

Abstract Submitted
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Development of nanoscale ESR techniques using nitrogen-vacancy centers in diamond¹ CHATHURANGA ABEYWARDANA, ZAILI PENG, Department of Chemistry, University of Southern California, SUSUMU TAKAHASHI, Department of Chemistry, University of Southern California, Department of Physics Astronomy, University of Southern California — A nitrogen-vacancy (NV) center in diamond is a promising sensor for nanoscale magnetic sensing. Spin sensitivity of electron spin resonance (ESR) spectroscopy and the spatial resolution of the ESR active volume are drastically improved using NV centers. Here we discuss development of nanoscale ESR techniques using a single NV center in diamond. We employ the free-induction decay, T_2 and T_1 measurements of the single NV center to study static and dynamic properties of nanoscale bath spins surrounding the NV center. The detected bath spins can be identified by analyzing ESR spectrum of the bath spins using double electron-electron resonance spectroscopy [1]. We also plan to discuss the investigation of NV centers in various diamond crystals [1] C. Abeywardana et al, J. Appl. Phys. 120, 123907 (2016).

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