

Abstract Submitted
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Study of Fluorescent Defect Properties in Nanodiamond JOSEPH KIMBALL, T. ZERDA, TCU, Department of Physics and Astronomy, B. ROUT, University of North Texas, Department of Physics, A. OSIPOV, V. N. Bakul Institute for Superhard Materials — The unique properties of fluorescent nanodiamonds make nanodiamonds preferred candidates for optical labels in biological and medical imaging. The basic theory behind the diamond crystal lattice and point defects within nanodiamond responsible for the fluorescence emitting nitrogen vacancy (N-V) center are presented. To fully implement and understand their optical and physical properties, this study uses two different techniques to create in raw diamond the defects responsible for the emission of a photostable spectrum containing Zero-Phonon Lines at 578 nm and 638 nm with fluorescent lifetimes ranging from 8-15 ns. Two different methods, irradiation and HPHT, are used to create the sought after (N-V) center.

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