit WCCTA. Thank you for your support!

7:00-9:00 pm (Woodpecker)

Saturday October 5, 2019

7:15-8:15 am Kingfisher Dining Lodge	**Breakfast**
8:30-8:55 am Chapel Theater	***Incorporating Undergraduate Research into the Organic Chemistry Lab.*** Doug Young; Lane Community College
8:30-8:55 am Flicker	***A Novel Approach to Prep Chem*** Paul Buckley; Washington State University
8:30-8:55 am Woodpecker	***Use of a Stirling Engine in General Chemistry and Thermochemistry courses*** Karen Stevens; Whitworth University
8:30-9:25 am Salmon Gallery	***Office hours with a Program Officer*** Thomas B. Higgins; National Science Foundation
9-9:25 am Chapel Theater	***Interdisciplinary Model for Undergraduate Research*** Marie Dunn & Lynette Rushton ; South Puget Sound Community College
9-9:25 am Flicker	***Environmental Success Stories: Teaching a Positive-Message Non-Science's Majors Course in Environmental Chemistry/ Science*** Frank Dunnivant; Whitman College
9-9:25 am Woodpecker	***Discussion group for all Online Chemistry Courses*** Ralph Morasch ; Pierce College

Saturday October 5, 2019

9:30-9:55 am Chapel	***Mastery Grading: Can Changing Student Assessment Improve Learning?*** John Thompson ; Lane Community College
9:30-9:55 am Flicker	***UN Sustainability Goals and Chemistry*** Grace Lasker ; University of Washington Bothell
9:30-10:25am Woodpecker	***Rapid Fire*** Hosted by Carole Berg; Bellevue College Ruth Russo; Enology Themed Labs Cameon Geyer; Critical Thinking Assessment Heather Price ; Climate Change Suki Smaglik ; Periodic Properties Lab Nadine Fattaleh; Chem141/161 Placement Exam Jeffrey Engle ; Problem of the Day Jan Hylden ; Guided Learning in Chem110
10:30-11:00 am	**Break and Check out by 11 am**
11:00-12:00pm Woodpecker	**Business Meeting**
12:00-1:00 pm Kingfisher Dining Lodge	**LUNCH**
1:00 pm	**Meeting Adjourned! Have a safe drive home!**

Dan Burgard is a professor of chemistry at the University of Puget Sound and an affiliate associate professor at the University of Washington-Tacoma in the department of Interdisciplinary Arts and Sciences. At the University of Puget Sound, Dan teaches Analytical Chemistry, Instrumental Analysis, Environmental Analytical Chemistry and The Art and Science of Color. Dan received his Bachelors of Arts in chemistry from Colorado College in 1996. He taught chemistry for 5 years at a Denver area high school and then returned to graduate school receiving his PhD in chemistry from the University of Denver in 2006. His graduate work focused on using a ground based remote sensing device (RSD) developed at DU to measure gaseous vehicle emissions. Since joining the faculty at Puget Sound, Dan has used the RSD to measure gaseous emissions from a variety of mobile sources in the Pacific Northwest. However, recently Dan has changed focus and is now involved in wastewater-based epidemiology to determine drug use trends in communities. Dan is part of the Sewage CORE network, an international collaboration of researchers measuring illicit drug use trends from wastewater.

Program Details

Friday Keynote Address October 4, 2019

9:00 – 10:15 am **Chapel Theatre**

Tailpipes to Toilets: An environmental chemist's path measuring emissions from two very different sources

Daniel A. Burgard

Professor of Chemistry, Department of chemistry, University of Puget Sound

Abstract:

Vehicle exhaust and municipal sewage provide both an environmental burden for and a wealth of information about a community. For the past 17 years I have studied what leaves pipes and is destined for the environment. Initially focused on the remote sensing of vehicle gaseous emissions, I now quantify illicit drug consumption using sewage. While the instrumentation and samples have changed, both techniques provide community scale, real-world data. Wastewater-based epidemiology (WBE) is only a decade old technique but has been realized as a powerful complementary tool to traditional epidemiological metrics in Europe, Australia, and Asia, and is growing in North America. This presentation will present the WBE approach, provide results from some wastewater case studies in the U.S., and suggest how wastewater may be useful with current and future challenges related to public health.

