Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Study of a single nitrogen-vacancy center in diamond to detect surrounding electron spins CHATHURANGA ABEYWARDANA, VIKTOR STEPANOV, SUSUMU TAKAHASHI, Department of Chemistry, University of Southern California — A nitrogen-vacancy (NV) center in diamond is a promising candidate for applications of nanoscale magnetic sensing as well as for investigation of fundamental quantum sciences because of its unique properties including capability to detect a NV center, long decoherence time even at room temperature, stable fluorescence and biocompatibility. Here we will present our approach to use a single NV center in diamond to probe tiny magnetic fields ($\sim$ uT or less) due to surrounding spin environments. We will discuss magnetic field dependence of spin decoherence in a single NV center as well as use of double electron-electron resonance spectroscopy to detect surrounding electron spins.

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Date submitted: 14 Nov 2013 Electronic form version 1.4