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Magnetic sensing with laser-synthesized nanodiamonds

Nitrogen-vacancy (NV)-doped nanodiamonds (NDs) have applications in quantum-sensing of temperature and magnetic fields. We succeeded in ns laser-synthesis, from graphite, of fluorescent NV-NDs w/o any post-process activation as opposed to current production techniques. Proof of NDs formation is given by SAED, SEM and Raman spectroscopy. NV centers are probed by spectrally-resolved Optically Detected Magnetic Resonance. A thermodynamic model was developed to explain NDs formation under ns laser ablation. Advanced room-T opto-magnetic sensing properties of our NDs are reported.

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