10:30-10:55 AM **Chapel Theater**

Teaching students to teach themselves - "Nuclear Chemistry Self-Study" in the first-year chemistry curriculum

Dharshi Bopegedera , The Evergreen State College

Our goal as educators must be to train our students to become lifelong, self-learners. Once students graduate and leave college, their only resources for such self-learning would be books, journals, and web sources.

What better place to help student develop the skill of self-learning than in the first year chemistry course? The nuclear chemistry chapter provides a great opportunity to teach students how to teach themselves. Every student has at least heard about nuclear energy, nuclear waste, and nuclear bombs. Nuclear chemistry has connections to other science disciplines such as physics, biology, and geology. Therefore, students find nuclear chemistry to be inherently interesting, relevant, and interdisciplinary.

Nuclear chemistry is usually taught in the third quarter (or second semester) of the first year chemistry sequence. At this point, students have some background in chemistry and are familiar with their textbook. Hopefully, they have also made a few friends in the course who can be study partners as they venture into a self-study of nuclear chemistry.

I will share my experience of guiding first-year chemistry students through a self-study of the nuclear chemistry chapter in their textbook. I will discuss when in the first-year chemistry sequence this self-study best fits, how students were guided through this self-study, and how their learning was assessed.

In this International Year of the Periodic Table (IYPT), it is apt to explore how our understanding of nuclear chemistry lead to the expansion of the Periodic Table form 63 elements during Mendeleev's time to 118, as we celebrate its 150th birthday. How we could use IYPT as an opportunity to help students learn about the scientists (the Human Element) who shaped the current periodic table will also be discussed.

10:30-10:55 AM **Flicker**

Project-Based Laboratory Experiments for Teaching Instrumental Methods of Analysis

Frank Dunnivant , Whitman College

Over the last ten years, my students and I have taken examples from the research literature and adapted these experiments for use in instrumental methods of analysis. Students select from a list of experiments and work in pairs on their experiment for four to six, four-hour lab periods. Different pairs of students are working on three to four experiments during each lab period and on three to four instruments (LC-UV-Vis, LC-MS, GC-MS, or GC-FID). The final product of these experiments are then presented by the students in a 15-minute oral presentation and a short lab report. This presentation will give a short summary of each experiment and how to access our projects and results.

10:30-10:55 AM **Woodpecker**

On-line, environmental, collaborative: revision of a liberal arts chemistry course

JoAnn Peters, Timothy Sorey, and Alex Soto , Central Washington University

Chem 101 at Central Washington University has undergone major revision over the last few years to synchronize with a new general education model, accommodate student demand for an on-line laboratory course, and continue to meet the needs of several technical majors. The redesign includes a new title, “Chemistry and Planet Earth”, and fits within the general education “Science and Technology” knowledge area and the “Sustainability” pathway. Topics include: atmospheric chemistry, the ozone layer and greenhouse gases; chemistry of natural waters, pH, and acid rain; combustion of fossil fuels; materials, energy, and recycling. Chemistry fundamentals are introduced as necessary to understand the topics presented. In-class collaborative problem-solving and on-line discussions play key roles. On campus students spend two hours per week in the lab; emphasis is on acquisition and interpretation of data and experiments parallel the lecture. The first on-line version of the course, delivered in spring 2019, included short videos, panopto/powerpoint lectures, old-fashioned homework, and frequent on-line discussions. The laboratory component employed LabPaqs from Hands-on Labs with experiments selected from both Chemistry and Environmental Science courses. This continues to be a work in progress and we welcome your questions and input!

11:00-11:45 AM **Chapel Theater**

Periodic Tales, Tiles & Trends: An Assessment Project to Improve Student Understanding of the Periodic Table

Ted Baldwin & Cameon Geyer , Olympic College

Over the last several years, we have been analyzing the results of the ACS General Chemistry Exam , which we administer as the final exam in our 3-quarter General Chemistry series. It became apparent that our students consistently displayed a disturbing lack of understanding of the conceptual underpinnings of the Periodic Table, specifically periodic trends in properties such as atomic & ionic radii, ionization energies, etc. We devised an assignment for all first quarter General Chemistry Students in Fall 2018 and Winter 2019 sections that involved each student designing an element tile for a large display of the Periodic Table, writing a tale involving their assigned element, and writing an extensive analysis of periodic trends with respect to their element.

In this session, we will present details of our analysis of ACS exam data, the assignment, and the results.

