Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A study of the structural, optical, and electronic properties of diamond nanoparticles R. CHAKRABORTY, J. KYLE LAROQUE, SURESH SHARMA, UT Arlington, Texas 76019 — We present extended results on the structure and optical properties of nanometer-size (10-100 nm) diamond particles. Samples were grown on silicon substrates by hot-filament assisted chemical vapor deposition (HFCVD) and characterized by using AFM, SEM, Raman and photoluminescence (PL) spectroscopies [1, 2]. AFM and SEM measurements show that the samples contain particles ranging in diameter from 10 to 100 nm. The Raman spectroscopy data confirm through the ~ 1332 cm^{-1} characteristic line that the samples contain diamond nanoparticles. We examine details of the Raman spectra (asymmetrical shape and shift from the 1332 cm^{-1} line) and correlations of these features with the properties of diamond nanoparticles [3]. The PL spectra show bands arising from structural defects in the Si/SiO_2 substrate and diamond nanoparticles.

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Date submitted: 14 Dec 2009 Electronic form version 1.4