

Portland Section 2019 May 9 Meeting Notice

Organophosphate and Sulfide Degradation by Molybdenum Complexes: How Guidance by Program Directors Played a Positive Influence

a talk presented by

Professor Louis Kuo

Department of Chemistry, Lewis & Clark College

7:30 pm Thursday May 9, 2019

Reed College Vollum Lounge

3203 SE Woodstock Blvd, Portland, OR 97202

[map](#)

[Dinner Reservations](#)

Dinner reservations FIRM deadline 9 PM Monday May6

Prices increase after the deadline! (including at the door)

Schedule: 6:00 pm social•6:45 pm buffet dinner•7:30 pm Service Awards•7:45 talk

Portland Section webpage <http://www.acsportland.org>

Inside

- Louis Kuo abstract/bio
- NWSE winners poster session during social hour
- ACS Scholarship recap/photos
- OSSF recap April 20
- Earth Day Tree Planting event
- Scholarship History project
- NORM 2019 Registration open
- Remembering Walt Partenheimer

Organophosphate and Sulfide Degradation by Molybdenum Complexes: How Guidance by Program Directors Played a Positive Influence

Professor Louis Kuo

*Department of Chemistry, Lewis & Clark College
Portland OR*

Professor Kuo's presentation is an overview of the fundamental chemistry of how molybdenum complexes degrade organophosphates and sulfides. Organophosphates (OPs) are the key functional group in pesticides/herbicides, and they have become ubiquitous in the environment. OPs work as enzyme inhibitors of fundamental transformations critical in neurotransmission and in amino acid biosynthesis. Some OPs are toxins with neurological effects, and their buildup is a public health concern. There is a need for the safe and complete degradation of these OPs, which begins with understanding the fundamental chemistry of their breakdown.

The fundamental chemistry begins with how molybdenum organometallic and coordination complexes degrade OPs. Specifically, Mo(IV) metallocenes effectively hydrolyze phosphonothioates of the form $\text{PhP}(=\text{O})(\text{SR}1)(\text{OR}2)$ with the desired P-S scission. This work evolved towards air-stable Mo(VI) coordination complexes including supported Mo-peroxide polymers that are operationally convenient. The target OPs include a variety of sulfur-containing pesticides and the phosphinate $[\text{RP}(=\text{O})(\text{OR})2]$ herbicide glyphosate. In some cases, the OP degradation yielded products that were commodity chemicals; this represents a form of phosphorus recovery which is a national priority. In working with the phosphonothioates, we found sulfur oxidation played a critical role in the OP degradation. This led to a parallel project that uses Mo(VI) coordination complexes as sulfide oxidation catalysts. A basic understanding of this oxidative chemistry has implications in the sulfur remediation of fossil fuels.

This fundamental chemistry research on OP and sulfide degradation has been a collaborative effort with undergraduates at Lewis & Clark College. The theme of undergraduate research had its roots from Louis' own undergraduate experience at Harvey Mudd College, which was followed by a PhD in 1989 from Northwestern University with Tobin Marks and

a postdoc at CalTech with Jacqueline Barton. Louis started his academic career teaching at Lewis & Clark in 1992.

Professor Kuo has mentored over 50 undergraduates and high school students on various research projects while taking two sabbaticals with professors Thomas Cech (1989 Nobel prize recipient) and Robert Grubbs (2005 Nobel prize recipient).

Intel Northwest Science Expo Winners in Poster Session at May 9 Section meeting

The Intel Northwest Science Expo (NWSE) was held Friday April 12 in the Viking Pavillion at Portland State University. Portland ACS awards two NWSE Special Awards, each with a certificate and \$250 cash award. The Portland ACS Special Award for Outstanding Chemistry Project went to Catlin Gabel student Nayan Murthy for his project "**Self Assembly of Copper Nanowires for Transparent Flexible Screens**". The Portland Section Portland Industrial Chemists Association (PICA) Special Award went to Zoe Strothkamp, Oregon Episcopal School, whose biochemistry project was entitled "**Time Dependence of Acid phosphatase and Chininase Activity in Trichome Secretions of *Drosera capensis* in Response to Prey Capture**". The PICA Special Award recognizes an Outstanding Applied or Practical Chemistry Project by a junior or senior high school student. Students and their parents are invited to the May 9 meeting to be dinner guests and to show their project posters during the 6pm social hour prior to dinner.

2019 Portland Section Scholarships

At the March 11 meeting, three outstanding students from local universities received Section scholarships, each totaling \$4,000 including a travel stipend to present a paper or poster at a national ACS meeting. Receiving the Richard Van Santen Scholarship was Haley Smith from Linfield College; the Zeh scholarship was awarded to Vanessa Eng, University of Portland; and the James Anderson Scholarship was presented to Margaret Hebert, Reed College. During the 51-year period from 1968 through 2019, 136 outstanding chemistry majors have received scholarships from the Section for an aggregate value of nearly \$300,000. Pictures on page 4 and 5.

