

Abstract Submitted
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Using NV-centers in diamond for optical magnetic sensing in superconductors¹ N M NUSRAN, K R JOSHI, K CHO, R PROZOROV, Ames Laboratory and Iowa State University — Magnetic field-dependent fluorescence of nitrogen vacancy (NV) centers in diamond has recently emerged as a promising technology for nanoscale sensing including non-invasive sensitive magnetometry and mapping of the magnetic field distribution. In particular, NV-sensing can be used to study magnetic phenomena in superconductors. After detailed introduction of this novel magneto-sensing technique, we will present results of magnetic measurements on several superconductors, including $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$ and type-I materials. Details of the superconducting phase transition, the Meissner state, magnetic flux distribution upon field penetration, exit and trapping will be discussed.

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