



## CEM SPECIAL SEMINAR

**Tuesday, December 8, 2009**

**4:00-5:00 pm, Smith Seminar Room  
1080 Physics Research Building**

# Oxide-based Diluted Magnetic Semiconductors and Defect Ferromagnetism

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### **Abstract:**

Diluted magnetic semiconductors (DMS) are a novel class of materials wherein non-magnetic semiconducting materials are doped with magnetic ions with the intent of building spin functionality therein. This field has witnessed tremendous activity during the past decade with some definitive successes in the domain of III-V semiconductors. However similar efforts in the case of oxide based systems have yielded mixed results with confusions regarding intrinsic vs. extrinsic effects. Interestingly the corresponding results have also revealed a rich variety of new phenomena and potentially novel mechanisms of ferromagnetism. In this talk I will briefly review this field and then present a set of our research results on the TiO<sub>2</sub> system dilutely doped with magnetic and non-magnetic dopants. I will also discuss few potential applications.

### **Biographical Sketch:**

Dr. Satish Ogale is currently Senior Scientist and Ramanujan National Fellow at the National Chemical Laboratory in Pune, India. He received his Ph.D. in Physics from the University of Poona, and he was on its faculty for 18 years. Dr. Ogale then worked as a Senior Research Scientist at University of Maryland MRSEC for 9 years, before returning to India in 2006. His research interests are in metal oxides, spintronics, thin films and heterointerfaces; nanomaterials for solar energy and optoelectronic applications. Dr. Ogale has published over 335 papers, which have received over 6,700 citations so far. A Fellow of the Indian Academy of Sciences, Dr. Ogale has received the C.V. Raman Prize, the B.M Birla Prize, and the MRS-India Medal.

Hosted by: Prof. Nitin Padture (457-8114; padture.1@osu.edu)



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