11:00-11:45 AM **Flicker**

Statistical Study of Grit in STEM and Non-STEM College Students

Jim Chen , South Puget Sound Community College and Harvard Extension School

Examining self-reported responses to the Grit-S Scale and its components (Duckworth & Quinn, 2009) by college students. Analyzing differences in Grit-S and component scores based on school type (community college versus four-year institution), class status, and discipline of study (STEM versus non-STEM).

11:00-11:45 AM **Woodpecker**

Integrate Climate Justice Into Your Course Sonya Doucette , Bellevue College

The pace of anthropogenic climate disruption continues to outpace society's understanding of the accompanying planetary peril and what we can do about it. The United Nation's Intergovernmental Panel on Climate Change released a report in October of 2018 warning that we have 12 years to significantly reduce global CO2 emissions and, if we continue on our current path, the risks of drought, floods, wildfire, extreme heat, and poverty for hundreds of millions of people will increase significantly. Chemistry teachers have a large role to play in educating students about climate change and, in most cases, it is very easy to connect chemistry concepts to climate change topics. Despite this, of all STEM disciplines, chemistry is one of the least engaged with this topic in the classroom. This workshop-style session, adapted from a Curriculum for the Bioregion Sustainability Integration Exercise, will help you pair a disciplinary chemistry concept with a climate change topic to create a chemistry lesson centered on climate change. During the session, you will spend time brainstorming individually and in groups, and presenting your ideas and receiving feedback from colleagues. You will walk away from the session with an outline of a climate change lesson to use in one or more of your chemistry courses.

1:00 –1:45 PM **Chapel Theater**

National Science Foundation programs that support undergraduate chemistry education

Thomas B. Higgins , National Science Foundation

This presentation will provide a brief overview of National Science Foundation (NSF) programs that support projects focused on undergraduate chemistry education research and practice, as well as scholarships for students. Within NSF's Division of Undergraduate Education (DUE), these include Improving Undergraduate STEM Education (IUSE); Scholarships in Science, Technology, Engineering, and Mathematics Education (S-STEM); Advanced Technological Education (ATE); and the Robert Noyce Teacher Scholarship programs. Solicitations for these programs have recently been revised, and all now incorporate tracks designed to support relevant STEM education research projects.

1:00 –1:45 PM **Flicker**

Online Proctored Testing for Online Classes

Kathy Carrigan & Stephanie Bryan , Portland Community College

Stephanie Bryan and Kathy Carrigan have been testing Proctorio and ProctorU as two different Online Proctoring systems. We will share what works and what did not work. We will share how we manage student integrity for our online GOB courses. We hope to have a lively discussion about student online integrity.

1:00 –1:45 PM **Woodpecker**

Is POGIL dead?

Suki Smaglik, Yakima Valley College

POGIL (Process Oriented Guided Inquiry Learning) made a large impact on chemical education in the 1990s and 2000s but is not given much credit in the current discussions on active learning and critical thinking. POGIL is time-intensive for both the instructor and the students. But does the outcome justify the process? POGIL.org maintains an active website and training opportunities. If POGIL is no longer widely used at the college level, what has it morphed into, or has it just been abandoned? This round table discussion will provide an introduction to the POGIL concept, and explore the types of activities credited with a POGIL flavor. If you use POGIL in your classroom, please bring a short activity/experience to share. If you have used POGIL in the past but no longer do, share with us why you no longer use it, and what you do instead. If you've never heard of POGIL, come and engage.

1:55-2:40 PM **Chapel Theater**

Biochemistry is not chemistry. Biochemistry is biology.

Dinara Storfer Washington State University

General, Organic, and Biological (GOB) chemistry is a standard sequence that is geared toward freshman-level non-majors. While general and organic chemistry is based on the laws of chemistry and physics; biological chemistry does not belong to the same platform of reasoning. When we teach general and organic chemistry we use “chemistry language” - mathematically formulated laws of quantum mechanics, electrostatics, kinetics, and thermodynamics. When we teach biochemistry, that language breaks down and we tend to utilize subjective, often teleological biological terms such as “biological molecules” are being “carried”, reactions are “controlled”, cycles are being “fed”, and polymers are being “read” to “replicate” (i.e., standard language GOB textbooks). Thus, being trained in chemistry, I suggest teaching biochemistry in chemistry terms, by exploring the chemistry approaches used to discover biological phenomena, rather than descriptions of the phenomena themselves. Here, I propose an alternative approach for teaching biological systems that are associated with physical laws governing animate phenomenon, as well as experimental techniques invented to discover biological pathways (e.g., glycolysis, Kreb’s cycle, etc.).

