

## High Crystalline Copper Nanoparticles Synthesized by Solution Process: Growth and Properties

Mohammad Vaseem, 홍동민, 김대영, 한윤봉\*  
전북대학교  
(ybhahn@chonbuk.ac.kr\*)

Recently, copper nanoparticles have received considerable attention due to its high conductivity as compared to metal oxide nanoparticles and a cheap source for various electronics application compare to other metals i.e. silver, gold and platinum. But surface oxidation is the prime concern for its various applications. In this regards, high-crystalline pure copper nanoparticles were synthesized through a room temperature synthesis by reduction of copper nitrate with hydrazine hydrate in aqueous CTAB solution with out providing any extra inert gases. Our results demonstrated that shape, size and crystallinity of the copper nanoparticles can be controlled by varying the solution pH, and hydrazine concentration. Furthermore, shape, size, crystallinity and chemical composition of as-synthesize copper nanoparticles are confirmed by field emission scanning electron microscopy (FE-SEM), transmission electron microscopy (TEM), XRD analysis and energy-dispersive X-ray analysis (EDX). In addition, on the basis of selected area electron diffraction (SAED) spectra, growth properties of copper nanoparticles have also been discussed.