Abstract Submitted
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The effects of initial pH and cobalt concentration on cobalt-doped maghemite BRIAN RUANE, RAMA BALASUBRAMANIAN, Roanoke College — We investigate the effect of varying cobalt (Co) concentrations and initial pH on the growth of Co-doped iron oxide nanoparticles used for carbon nanotube growth. Co-doped nanoparticles were grown using a coprecipitation method in an acidic medium. Crystallite size was estimated using x-ray diffraction and supported with atomic force microscopy. The size of the nanoparticles decreased when cobalt concentrations increased for the unadjusted pH (9.1 nm to 6.5 nm) and the 0.5 pH solutions (10.4 nm to 7.7 nm) but increased for the 1.0 pH solutions (7.9 nm to 9.6 nm). Understanding how the conditions of the coprecipitation reaction affect particle size will allow us to tailor nanoparticles for use as catalysts in carbon nanotube synthesis.

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