OSSF April 20 Recap and pictures

The 4th annual Oregon Science Startup Forum (OSSF) was held Saturday April 20 in the Robertson Life Sciences Building at the OHSU waterfront complex. Over 100 participants and presenters shared the experiences of starting a science business. The event concluded with three “pitch presenters” who were coached on their startup proposals by three pitch coaches.



OSSF participants network over lunch.

OSSF participants learn about the successes and failures encountered in the highly competitive world of the startup from presenters who've had both successes and failures. Important insights and the highs and lows of entrepreneurship were shared by Rita Hansen, CEO of Onboard Dynamics; the event was a complete success, and we plan for many more Startup Forums. Additional Pictures Page 6.

Earth Day Tree Planting brings out ACS Volunteers

Boeing Portland partnered with Friends of Trees, the American Chemical Society Portland Section, Greenpeace and other groups for a Rockwood / Nadaka Nature Park tree planting event on Saturday, April 13. There were a grand total of 195 volunteers from the community in attendance volunteering at this event. Over 150 trees were planted across Rockwood's West Gresham neighborhoods and 405 trees and shrubs were planted at Nadaka Park last Saturday! The rain held off until later in the morning and the volunteers were Northwest tough, which didn't stop the volunteers from making a huge difference greening East County.

Scholarship History Project

The Section's Scholarship History Committee has undertaken a “Scholarship History Project”, tracking down former scholarship winners, and preparing for a reception for them June 18 during NORM 2019. During the 51-year period from 1968 through 2019, 136 outstanding chemistry majors have received scholarships from the Section for an aggregate value of nearly \$300,000. [Bios of former winners](#) are on the Portland [website](#). To donate to the Portland Scholarship endowment, send your check payable to ACS Portland Section Scholarships to Dave Reingold, 808 Ne Siskiyou, Portland OR 97212-2270.

Plan to attend NORM 2019 June 16-19



[Register for NORM 2019!](#) The NORM 2019 Steering Committee under the able leadership of co-chairs Jim Tung and Angela Hoffman are completing plans for this year's ACS Portland hosted Northwest Regional Meeting at Portland State University. Over 300 abstracts have been submitted comprising the technical program; in addition, multiple networking and social events ensure that participants have the opportunity to “meet and greet” and learn about careers of other chemists in the Northwest Region's 14 Local Sections.

A total of 26 sessions will comprise the technical part of the program, which begins Sunday June 16 with the Plenary Talk by Linus Pauling Medal Award-ee Dr. Geraldine Richmond, University of Oregon. The Vendor Expo opens Monday morning and continues through Tuesday afternoon. The poster session follows the Plenary Sunday evening in the Viking Pavillion. The Women's Luncheon (ticketed) is planned for Monday noon; Tuesday morning is the Senior Chemists Breakfast (ticketed); and Tuesday afternoon includes two social events, the LGBTQ+ Social and the Portland Section Scholarship History Reception. Tuesday evening is the Award Banquet (ticketed). The NorBoard meeting (breakfast) is Wednesday morning. In all there will be 10 social events and three teacher workshops, in addition to four ACS Career Pathways workshops (Sunday all day).

Remembering Walt Partenheimer

Walt Partenheimer, 53-year ACS member, passed away Feb. 18, 2019, from ALS.

Walt was a zero-waste advocate in the manufacturing sector. At the October 11, 2007 meeting of the Portland Section Walt presented a talk entitled “**Bringing Green Chemistry to Industrial Processes: the Aerobic Oxidation of p-Xylene to Terephthalic acid in Supercritical Water (scH₂O)**”, which had only water as a waste product.

Walt joined the Portland Section in 2006 when he retired and moved to Portland. He served on the NORM 2011 Steering Committee and attended Silver Chemist events.

Walt received his PhD in inorganic/organometallic chemistry from the University of Iowa (1963).

After a post-doctoral fellowship at the University of Illinois (1968) and an Assistant Professorship at Clarkson University (NY) 1970-75, he spent 19 years as Senior Research Associate at Amoco Research laboratories “inventing and understanding the mechanisms of heterogeneous and homogeneous catalysts to convert hydrocarbons to oxygenates using O₂”. In 1994, Walt went on to DuPont Experimental Station where for ten years he was Senior Research Associate involved in projects such as obtaining chemicals from biomass, recycling plastics, developing anti-septics derived from biomass (lignin) and improving terephthalic acid plants. His work has resulted in 52 papers, 34 patents and 60 presentations at scientific meetings. Until recently, Walt worked as a consultant and was involved in other independent projects.

Pictures from the April 11, 2019 ACS Portland Section Meeting



Haley Smith, Linfield College, Richard Van Santen Scholarship.



