

## عنوان مقاله:

SYNTHESIS OF ULTRA FINE COPPER OXIDE NANOPARTICLES: EFFECT OF TEMPERATURE ON SIZE AND THERMAL DECOMPOSITION OF IMPURITY AT SUPERCRITICAL WATER

## محل انتشار:

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## خلاصه مقاله:

Ultra fine copper oxide nanoparticles were synthesized by using a supercritical water method. The produced nanoparticles had an average size of 1.6 nm, and were characterized by X-ray diffractometry (XRD), transmission electron microscopy (TEM), nitrogen gas adsorption test (BET) for measuring the surface area, inductively coupled plasma spectrometry (ICP) to result in the yield of reaction and thermogravimetric analysis (TGA) for estimating of impurity content ( $\text{Cu}(\text{OH})_4\text{NO}_3$ ). The results demonstrated appreciable potential of the hydrothermal supercritical methods for the synthesis of inorganic metal oxides. The second goal of the study was elucidation of the mechanisms of effects of operational conditions (e.g. temperature) on the abovementioned target parameters, through application of the appropriate mechanisms of formation of nanoparticles. Nanoparticles are suggested to form initially in the liquid phase as  $\text{Cu}(\text{OH})_2$  that are later transformed to  $\text{Cu}(\text{OH})_3\text{NO}$ , and through which to  $\text{CuO}$  product. Decomposition of nitric acid also plays role in this mechanism. Fabricated nanoparticles are effective catalyst for synthesis of benzoheterocycle compounds in pharmaceutical industries.

## کلمات کلیدی:

$\text{CuO}$  Nanoparticles, Catalyst, Hydrothermal synthesis, Supercritical water

## لینک ثابت مقاله در پایگاه سیویلیکا:

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