Reactions in Lipid and Lipid-like Environments and Applications of the Chemistry

Debbie Crans, Symposium Organizer, Dept. of Chemistry, Colorado State University, Ft. Collins, Colorado, Professor. She received her Ph.D. in Organic Chemistry from Harvard University under George Whitesides. She earned her B.S. at the University of Copenhagen and did postdoctoral research at the University of California, Los Angeles. Her research interests include the biochemistry of phosphorus, vanadium and other transition metal ions as related to metabolism. She also studies enzymes, particularly phosphatases, kinases, and beta polymerase. A recent focus of her research is with lipids and model lipid environments and the interaction of metal ions and lipids. She has received a number of awards including ACS Fellow; CSU Undergraduate Teaching, Research, and Mentoring Award; Alfred P. Sloan Research Fellow; and Eli Lilly Young Investigator Award. She serves on the Editorial Board of Inorganic Chemistry and also the Editorial Board of Chemija. She serves on the Council of Society for Biological Inorganic Chemistry and is the Program Chair of the Inorganic Division of ACS.

Vince Rotello, Professor, University of Massachusetts, Dept. Chemistry, Amherst, Massachusetts. He earned his Ph. D. from Yale University and his B.S. from Illinois Institute of Technology. He did Postdoctoral research at M.I.T. His research focuses on the use of nanomaterials in controlling the interfacial interactions in complex systems. He tailors the interfaces through the atomic-level control provided by organic synthesis to develop particles for biological applications. These include gene and drug delivery agents and sensors for identifying pathogens. He has received the NSF Career Award and the Cottrell Scholar Award. His topic is "Applications of nanoparticles as surfactants."

George Negrete, Professor, University of Texas, Dept. of Chemistry, San Antonio, Texas. His research focuses on enhancing the competence of liposomes for medicinal agent delivery applications using novel fatty amino acids developed by his lab. His topic is "Enhancing the competence of liposomes as carriers."

Bharat Baruah, Assistant Professor, Kennesaw State University, Dept. Chemistry & Biochemistry, Kennesaw, Georgia. He received his Ph.D. from Jadavpur University in India and his M.S. degree from Dibrugarh University in India. He did postdoctoral research at Colorado State University. The goal of his research is to encapsulate metal-based drugs in nanocapsules and investigate drug release spectroscopically. He also researches drug release from liposomes and nanocapsules. His topic is "Combining nano and lipid to modify chemical properties."

Audra Sostarecz, Associate Professor, Monmouth College, Dept. Chemistry, Monmouth, Illinois. She is interested in investigating molecular interactions in relation to membrane domain formation. She is particularly interested in the ability of the cellular membrane to serve as a barrier to the cell due to the hydrophilic and hydrophobic nature of the lipid bilayer. Some of her research projects include the use of new antibacterial molecules in combating cystic fibrosis, drug delivery systems, the use of vanadium complexes as insulin mimics, and cholesterol studies related to viral replication.

Mukund S. Chorghade, AgroGreen Biofuels, Newton, MA. The research of his company involves biofuels. He is an organic chemist and has over twenty-five years of experience in discovery and development of pharmaceuticals, agrochemicals, and polymers. His topic is "Fascinating Adventures in Industrial Chemistry: An insider's perspective."

Lieve Laurens, Senior Scientist, National Renewable Energy Laboratory (NREL), Golden, Colorado. At NREL she works at determining the oil content in algae using near infrared spectroscopy. She investigates using light to filter microalgae based on its lipid content. She earned her undergraduate degree in biotechnology. Her presentation topic is "Thermal conversion of algae biomass to soluble sugars and extractable lipids."

Michio Kurosu, Associate Professor of Pharmaceutical Sciences, University of Tennessee Health Sciences, Memphis, Tennessee. The title of his talk is "Synthesizing lipid-like drugs as antibacterial agents targeting vitamin K biosynthesis."

Michael Johnson, Professor, New Mexico State University, Dept. Chemistry & Biochemistry, Las Cruces, New Mexico. He received his Ph.D. from New Mexico State University and both his M.A. and B.S. from University of Missouri at Columbia. He did postdoctoral work at the University of Illinois and the University of Guelph in Canada. His research focuses on binding of fatty acids to cytochrome c, electron transfer reactions, and research on the ferrate ion. His talk is entitled "How microemulsions can modify reaction rates in electron transfer and proton transfer reactions."

Nancy Levinger, Professor, Colorado State University, Dept. of Chemistry, Ft. Collins. The research in her lab focuses on the influence of condensed-phase environments on chemical reactions. She has probed solvation dynamics at various interfaces such as reverse micelles and the surface of nanoparticles in solutions. She has worked to increase research opportunities for undergraduates. She is a Fellow of the American Physical Society and received the NSF Young

Investigator Award. Her topic is “Changing character of water droplets as a function of size and how this impacts solute properties.”