

Growth and structural properties of complex CuO nanostructure prepared by aqueous solution process

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We report here a very easy and successful synthesis and detailed characterization of complex CuO nanostructures by simple solution process at 100 °C by using copper nitrate, NaOH, hexamethylenetetramine (HMTA) and triethylamine (TEA). The detailed structural characterizations exhibited the nanocrystalline nature with monoclinic structure for the as-synthesized complex CuO nanostructures. Moreover, we researched that the obtained nanostructures morphologies are strongly dependent on several process parameters which includes the concentration of HMTA and TEA, presence or absence of NaOH and HMTA and TEA, reaction-time and temperature. Therefore, extensive experiments depending on different reaction parameters were performed to conclude some possible growth mechanism for the formation of the as-grown complex CuO nanostructures. Depending on the obtained experimental results finally a plausible growth mechanism has been discussed.