



16th International Conference on Surfaces,
Coatings and Nanostructured Materials
www.nanosmat.org/special.html

ABSTRACT:

Precursor Routes to Functional Nanomaterials for Energy Applications

Neerish Revaprasadu

Department of Chemistry, University of Zululand, Private Bag X1001,
Kwa-Dlangezwa, 3886, South Africa.
RevaprasaduN@unizulu.ac.za

Nanoscale materials have long promised to revolutionize science and technology. The fascinating properties realised when materials dimensions shrink all the way down to a few hundreds/thousands of atoms have bedazzled scientists for the past few decades. The use of these functional materials in technological applications is still in it's infancy with exponential growth expected within the next few years. These applications have encompassed fields as disparate as medicine, biology, energy conversion and storage, catalysis, sensing, nanocomposite engineering, cosmetics, to cite the most popular ones. While great strides have been made in the synthesis of nanomaterials on lab scale, the ability to scale up the production has still not reached maturity. There are numerous methods used to prepare nanomaterials, which fall into various categories. This lecture will highlight the hot-injection precursor route and solventless melt method, both using single molecular precursors. Examples involving II-VI binary and ternary semiconductors will be shown. Examples of 2-D materials will also be presented. In particular a step by step approach to precursor synthesis will be presented. The challenges and intricacy of preparation will also be discussed. The lecture will highlight sub themes such as green chemistry, shape control, phase purity and energy applications of the materials.