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Basics of Solid-State NMR and Some Applications

Solid-state NMR is distinct from liquid-state NMR because of anisotropic interactions that lead to line broadening in the static spectra and destroy all spectral resolution. In order to obtain resolution, magic-angle spinning is applied in almost all solid-state NMR spectra to average out the anisotropic interactions. At the same time, the sample rotation opens up new possibilities to manipulate the Hamiltonian and, therefore, the possible experiments. NMR spectroscopy is hampered by the poor signal-to-noise ratio and in solid samples DNP is one possibility to amplify the signals. I will show some examples from the literature which illustrate what NMR spectroscopy can do to investigate materials and surfaces.