1:55-2:40 PM **Flicker**

Transparent Assignment Design

Wendy Lundquist , Green River College

The transparent teaching framework or transparent assignment design is a teaching strategy that can equitably enhance student success[1]. A transparent or ‘tilted’ assignment explicitly informs students on the purpose, tasks and criteria for success on the assignment. Green River College, along with a number of colleges in Washington state, embarked on a project where participating faculty taught one course in spring 2019 in which they ‘tilted’ at least two assignments. This presentation provides an overview of this project, as well as, a summary of its findings (if available at the time of the presentation). Participants will also have an opportunity to review examples of ‘tilted’ assignments and to work collaboratively with peers to 'tilt' their own assignments. Attendees are strongly encouraged to bring two copies of an assignment from one of their courses. Preferably (but not required) this is an assignment that is completed outside of class, has a reasonable impact on a students’ course grade, and is assigned after students have learned some essential course skills.

[1] Winkelmes, Mary-Ann et al, “A Teaching intervention that Increases Underserved College Students’ Success”, Peer Review (Winter/Spring 2016).

1:55-2:40 PM **Woodpecker**

Food for Thought: What a learned creating a chemistry of cooking course for non-majors.

Joan Vea Bleecker , University of Washington Tacoma

Inspired by work from Dr. Das, the keynote speaker at the WCCTA 2016 Conference, I created and taught a chemistry-of-cooking lab course for non-majors at the University of Washington Tacoma. In my talk, I will share some of the lessons I learned from the process (e.g., there IS such a thing as too much ice cream!) and some of my favorite assignments and demonstrations. I will also share how what I learned in the chemistry of cooking class has informed my teaching in general chemistry.

3:15-4:00 PM **Chapel Theater**

A Visit with Madame Curie

Carole Berg, Bellevue College

Marie Curie, who discovered Polonium and Radium, was the first to define and use the word "radiation". She was born in Warsaw, Poland, but lived most of her life in France. This presentation is a live performance of her life from birth to death and beyond. Come and enjoy asking her questions directly!

4:10-4:55PM **Chapel Theater**

Rapid Fire

Hosted by Morgan Stock, South Puget Sound Community College

Each presenter has five minutes to share the essence of an idea on teaching a concept, a favorite lab or demo, outreach idea, etc.

Karen Stevens; Outreach
Ann McNally; Mastering Organic Mechanisms
Emily Sprafka Coleman; Student Prep for Flipped Classrooms
Sonya Doucette; Ocean Acidification
Dharshi Bopegedera; Equilibrium Experiment
Dharshi Bopegedera ; Mole Concepts and Stoichiometry

4:10– 5:00 PM **Flicker**

Practical Examples of Climate Science in Chemistry

Heather Price , North Seattle College

Chemistry and climate science share numerous overlaps that can aid students in learning general, GOB, and non-majors chemistry. In this session, we will explore connections between chemistry and climate science, with specific practical examples of climate science that can be leveraged for a general chemistry audience. Examples we will explore and build on include:

Balancing Equations, Thermodynamics, and Redox: Fossil fuels (coal, oil, and natural gas) can be used in balancing equations, to compare redox reactions, and enthalpy. The principle component of natural gas, methane, is a potent greenhouse gas, while solid carbon (coal) and liquid octane (oil) are not. For coal or oil to affect climate, they must first undergo combustion, while natural gas impacts climate through both leaking and combustion.

Henry's Law: One can use the temperature dependence of the Henry's Law constant to explore dissolved oxygen in marine and aquatic waters. For instance, warm tropical waters have lower oxygen, while the cold Arctic have higher dissolved oxygen concentrations. Students can compare dissolved oxygen at preindustrial ocean temperatures to current and future dissolved oxygen, as oceans and lakes warm. Vapor pressure calculations/examples, can also be included, comparing lower dissolved oxygen in a mountain lake to higher oxygen levels in a lake at sea level.

