

Boosting Nuclear Magnetic Resonance – Applications of Hyperpolarization in Biology and Chemistry

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Dissolution dynamic nuclear polarization (D-DNP) is a technique to overcome limitations in nuclear magnetic resonance (NMR) spectroscopy due to its intrinsically low signal intensities. Combining temperature jumps with DNP, signal boosts up to five orders of magnitude are possible enabling a plethora of applications of NMR in many fields of research. This contribution aims at giving an overview over the possibilities and recent developments in the field especially with respect to biochemical and biophysical applications. The spectrum thereby ranges from signal-enhanced, multidimensional NMR of folded as well as intrinsically disordered proteins over real-time monitoring of calcium phosphates bio-mineralization, and long-lived states in screening of deuterated drugs.¹⁻³

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