



**MATERIALS DEPARTMENT / MRL
JOINT COLLOQUIUM**

Friday, November 13, 2009, 4:00 PM, ESB 1001



“Chemical Strategies in Nanoscience”

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Abstract

In the first part of the talk, we update selected chemical strategies used for the focused functionalization of single walled carbon nanotube (SWNT) surfaces. In recent years, SWNTs have been treated as legitimate nanoscale chemical reagents. Hence, herein we seek to understand, from a structural and mechanistic perspective, the breadth and types of controlled covalent reactions SWNTs can undergo in solution phase, not only at ends and defect sites but also along sidewalls. Controllable chemical functionalization suggests that the unique optical, electronic and mechanical properties of SWNTs can be much more readily tuned than ever before, with key implications for the generation of truly functional nanoscale working devices.

In the second part of the talk, environmentally friendly synthetic methodologies have gradually been implemented as viable techniques in the synthesis of a range of nanostructures. In this work, we focus on the application of green chemistry principles to the synthesis of complex metal oxide and fluoride nanostructures. In particular, we describe advances in the use of the hydrothermal protocols and template-directed techniques as environmentally sound, socially responsible, and cost-effective methodologies that allow us to generate nanomaterials without the need to sacrifice on sample quality, purity, crystallinity, in addition to control over size and shape.

Host: Professor Ram Seshadri

LIGHT REFRESHMENTS WILL BE SERVED PRIOR TO THE SEMINAR AT 3:45PM