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A Seminar by NUS Nanoscience & Nanotechnology Initiative

Chemical Nanotechnology: From Molecules to Product Applications

Speaker: Prof. Dr. Sanjay Mathur

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&
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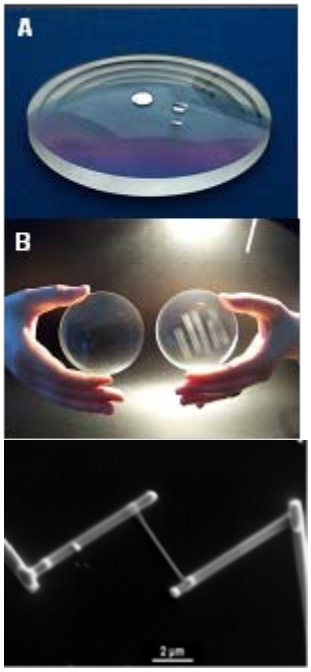
DATE : 30 April 2008 (Wednesday)
TIME : 2.00 to 3.00pm
VENUE : EA#06-03 Seminar room, Faculty of Engineering

Abstract

This talk will present how chemically processed nanoparticles and nanowires of different metal oxides open up new vistas of material properties, which can be transformed into advanced material technologies. The examples will include application of superparamagnetic iron oxide nanoparticles for drug delivery applications, surfaces with engineered functionality and development of single-nanowire based devices.

Availability of high-purity nanophase materials exhibiting specific properties, tailored shape and microstructure is essential for transforming the developments of nanoscience into nanotechnology. Despite extensive research in the synthesis and processing of inorganic materials, producing nanoscaled matter with precise control over chemical composition, morphology and microstructure remains an overarching task. The conventional synthesis of inorganic compositions, controlled by diffusion of ionic and atomic species through both reactants and products, is rather crude for the unit-by-unit assembly of nanostructures. Given the inherent limitations of traditional material processing routes, we are developing chemical concepts for a designed materials synthesis and evaluating their applications in chemical nanotechnologies.



About the Speaker

Sanjay Mathur, is currently the Chair of Inorganic and Materials Chemistry at the University of Cologne, Germany. He also leads the Division of Nanocrystalline Materials and Thin Film Systems at the Leibniz Institute of New Materials in Saarbruecken. He received his PhD (1993) in Inorganic Materials Chemistry at the University of Rajasthan, Jaipur, India. His Habilitation thesis (2004) was on “Chemical Synthesis of Functional Nanostructures” at the Saarland University, Saarbruecken, Germany. He is Associate Editor of the journals *Applied Ceramic Technology* and *Nanomaterials* and serves as Member of the Editorial Board on *Ceramics International* and *International Journal of Nanotechnology*. He has published over 120 scientific papers, reviews and book chapters and has several patents to his credit. He was an Alexander von Humboldt Fellow and has received the Young Observer prize of the IUPAC. He is a member of the Inorganic Chemistry Division of the IUPAC and serves on the Materials Sub-committee. He also serves on the Advisory Committees of a number of international societies and conferences.

~ All are welcome ~

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