Acids and Solubility: Use carbon dioxide as an example for Lewis acids and for its impact on ocean pH. Also, how ocean pH affects the solubility of calcium carbonate shells through demo, discussion, and/or calculations in class or lab. Discuss and/or calculate impacts of increased carbon dioxide (more than an ice age level increase >110ppm since 1900) in concentration, on ocean, lake, or rain pH. Students can further discuss the impact of acidification on calcium carbonate solubility for local oysters and plankton.

Other practical examples we may explore in the session include: stoichiometry, VSEPR, IR spectroscopy, and kinetics.

The Puget Sound Section of the American Chemical Society (ACS-PSS)

We are proud to once again participate in the Vendor Session and sponsor the two invited speakers at the 2019 WCCTA conference. Please connect with our Executive Committee members during this conference. Let us know how we can serve you better and partner with us to enrich the chemistry community in the Puget Sound region.

The Executive Committee meeting is on the second Monday of each month at 7 PM at the North Seattle Community College. Come share your ideas! Join a committee that piques your interest or start a new committee!

Two important upcoming events:

- The 2019 Pauling Medal award and symposium, will be held at the Oregon State University on October 26, 2019 in honor of the Pauling Medalist **Professor Catherine Murphy** of the University of Illinois at Urbana-Champaign.
- The 17th Annual Career Event will be held in February, 2020. Venue will be announced on our website. Please encourage your students to participate and join us.

Please announce the following awards to your students (pugetsound.sites.acs.org/scholarshipsandawards.htm). We need more students to apply for these awards!

- $1,500 scholarships for college students (separate awards for 2-Year and 4-Year College students)
- Grants for student Clubs for projects & travel to conferences

To join the ACS Puget Sound Section for only $10 please contact Carole Berg

ACS Local Section
Puget Sound

ACS-Puget Sound Section

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Subscribe to the Section email list	www.chem.plu.edu/mailman/listinfo/puget-sound-acs-news

Event	Contact	When
Awards to student clubs	Len Andrews	Ongoing
Career Event	Dharshi Bopegedera	February 2020
Chemistry Olympiad	Clarita Bhat	February - April
Chemists Celebrate Earth Week	Karen Goodwin	April 19-25, 2020
High School Teacher Award	Jennie Mayer	Feb.– Mar. 2020
National Chemistry Week	Roxanne Smith	Oct.20-26, 2019
Pauling Symposium and Award	Len Andrews	Oct. 26, 2019
Public Relations	Craig Fryhle	Ongoing
Safety Committee	Natalie Merrill	Ongoing
Scholarships to college students	Jennie Mayer	February 2020
Senior Chemists Committee	Despina Strong	Ongoing
Social Events	Carole Berg	Ongoing
Sustainability Committee	Natalie Merrill	Ongoing
Tour Speaker events	Len Andrews	Ongoing
Undergraduate Research Symposium	Neal Yakelis	Spring 2020
Webmaster/Newsletter Editor	Jonathan Clark	Ongoing
Women Chemists Committee	Despina Strong	Ongoing
Younger Chemists Committee	Michael Meechan	Ongoing

ACS Local Section
Puget Sound

Theodore Gray is the co-founder of *Wolfram Research, Inc*, makers of *Mathematica*, and the author of *The Elements*, the internationally best-selling book and App on the beauty of the periodic table, which has been translated into twenty-five different languages. He is the creator of the BAFTA award-winning, 2013 iPad App of the Year "*Disney Animated*", and proprietor of *periodictable.com* and *mechanicalgifs.com*. His most recent project is a book on the functional beauty of mechanical devices, to be published in the fall of 2019.

To celebrate the International Year of the Periodic Table, the WCCTA Organizing Committee in collaboration with the Puget Sound Section of the American Chemical Society invited Theodore Gray to be the Friday Evening Speaker at the 2019 meeting of the WCCTA. We invite WCCTA members to get their copies of Gray's books signed by the author at the Sleeping Lady Conference Center on Friday, October 4, 2019. His books can be purchased from the Sleeping Lady Gift Shop.

Friday Evening Keynote — October 4, 2019

7:00-8:00 pm — Woodpecker

The Periodic Table: A Work of Ages

Theodore Gray

Abstract:

The architects of the great medieval and renaissance cathedrals knew that they could not live to see their completion: construction times were measured in centuries. And so too the architect of the Periodic Table of the Elements, Dimitri Mendeleev, could not expect ever to see his table finished. Generations of scientists in their thousands worked to lay in place the bricks of the periodic table, not knowing when or if the edifice would ever be finished. So it is a great honor to see in our time the completion of this great work of ages, an accomplishment six generations in the making. Just in time for the 150 anniversary of its first publication, the Periodic Table of the Elements is finally complete, with all 118 elements discovered and properly named. The United Nations has declared 2019 the International Year of the Periodic Table, and in this talk we will celebrate not only its history, but the living wonder that is this marvelous collection of beautiful things, the elements.

