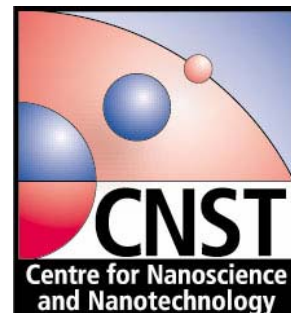




CENTRE FOR NANOSCIENCE AND NANOTECHNOLOGY SEMINAR SERIES



TOPIC: Dynamic control of diffraction within colloidal photonic crystals

SPEAKER: Dr David Snoswell
School of Chemistry, University of Bristol, UK

TIME: 12:00-1:00pm, Thursday 12 October 2006 (No RSVP required)

VENUE: Ground Floor Lecture Theatre,
Chemical and Biomolecular Engineering Building 1,
The University of Melbourne

ABSTRACT:

The construction of photonic crystals is of interest in a range of applications including lasers, optical circuits, optical fibres, lenses and display devices. A key parameter of colloidal photonic crystals is the particle spacing which influences the optical properties. Typically, particle spacing is determined by the diameter of the close packed, monodisperse spheres, and remains fixed once the crystal structure has formed.

In this project we demonstrate the dynamic, reversible control of particle spacing within two dimensional crystals, and orientation of one dimensional crystal strings. Particles in suspension are controlled by an electric field. Electrostatic forces prevent the particle surfaces from touching. However, they are held in crystal structures by temporary dipoles induced by the electric field. As a consequence, changes in field intensity and direction cause rapid and reversible changes in lattice spacing and orientation of the crystals, enabling diffraction of white light to be controlled to produce variable visible colours.

Further details available at: www.cnst.unimelb.edu.au/news/seminars.html