Structural characterizations and growth mechanism of CuO ellipsoids synthesized by solution process

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CuO ellipsoids were successfully synthesized via the simple solution process by using copper nitrate, NaOH, and triethylamine at low temperature of 80 °C. The triethylamine used in our synthesis acted as capping molecule and hydrolyzing agent. The general morphological investigations by FESEM revealed that the nanoellipsoids are formed in high density with uniform size distribution. The average sizes of the synthesized CuO ellipsoids are in the range of 800 nm ~ 1 um. Detailed structural investigations revealed that the formed structures are in monoclinic crystalline phase. Fourier transform infra red analysis also showed that the as-obtained product is pure phase CuO with monoclinic structure. In addition to this, by extensive experiments, we have found that the obtained CuO ellipsoids are strongly dependent on the concentration of triethylamine and presence of NaOH.