8:00-9:00 pm

BOOK SIGNING

A no-host bar will be available from 7-9 pm in Woodpecker. Your purchases directly benefit WCCTA. Thank you for your support!

7:00-9:00 pm

8:30-8:55 AM **Chapel Theater**

Incorporating Undergraduate Research into the Organic Chemistry Lab.

Doug Young , Lane Community College

Colleges across the nation are incorporating more research experiences for undergraduates. This high impact practice gives science majors a better sense of what their careers may look like and forces students to engage in higher level learning. In this talk, we will discuss how we converted our third-term organic chemistry lab into a student-directed research project. Examples of research projects, syllabi, rubrics, student feedback, and future directions will all be discussed.

8:30-8:55 AM **Flicker**

A Novel Approach to Prep Chem

Paul Buckley , Washington State University

A new preparatory chemistry course is offered at WSU with a novel organization of the general chemistry curriculum. The curriculum is aligned along four main conceptual themes. We take four sequential “passes” through the chapters normally covered in a traditional first semester general chemistry textbook, but with each pass, only the parts of each chapter that correspond to the current conceptual theme are examined. The course follows a flipped-classroom model, and also requires a two-hour small group problem solving session led by an undergraduate TA. This talk will describe the course and present preliminary data on student success as their performance is tracked through general chemistry.

8:30-8:55 AM **Woodpecker**

Use of a Stirling Engine in General Chemistry and Thermochemistry courses

Karen Stevens , Whitworth University

A low-cost, modified Stirling Engine is described which can be used in various chemistry courses. In general chemistry it can be used to demonstrate the conversion of heat into work and also how pressure and volume changes relate to the work done. In thermochemistry courses, it can be used in a more advanced way to calculate work from P-V graphs, and compare that value to theoretical calculations.

8:30-9:25 AM **Salmon Gallery**

Office hours with a Program Officer

Thomas B. Higgins, National Science Foundation

Come and talk to an NSF Program Officer about your ideas for improving the learning environment of your students, and he will guide you where your ideas align with NSF funding opportunities.

9:00-9:25 AM **Chapel Theater**

Interdisciplinary Model for Undergraduate Research

Marie Dunn and Lynette Rushton , South Puget Sound Community College

Undergraduate research at South Puget Sound Community College is part of a project that is a collaborative effort between students, faculty and community partners from chemistry, biology, and physics. During a three quarter sequence, students explore an area of research interest, develop a proposal, carry out a research project, and present their findings. We will share our experiences, successes and challenges. This is an evolving project. We welcome your input!

9:00-9:25 AM **Flicker**

Environmental Success Stories: Teaching a Positive-Message Non-Science's Majors Course in Environmental Chemistry/Science

Frank Dunnivant , Whitman College

This presentation will illustrate how an undergraduate, non-science majors course can prepare students to become environmentally responsible citizens and empower them with scientific knowledge to make the right decisions concerning the environment. The course is a one-semester introduction to important topics in the environmental sciences where emphasis is placed on historic environmental success and what major problems remain to be solved. Topics that are covered in the course include the availability of clean water, effective wastewater treatment, restoration of the stratospheric ozone layer, the removal of anthropogenic produced lead, past and current endocrine disruptors, the proper use of risk assessment, an effective environmental legal U.S. and international framework, technological environmental advances, and appropriate actions to combat human-caused global change/chaos.

9:00-9:25 AM **Woodpecker**

Discussion group for all Online Chemistry Courses

Ralph Morasch, Pierce College

I would like to host a discussion group covering teaching all online Chemistry courses; How do others deal with cheating? How are you insuring you have weekly contact with students? How are you insuring the student listed is the one taking the test/earning the grade? What are people doing that is innovative/new approach? I am sure there are other questions also.

Yes, I know a lot of questions/areas to cover, but I do not have the answers yet, and I struggle daily with the thought of being an all online teacher in Chemistry. (My one saving thought is we only teach prep courses (Chem&100 and 139 not required course all online.) Additionally I want to improve my class an have no Idea where to start.

