

Magnetization Transfer Processes in Xenon NMR for Molecular Sensing

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Nuclear Magnetic Resonance (NMR) suffers from low sensitivity for detection of thermally polarized spin ensembles. On the other hand, the high molecular specificity of NMR makes the method an important tool in biophysics, chemistry, and biomedical imaging. The sensitivity issue can be solved by means of hyperpolarized noble gases. In particular hyperpolarized Xe-129 (spin $\frac{1}{2}$) systems can be manipulated by saturation transfer techniques for further sensitivity enhancement and improved spectral resolution. This talk will give an overview of the magnetization transfer processes that first generate hyperpolarized xenon and then induce a controlled depolarization for sensitive detection of Xe-loaded complexes in different molecular environments.