

The Richard Olsen Lecture Series



The Olsen Lectures in Chemistry were established by Richard K. Olsen, a respected teacher and researcher, who spent most of his professional career as a faculty member in the Department of Chemistry & Biochemistry of Utah State University. The Lectureship is in honor of the memory of his parents, Kenneth Beal & Sarah Young Olsen, and is in appreciation to the Department for the opportunity to realize his goal of serving as a University professor.

Dr. Olsen was born in Provo, UT in 1935. He attended Brigham Young University where he earned his BS in chemistry in 1960. He then went on to graduate school at the University of Illinois, obtaining a doctorate in 1964. During his graduate studies Dr. Olsen was a National Science Foundation Fellow and a Public Health Service Fellow. This was followed by postdoctoral research at the Stanford Research Institute and the University of Utah.

Dr. Olsen began his faculty career as an Assistant Professor at Utah State University in 1967. He quickly rose through the ranks, first to Associate Professor (1970) and then to full Professor (1978). His research interests focused on synthesis of peptide antibiotics and novel amino acids. He was the recipient of numerous research grants from prestigious agencies such as the National Institutes of Health. During his time at Utah State, Dr. Olsen mentored 19 PhD and MS students, as well as a dozen postdoctoral fellows. He authored nearly 60 articles in peer-reviewed journals and wrote four review articles.

Dr. Olsen is fondly remembered by many organic chemistry students. In retirement, he volunteered as a tutor and mentor to organic chemistry students. After retirement Dr. Olsen developed his interest in fine art, and became a prominent artist in the area. His paintings appeared in a number of shows in Cache Valley. He was kind enough to donate some of his work to the Department, where it is proudly displayed in the Library, the department head office, and elsewhere. Richard passed away in January 2012, and is survived by his wife LaVina, and their five children.

The Richard Olsen Lecture Series

2018-2019 Lecturer



Professor Heather C. Allen

Professor of Chemistry and Biochemistry
Department of Chemistry and Biochemistry,
The Ohio State University

Electric Fields, Ion Pairing, and the Salty
Aqueous Surfaces

4:00 P.M. Wednesday, April 3rd, 2019
Eccles Science Learning Center, Rm 046

Department of Chemistry & Biochemistry
Utah State University
Logan, Utah

*The 2018-2019 Richard Olsen Lecture will be presented by **Professor Heather C. Allen**, Professor of Chemistry and Biochemistry, Department of Chemistry and Biochemistry, The Ohio State University*

Biographical Sketch: Professor Heather C. Allen attended Saddleback College from 1989-1992, completing much of her undergraduate science and general education coursework before transferring to the University of California, Irvine in 1992. After her second year at Saddleback, she focused on the sciences, targeting chemistry as her major, winning a Saddleback College Science Scholarship Award to continue advancement toward her chemistry degree.

She received her B.S. degree in Chemistry in 1993, and Ph.D. in Physical Chemistry in 1997 at the University of California Irvine working with Nobel Laureate F. S. Rowland, and Professors D. Blake, J. Hemminger, and B. Finlayson-Pitts. She continued her postdoctoral studies in 1997 at the University of Oregon advised by Professor G. L. Richmond. Following the Saddleback Science Scholarship, as a student and postdoctoral researcher, she was also recognized with other scholarships and fellowships: Fannie and John Hertz Fellowship, EPA, NSF Traineeship, and a NOAA Post-Doctoral Fellowship in Climate and Global Change.

Dr. Allen began her Professorial career at Ohio State in 2000, and has since been recognized for many research accomplishments: Research Innovation Award from Research Corp., NSF CAREER Award, Beckman Young Investigator Award, Alfred P. Sloan Research Fellow Award, Camille Dreyfus Teacher-Scholar Award, Fellow of the American Association for the Advancement of Science (AAAS), Ohio State Distinguished Scholar Award, the Alexander von Humboldt Research Award from Germany, and most recently the Tohoku Forum for Creativity awarded in Japan.

In addition, Dr. Allen has been recognized for several mentoring awards over the years including the Ohio State Office of Minority Affairs Mentor Award, an Empowered Woman Award from the City of Columbus, and the American Chemical Society National Award for Encouraging Women into Careers in the Chemical Sciences. She is a Full Professor in the Department of Chemistry and Biochemistry, and in the Department of Pathology. Her research specialization is in molecular organization, ion pairing, and hydration at aqueous interfaces.

Lecture Title: Electric Fields, Ion Pairing, and the Salty Aqueous Surfaces

Abstract: Our oceans are the largest generators of highly saline and organic-rich atmospheric aerosol. Research in the Allen lab investigates ocean and sea spray aerosol systems to understand interfacial speciation and organization to then inform on atmospheric aerosol, cloud, and marine surface reactivity, correlating to climate change and its contributing uncertainties. Surface selective experiments reveal surface propensity of hydrated ions and ion pairs and generation of electric fields inherent to the ordering of electrical double layers at aqueous surfaces. Magnesium solvent shared ion pairing with sulfate is one example where relatively few ion pairs produce a significant electric field at an aqueous surface. In recent work, we investigate iron (III) hydration and speciation. Lipid and fatty acid – ion binding and surface domain formation is investigated to shed light on trace metal enrichment of the ocean's sea surface microlayer and of sea spray aerosol surfaces. The surface electric field is measured using a Kelvin probe technique and surface potentiometry using radioactive Americium, a new method being refined in our laboratory. Surface tensiometry, Brewster angle microscopy (BAM), and surface vibrational probes of sum frequency generation (SFG), and infrared reflection absorption spectroscopy (IRRAS) are discussed.

The Department of Chemistry and Biochemistry is pleased to welcome Professor Allen as our Olsen Lecturer.

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- 2006 Dale L. Boger, The Scripps Research Institute
- 2007 Norman J. Dovichi, University of Washington
- 2008 William J. Jorgensen, Yale University
- 2009 Jacqueline K. Barton, California Institute of Technology
- 2011 Jon Clardy, Harvard University
- 2012 Marc D. Porter, University of Utah
- 2013 Kendall N. Houk, UCLA
- 2015 Hung-wen (Ben) Liu, University of Texas
- 2016 William B. Tolman, University of Minnesota
- 2017 Jonas C. Peters, California Institute of Technology
- 2019 Heather C. Allen, the Ohio State University