



## Synthesis of Copper Oxide Nanoparticles by Chemical Reduction of Copper Isophthalate Complex

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Accepted on 20<sup>th</sup> September 2017, Published online on 27<sup>th</sup> September 2017

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### ABSTRACT

*Here a simple method has been employed to synthesize copper oxide nanoparticles by chemical reduction of copper isophthalate complex in aqueous medium using ascorbic acid as a reducing agent. Experimental conditions are varied by changing the concentration of precursors and the presence of octanoic acid as a capping agent/ surfactant. The formation of nanoparticles was evidenced by the X-ray diffraction and transmission electron microscopy. The peaks in the XRD pattern correspond to the standard values of the copper (II) oxide. TEM analysis showed spherical nanoparticles with sizes in the range of 5 to 20 nm under different experimental conditions. Results show that the nanoparticles synthesized in the presence of octanoic acid are uniform and smaller in size as compared to nanoparticles synthesized in the absence of surfactant. Hence octanoic acid acts both as size controller and polymeric capping agent because it hinders the nanoparticles from aggregation through the polar groups, which strongly adsorb on the surface of nanoparticles.*

**Keywords:** Nanoparticles, Chemical reduction, Surfactant, Transmission electron microscopy, Aggregation.

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