Margaret Hebert Reed College Anderson Scholarship

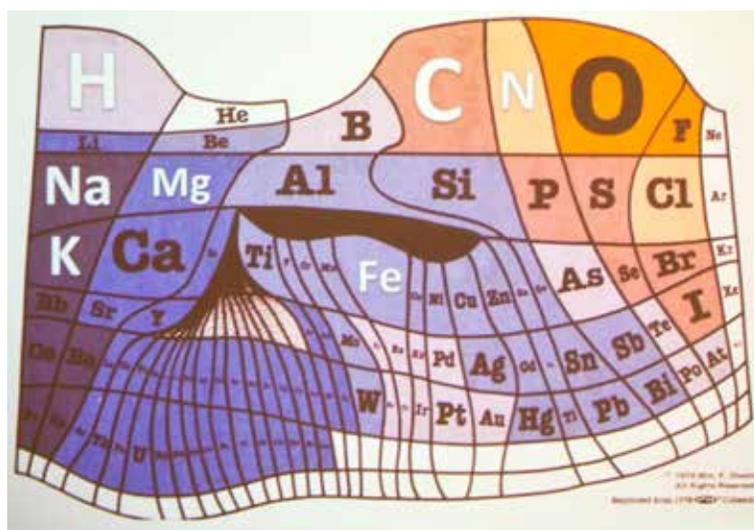




Vanessa Eng, University of Portland, Zeh Scholarship



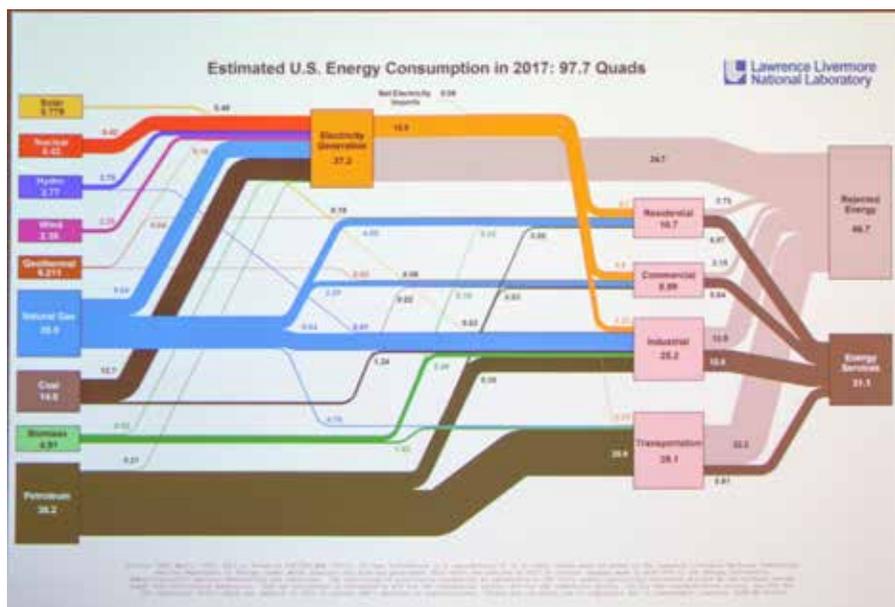
David Ji, OSU, speaker at April 11 ACS meeting



Slide of Periodic Table of elemental abundance (David Ji)



Title slide (David Ji)



Slide US ENERGY Consumption in 2017 (David Ji)

Oregon Science Startup Forum

Saturday April 20, 2019
Robertson Life Sciences Building



Opening Panel (l to r): Ted Hobbs, Oregon National Primate Research Center; Rita Hansen, CEO, Onboard Dynamics; Dana Garves, founder of Oregon BrewLab; Calden Carroll, co-founder and President of SupraSensor Technologies; Skip Rung, President and Executive Director of the Oregon Nanoscience and Microtechnologies Institute (ONAMI), Moderator.



Sheila Ramerman, Founder and Principal Consultant at SJR Associates, a medical device regulatory affairs firm.



William Newman is Managing Director at Northwest technology Ventures, an Oregon seed fund.



Caroline Lewis, Rogue Venture Partners, identifies new investment opportunities to support Portland's start-up ecosystem.



Charla Triplett, President of Catalyze, which supports both start-ups and corporate innovation groups.



Practice Your Pitch (l to r): Viswanth P. Kashi, CEO/COO, Phoneshake; August Sick, Consultant, Entrepreneur-In-Residence, ONAMI; Charla Triplett, President, Catalyze; Rita Hansen, CEO, Onboard Dynamics; Ashlyn Gallagher (IDENTIFI ZikVC); Pavan Thanai, CMO, Phoneshake; Taqi Sleel, CIO/CVO, Phoneshake; Griffin Christenson, EyeZone; Jim Tung and Troy Wahl, ACS OSSF.