

Spectroscopy Society of Pittsburgh

SEPTEMBER MEETING

Wednesday–September 19, 2007

Duquesne University
Mellon Science Hall of Science
(Maurice Falk Hall)

TECHNOLOGY FORUM - 5:30 PM

Robert L. Wolke
Professor Emeritus of Chemistry, University of Pittsburgh
Washington Post Food Science Columnist
“**Chemical Abuse in the Kitchen**”

This presentation on the science of food and cooking is intended for scientists and nonscientists alike -- for anyone who is interested in the procedures and products of the kitchen, whether techie or foodie. Professor Wolke will examine several long-established kitchen practices and beliefs that may or may not be scientifically defensible.

He will describe his research into debunking a variety of long-held food myths. Such concepts as solubility, viscosity, heat capacity, emissivity, boiling point, crystallization, hydrogenation and partial pressure will be explained and used to analyze common kitchen operations.

A few of the issues that will be addressed are why brick ovens make better pizzas, whether baking soda absorbs refrigerator odors, how to keep soda fizzy, how sea salt differs from mined salt, when to add cream to one's coffee, the use of raw potato to remove excess salt from a soup, what marinating does (and does not do), and the role of alcohol in cooking with wine.

After the lecture, Professor Wolke will sign copies of his books, "What Einstein Told His Cook: Kitchen Science Explained" and "What Einstein Told His Cook 2: Further Adventures in Kitchen Science."

Bio

Robert L. Wolke received his B.S. in Chemistry from the Polytechnic Institute of Brooklyn (now Polytechnic University) and his Ph.D. in Nuclear Chemistry from Cornell University.

His academic appointments have included Research Associate at the Enrico Fermi Institute of the University of Chicago and the Oak Ridge National Laboratory; Assistant and Associate Professor of Chemistry at the University of Florida; Associate and Full Professor, director of the Office of Faculty Development, and Academic Dean of Semester at Sea at the University of Pittsburgh, where he is currently Professor Emeritus. Short-term appointments include the University of Puerto Rico; the Universidad de Oriente in Venezuela (on USAID mission); Resident Fellow at the Camargo Foundation in Cassis, France; and education consultant for UNESCO and the USIA in Bangladesh.

He is the author of *Impact: Science on Society*; *Chemistry Explained*; *What Einstein Didn't Know: Scientific Answers to Everyday Questions*; *What Einstein Told His Barber: More Scientific Answers to Everyday Questions*; *What Einstein Told His cook: Kitchen Science Explained* (nominated for both the James Beard Foundation's and the International Association of Culinary Professionals (IACP's) awards for best technical or reference book of the year); and *What Einstein Told His Cook 2: Further Adventures in Kitchen Science*. His four "Einstein" books have been translated into 20 languages.

Since 1998, Wolke has been writing the FOOD 101 column for The Washington Post. His journalism awards include the James Beard Foundation award for best newspaper column, the IACP's Bert Greene Award for best newspaper food writing, and the American Chemical Society's 2005 Grady-Stack Award for interpreting chemistry to the public.



TECHNICAL PROGRAM - 8:15PM

Dr. Robert M. Corn
Professor, Department of Chemistry
University of California-Irvine

“Combining Surface Plasmons, Diffraction Gratings and Nanoparticles for Ultrasensitive Biosensing”

Surface bioaffinity biosensors have become invaluable biotechnological tools for the rapid, multiplexed detection of biomolecules. In the last decade, a number of surface-sensitive spectroscopic techniques based on changes in the local optical index of refraction near an interface upon adsorption have emerged as attractive alternatives to traditional fluorescence-based detection methods for surface bioaffinity biosensing. For example, we have successfully applied surface plasmon resonance imaging (SPRI) to measure the bioaffinity adsorption of DNA, RNA, antibodies, proteins and biomarkers. In this talk I will describe our recent efforts to create the next generation of ultrasensitive biosensors which use a combination of (i) surface enzyme chemistry and (ii) nanoparticle surface incorporation and (iii) nanoparticle-enhanced diffraction gratings (NEDG).



Bio

Dr. Robert M. Corn, Professor of Chemistry at the University of California Irvine, is the recipient of the 2007 Pittsburgh Spectroscopy Award. Professor Corn is being honored for his leadership in the field of interfacial spectroscopy. He was among the first to apply surface plasmon resonance imaging to the study of biomolecular assembly, protein and DNA interactions, and biomolecule sensing. With recent work involving microfluidics and enzymatic amplification at the surface, he has actually reinvented his own field. His group has also made seminal contributions in the area of second harmonic generation and the use of polarization modulation FTIR to elucidate surface and interfacial structures and to study interfacial electron transfer. Recent work includes DNA self-assembly and DNA computing on carefully tailored surfaces. Professor Corn has published over 100 research papers and book chapters.

Professor Corn received his B.A. in Chemistry, summa cum laude, from the University of California at San Diego in 1978. He received his Ph.D. in 1983 from the University of California at Berkeley under the direction of Prof. Herbert Strauss. Following a postdoctoral appointment with Michael Philpott of IBM San Jose Research Laboratory, he joined the faculty of the University of Wisconsin-Madison. Professor Corn was promoted to Professor there in 1994 and served as the Evan Helfaer Professor from 1996 to 2001. In 2004 he joined the faculty of the University of California at Irvine.

Professor Corn is active in a wide variety of professional activities, having served on a number of editorial advisory boards (including Langmuir and Analytical Chemistry) and having organized a variety of symposia, conferences, and workshops. In addition to holding the Evan Helfaer Professorship at the University of Wisconsin, he has received Fellowships from the Ecole Polytechnique Federale de Lausanne and the Japan Society for the Promotion of Science.

Dinner Reservations:

The entrée is Beef Wellington. Please email Carolyn Benga at crbssp@yahoo.com or call (412) 487-0915 to make dinner reservations **NO LATER THAN FRIDAY**, September 14, 2007. Dinner will cost \$8 and checks can be made out to the SSP. If you have dietary restrictions, please let Carolyn know when you RSVP.

Parking Instructions:

The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting. If any difficulties arise, contact Dr. Mitch Johnson at Duquesne University.