

Spontaneous Nanostructures in the Solid State

Abstract:

Solid-solid and solid gas reactions can give rise to interesting micro and nanostructures that can be engineered to serve a number of useful functions. I will describe an extensive body of work on inducing porosity (micro, meso, and hierarchies) in functional solids through spontaneous processes, without the use of pre-formed templates. This work has led to the exploitation of magnetic interfaces that can be formed through solid state reactions, including exchange-biased nanostructures of metals on antiferromagnetic monoliths. I will also describe some related recent work on the prospects of "intelligent" catalysts based on noble metal ions in oxide hosts.

Bio:

Ram Seshadri received his PhD in 1995 from the Indian Institute of Science in Bangalore. After some years as a post-doctoral fellow in Caen, France, and in Mainz, Germany, he joined the faculty of the Indian Institute of Science in 1999. He moved to the Materials Department at the University of California, Santa Barbara in 2002 as an Assistant Professor. Since July 2008, he is Professor in the Materials Department, and the Department of Chemistry and Biochemistry at UCSB. Ram is the author of over 150 publications in the broad area of functional inorganic materials, and is a recipient of the ExxonMobil Solid State Chemistry Faculty Fellowship of the American Chemical Society.