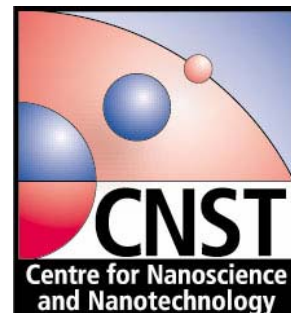




CENTRE FOR NANOSCIENCE AND NANOTECHNOLOGY SEMINAR SERIES



TOPIC: Superparamagnetic particles for diagnostics and therapeutics

SPEAKER: Professor Heinrich Hofmann
Ecole Polytechnique Fédéral Lausanne, Switzerland

TIME: 12:00-1:00pm, Wednesday 12 July 2006 (No RSVP required)

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

ABSTRACT:

Nanoparticles for biomedical applications such as targeted drug delivery, non-viral vectors for gene delivery, contrast agents for in vivo imaging (MRI) or in biosensors have to fulfil very different requirements simultaneously. To achieve physical requirements such as fast transport in a magnetic field gradient or photoluminescence, the particles have to be very small. At such sizes, superparamagnetism and quantum confinement help determine the particles' properties. From a biological point of view, the particle size is also important during up-take by cells or in controlling the colloidal behaviour in contact with blood. However, recent results show that the biocompatible coatings of the particles and properties like surface charge and zeta potential are even more important still.

In this presentation, methods for the synthesis of biocompatible particles with properties fulfilling the physical and biological needs will be discussed. The presentation will focus on superparamagnetic particles for targeted drug delivery and gene therapy. In the second part, a review of medical applications of such particles will be given. Recent results regarding non-viral gene transfection using superparamagnetic particles and a dynamic magnetic field will also be presented.

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