

Abstract Submitted
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Synthesis of magnetic GdC₂ nanoparticles using cavitation plasma RAKESH CHAUDHARY, ALI R. KOYMEN, Department of Physics, The University of Texas at Arlington — Gadolinium dicarbide (GdC₂) nanoparticles were synthesized using Gd electrodes in toluene. Gd nanoparticles are formed in plasma caused due to collapse of cavitation bubbles using ultrasonication in electric field between Gd wire electrodes. The presence of a single phase of GdC₂ nanocrystals have been determined by X-Ray Diffraction (XRD) and High Resolution Transmission Electron Microscopy (HRTEM). The GdC₂ nanoparticles have tetragonal crystal structure. Transmission Electron Microscopy (TEM) shows that the nanoparticles range in size of 4-45 nm in diameter. Magnetization measurements performed using a Superconducting Quantum Interference Device (SQUID) magnetometer shows GdC₂ nanoparticles are paramagnetic in nature. To the best of our knowledge, this is the first synthesis of GdC₂ in single phase form, allowing further characterization of physical properties.

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