

# Colloquium Notice

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*The use of Nuclear Magnetic Resonance (NMR) in the study of ion-conducting and polymer materials*

Multi-nuclear Nuclear Magnetic Resonance (NMR) techniques have been used to investigate the molecular dynamics and structures in ion conducting and polymer materials. Materials studied included various proton and lithium ion conductors that have application in electrochemical devices such as fuel cells and batteries. Also studied were varying concentrations of aqueous solutions of various superacids, the purpose of which was to provide a fundamental understanding of the ions solvation and mobility and how they were affected by acid concentration. Parameters studied included self-diffusion coefficients (D) obtained by the Pulse Gradient Spin-Echo (PGSE) technique, spin lattice relaxation times (T1) obtained by the Inversion Recovery technique, and chemical shifts. These provided information on the translational mass transport, rate of energy transfer between the nuclei and their surroundings, and the local electronic environment surrounding the nuclei, respectively. In addition to this, the development of high-pressure NMR technique and its application to the study of NMR lineshapes of individual polymers and small molecules in polymer will also be discussed.

Wednesday

**March 19, 2008**

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326