

## C. K. Majumdar Memorial Lecture

The C K Majumdar Memorial Lectures are organized by the Satyendra Nath Bose National Centre for Basic Sciences, Kolkata as a tribute to the late Professor Chanchal Kumar Majumdar, Founder-Director of the Centre.



### Past Speakers

N Mukunda	Geometric Phases for Two- and Three-Level Quantum Systems
B Sriram Shastry	Dynamical Symmetries, Accidental Degeneracies and Transport in Many Body Systems
Sudhanshu S Jha	Superconductivity in Solids: Misconceptions and Realities
Guruswamy Rajasekaran	Recent Discoveries in Neutrino Physics
Jainendra K. Jain	A new class of Fermions in Physics
David Logan	Optics and transport in heavy electron materials: theory meets experiment

7<sup>th</sup>

## C. K. Majumdar Memorial Lecture



by

**Professor R Ramesh**

on

4<sup>th</sup> January 2008

at

Purbashree Auditorium  
Bharatiyam Multiplex, EZCC, Salt Lake



**S N Bose National Centre for Basic Sciences**  
Kolkata

## A B S T R A C T

### WHITHER OXIDE ELECTRONICS ?



Complex oxides exhibit a rich spectrum of functional responses, including magnetism, ferroelectricity, highly correlated electron behavior, superconductivity, etc. The basic materials physics of such materials provide the ideal playground for interdisciplinary scientific exploration. The advent of high temperature superconductivity in the cuprates, ushered in a new era of scientific and technological exploration of these fascinating materials. Over the past two decades, I have had the fortune of being able to work in this field, learning and exploring with my colleagues, students and postdocs. Our work would not have been possible without the continuous support of various federal agencies, including, DOE, NSF, DARPA, ONR, ARO and AFOSR as well as several industrial sources. Together we are exploring the science of such materials (for example, ferroelectricity, colossal magnetoresistance, multiferroicity, etc) and their applications in thin film form by creating model epitaxial heterostructures and nanostructures. Specifically, we are studying the role of thin film growth, heteroepitaxy and processing on physical and functional properties. A new development has been the discovery of the formation of spontaneously assembled nanostructures that exhibit 3-D heteroepitaxy. In this talk I will describe our scientific and technological successes and lessons learned with examples assembled from many areas of oxide electronics and will finish the presentation with some closing thoughts on where we are heading in the years to come.

## S. N. Bose National Centre for Basic Sciences

Block JD, Sector III, Salt Lake, Kolkata 700 098



On behalf of the Faculty and Staff of the Centre

I have great pleasure in inviting you to the

### 7<sup>th</sup> C. K. Majumdar Memorial Lecture

to be delivered by

**Professor R Ramesh**

Department of Materials Science & Engineering  
and Department of Physics  
University of California, Berkeley, USA

on

### WHITHER OXIDE ELECTRONICS ?

at

Purbashree  
Bharatiyam Cultural Multiplex  
Eastern Zonal Cultural Centre  
IB-201, Sector III, Salt Lake, Kolkata 700 106

on

Friday, 4<sup>th</sup> January 2008 at 3.30 p.m.

followed by

High Tea (at 5.00 pm).

**Arup Kumar Raychaudhuri**

Director