

Engineering Nanodiamonds for Quantum-enhanced Bio-sensing

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Diamond color centers like the nitrogen-vacancy (NV) have shown much promise for nanoscale sensing of magnetic and electric fields and temperature. So far however the quantum properties of the NV have not been used to full advantage, for example quantum entanglement of NV qubits has rarely been used for sensing. In this talk I will review recent advances in the fabrication of NVs, and other magnetic color centers in diamond, and in the growth of high quality nanodiamonds. Combining these advances, I will discuss the future prospects of engineering quantum-enhanced sensors in nanodiamonds.