

NMR Spectroscopy with Femtomole Sensitivity using Quantum Defects in Diamond

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Recently, a new class of NMR sensors based on optically-probed nitrogen-vacancy (NV) quantum defects in diamond has allowed molecular spectroscopy from picoliter sample volumes, several orders of magnitude smaller than the most sensitive inductive detectors. In addition, hyperpolarization techniques have been integrated with NV-NMR, enabling high-resolution spectroscopy on small molecules in dilute solution with femtomole sensitivity. I will provide an overview of this rapidly advancing technology, including its challenges and potential applications.