

Abstract Submitted  
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**A Single Step Synthesis and Characterization of Nanowires & Nanospheres for Catalytic Applications** FENIL CHAVDA, The Carol Martin Gatton Academy, Western Kentucky University, YOGESH KHERDE, Western Kentucky University — Nanoparticles have gained an immense interest due to its potency for a wide range of applications. Metals have been extensively used for catalytic reduction of p-nitrophenol in presence of  $\text{NaBH}_4$ . p-Nitrophenol is an environmental and biological toxic agent which is widely used in industries for a variety of purposes. Here, we report a single step, biofriendly synthesis of gold nanoparticles (AuNPs) with the help of a fluorescent dye called rhodamine-6G. We were successfully able to form AuNPs of different morphology i.e. gold nanowires and nanospheres by varying the concentration of rhodamine-6G. The synthesized gold nanostructures were characterized using transmission electron microscope (TEM), scanning electron microscope (SEM) and UV-Vis spectroscopy which proved the formation of rhodamine-6G containing gold nanostructures. Catalytic activity in reducing p-nitrophenol to p-aminophenol was assessed and compared for similar concentration of rhodamine-6G gold nanowires and nanospheres using UV-Vis spectroscopy. Finally, using the spectroscopic data, rate constant ( $k$ ) was calculated and compared for individual nanostructure to determine the effect of nanogold morphology on catalytic reduction activity.

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