



Electrodeposition of Thin Films and Nanostructures for Energy Conversion and Storage

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Location : Guyon Auditorium

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Abstract: Electrodeposition is a bottom-up processing method in which solid films are assembled on an electrode surface from molecular and ionic precursors in solution. The rate of the reaction is precisely controlled through the applied potential, and microstructure and orientation of the film can often be controlled through solution additives. In our lab, we have studied the epitaxial electrodeposition of metal oxide thin films and nanostructures onto single-crystal substrates for several years. Recent work in our lab has focused on materials that exhibit resistance switching, and on films and nanostructures for energy conversion and storage. In this talk, I will discuss the electrodeposition of cobalt oxide and oxyhydroxide catalysts for the photoelectrochemical splitting of water into hydrogen and oxygen gas, and I will present recent results on the electrodeposition of germanium nanowires from aqueous solution.

Jay A. Switzer is Curators' Professor and the Donald L. Castleman Distinguished Professor of Chemistry at the Missouri University of Science and Technology (formerly, University of Missouri-Rolla). He is also a Senior Investigator in the Materials Research Center. He received his B.S. in Chemistry from the University of Cincinnati in 1973, and his Ph.D. in Inorganic Chemistry from Wayne State University in 1979. Professor Switzer has spent most of his career working in the areas of electrochemistry and electrodeposition.

In 1986, Dr. Switzer joined the Materials Science and Engineering Department of the University of Pittsburgh as an Associate Professor. In 1990, he moved to MUST as a Professor of Chemistry. Switzer became a Curators' Professor of Chemistry in 1994, and was appointed the Donald L. Castleman Professor at UMR in 1999. He is best known for his research on the electrodeposition of ceramic superlattices, epitaxial films, and chiral catalysts. Switzer is a Fellow of the American Association for the Advancement of Science (AAAS) and the Materials Research Society (MRS).