9:30– 9:55 AM **Chapel Theater**

Mastery Grading: Can Changing Student Assessment Improve Learning?

John Thompson , Lane Community College

Exams are a staple for student assessment, but are they really the best tool? We rely on them to be a fair evaluation of learning, yet we know that they ignore economic and cultural barriers, students workloads, jobs, and other responsibilities. Furthermore, test anxiety is a growing problem. Looking for solutions, we were inspired by a C&E News article where quests (longer than a quiz, shorter than a test) are used for student assessment and multiple attempts are allowed. We tried quests in our year-long organic sequence where we graded for mastery, with no partial credit, to push student learning and to simplify the grading task. I will share our experience and results.

9:30– 9:55 AM **Flicker**

UN Sustainability Goals and Chemistry

Grace Lasker, University of Washington Bothell

In 2015, the United Nations adopted a set of 17 Sustainable Development Goals (SDGs) as part of a global agenda to improve the lives of people by addressing world-wide challenges of poverty, protecting the planet and ensuring prosperity for all. There is excellent potential for the chemistry enterprise to make significant contributions to help achieve these goals. However, the chemistry enterprise must commit to a transition to systems and life cycle thinking approaches; consider the source of all chemicals and their transformations; their end of life fate; and impacts on people, the environment and the economy. Discussing these issues will help advance the chemistry enterprise to achieve sustainability, assist those being trained to enter the workforce, and help better communicate the societal benefits of green and sustainable chemistry technologies. Engaging chemistry educators is key to this shift. This talk will discuss what the UN Goals are, how chemistry connects, and provide some ideas for integrating these into chemistry curriculum.

9:30– 10:25 AM **Woodpecker**

Rapid Fire

Hosted by Carole Berg, Bellevue College

Each presenter has five minutes to share the essence of an idea on teaching a concept, a favorite lab or demo, outreach idea, etc.

Ruth Russo; Enology Themed Labs
Cameon Geyer; Critical Thinking Assessment
Heather Price ; Climate Change
Suki Smaglik ; Periodic Properties Lab
Nadine Fattaleh; Chem141/161 Placement Exam
Jeffrey Engle ; Problem of the Day
Jan Hylden ; Guided Learning in Chem110

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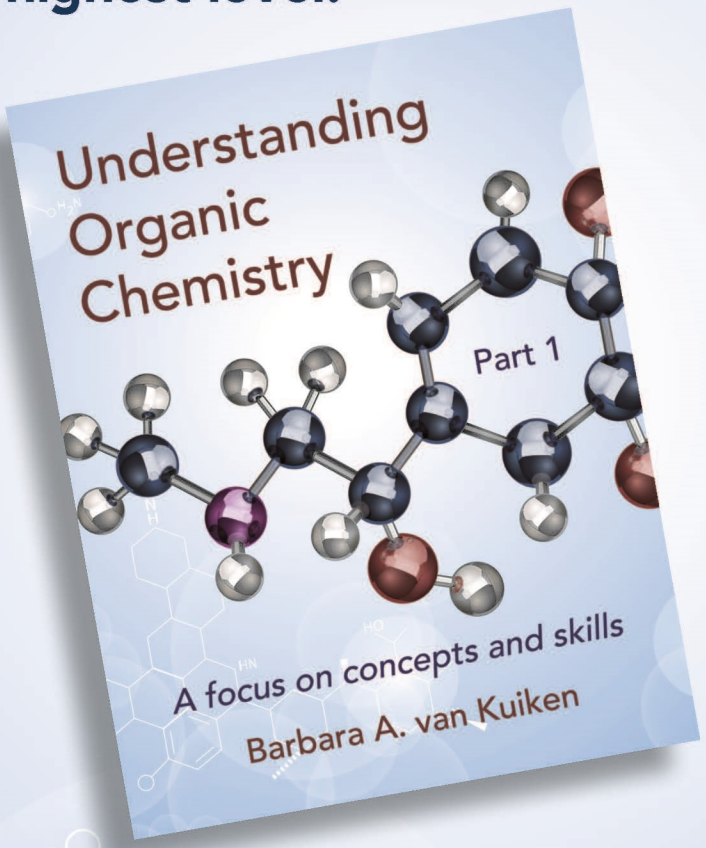

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