

The School of Pharmacy and Pharmaceutical Sciences

Research Lecture

Magnetic nanoparticles for drug delivery and as contrast agents for MRI

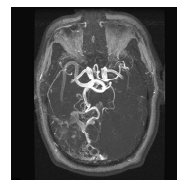
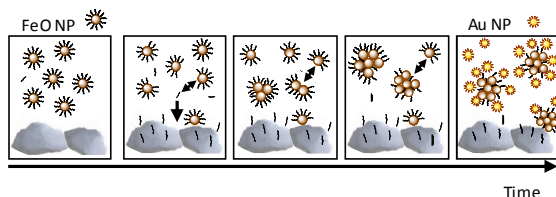
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1 pm, Friday, December 9th,
Lecture Theatre 1 East End 4/5, Panoz Institute, TCD

Dermot Brougham received his PhD in organometallic chemistry from University College Dublin in 1993. He subsequently undertook postdoctoral research in magnetic resonance spectroscopy and imaging at Queen Mary, London, and at the University of Nottingham. In 1999 he was appointed as a Lecturer in Physical Chemistry in DCU. Dr. Brougham's group apply NMR spectroscopy to study systems that exhibit complex dynamics, and to develop nanomaterials.

Iron-oxide nanoparticles (MNPs) are under intense study for biomedical applications. This is because their strong magnetic moments facilitate uses in magnetic drug delivery, in AC field hyperthermia and as contrast agents for magnetic resonance imaging. It is particularly attractive that, in principle, these functions could be combined and simultaneously exploited in a multifunctional agent. In this talk I will describe the physical basis for the applications of MNPs, and will briefly review the current state of the art in MNP research. I will also describe the work in our laboratory. Our focus is on using magnetic resonance measurements to probe the colloidal state and hence provide information on particle size, on crystallinity and on the assembly of particle clusters. We are particularly interested in how the MRI properties are determined by cluster architecture. In ongoing work we are attempting to exploit these advances for real applications.



nanoparticle cluster assembly

positive MRI contrast