
Seminar

Biomolecular Solid-State NMR: Past, Present and Future

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Solid-state NMR (ssNMR) is a versatile analytical technique to study structure and dynamics of a diverse range of molecules without placing any restriction on the physical properties of the sample (Crystallinity, solubility etc.). Poor resolution and sensitivity have traditionally limited the progress of ssNMR spectroscopy. Our work has demonstrated that these issues can be circumvented, enabling structure determination of proteins with nano moles amount of samples. In addition, the improved resolution and sensitivity allows probing new applications of ssNMR to biomolecules (fibrils, membrane proteins, tissues, bones etc.).

The diverse range of systems being targeted by ssNMR has created the need to develop new experimental methods. We use a combination of theoretical tools (Average Hamiltonian and Floquet Theory), simulations and experiments to understand, analyses and characterize the spin-dynamics of new experiments. In this respect I will discuss couple of our results on decoupling and recoupling techniques.

I will also briefly present some results on how solid-state NMR can provide solution to long-standing problems in material sciences.

This talk is a synopsis of our past work and provides a blueprint for our present and future research plans. In this context, the talk should be useful for students still looking for a Ph.D. supervisor or for people who might benefit from the use of ssNMR in their research work. However other people are also welcome to join.

Friday, May 15th 2015

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS