



SEMINARS IN CHEMICAL AND BIOMOLECULAR ENGINEERING



Friday, Apr. 26, 2019

10:00am - 11:00am

Boelter Hall 3400

Nosang V. Myung

Professor

Chemical and Environmental Engineering

UC Riverside

"Old Stagnant Technology Becoming Hot Technology: Electroplating Advanced Functional Materials"

The ever-increasing demands for faster, smaller and less expensive systems have resulted in the development of a novel, cost-effective processes. Electrochemical processes including electrodeposition, and anodizing meet the needs of emerging technology. It is one of the easiest and most versatile solution-based synthesis techniques that can be used in a cost-effective and scalable manner. It typically operated near ambient conditions and able to synthesize various materials including metals, metal oxides, conductive polymers and semiconductors. Precise control over the dimensions, composition, morphology, and degree of crystallinity can be achieved by varying electrodeposition parameters, such as the applied potential, electrolyte concentration, temperature, agitation, and additives. Additionally, the non-equilibrium reaction makes it possible to synthesize stoichiometric or non-stoichiometric materials easily without changing other aspects of the material properties. In this presentation, applications of electroplated materials including thermoelectrics, biological and chemical sensor arrays will be discussed.

Professor Nosang Vincent Myung received his B.S. M.S. and Ph. D. Degree in Chemical Engineering from the University of California, Los Angeles in 1994, 1997, and 1998, respectively. He spent three years as a research engineer at the same institution. In 2001-2003, he joined micro electromechanical systems (MEMS) group at Jet Propulsion Laboratory (JPL) which is one of NASA center as a member of engineering staff. In 2003, he joined Department of Chemical and Environmental Engineering at University of California-Riverside and served as the Department Chair from 2011-2017. Currently, he is the founding director for UC-KIMS Center for Innovative Materials for Energy and Environment and Specialty Chief Editor for Frontiers of Chemistry, Electrochemistry Section. During his career, he received a few awards including 2018 ECS Electrodeposition Division Research Award, KICHe President Award, Brainpool Fellow from Korean Government, University of California Regent Fellowship, Jet Propulsion Laboratory Spot Award, Abner Brenner gold medal award from American Electroplaters and Surface Finishers Society (AESF), First time author's award from Plating and Surface Finishing, National Science Foundation graduate fellowship, and Department of Education fellowship. Dr. Myung's research interests are focused on the synthesis of nanoengineered materials and apply these materials in various advanced applications including spintronics, biological and chemical sensors, electronics, optoelectronics, energy harvesting, and environmental remediation. Dr. Myung's group objective is to control nanoscale sized features to enhance material properties and device functions beyond those that we currently know. Currently, he published over 200 peer-reviewed journal papers and his h-index is 55 with the total citation of over 11,000.