



IBS Center for Multidimensional Carbon Materials



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**Development of solid-state NMR methodology
and Its application in materials**

May 16 | Bldg. 101
RSR Group Meeting | Seminar room on the 4th floor

Magic-angle spinning (MAS) solid-state NMR is a powerful tool for providing atomic-level insights into the structure and dynamics of various molecular systems, due to its capability of selectively manipulating different anisotropic spin interactions in solids. In particular, solid-state NMR could offer information of the structure with a length scale from 0.1nm to 100nm, and dynamics with a time scale from 1ns to 100s. Herein, I would firstly present some solid-state NMR methodologies we developed under high magnetic field (beyond 400MHz) in the last few years, focusing on chemical shift resonance assignment (^1H and ^{13}C), extraction of structural and dynamics information, and the resolution and signal enhancement of NMR spectra. Secondly, I would like to give two typical examples, self-healing supramolecular rubber and polyurethane, to show how solid-state NMR (high field and low field) could be well utilized to probe the molecular structures and dynamics at a molecular level, in combination of DSC, SAXS and rheology experiments. Overall, the appropriate choice of solid-state NMR methods would enable us to extract detailed structural and dynamics information in various non-soluble and non-crystallizable systems where the solution NMR and X-ray crystallography fail, and thus will greatly benefit understanding the structure-property relationship of materials at a molecular level.

Special Guest Speaker

You are cordially invited to attend!