

SYNTHESIS OF COPPER OXIDE NANOPARTICLES: CuO-WATER NANOFLUID AND ITS APPLICATIONS IN NANOFLUID

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ABSTRACT

In this research, Copper Oxide nanoparticles were synthesized and then these nanoparticles were applied by using Spinning Disk Reactor (SDR) to prepare CuO-water nanofluid. Using the reactants copper (II) sulfate pentahydrate & sodium carbonate through a liquid reaction, the precursor of copper oxide were prepared in continuous mode. After then, to obtain the copper oxide nanoparticles, the precursor were cleaned up to 500 degree Celsius and obtained primary particles of copper oxide ranged between 20 nm to 30 nm using SEM (Scanning Electron Microscope) as compared to the number mean size of 40 nm to 50 nm determined by a particle size analyzer. The effect of operating variables, reactant concentration, including disk rotation speed and liquid flow rate, on the size of copper oxide nanoparticles were investigated. Finally, using various CuO contents and surfactant concentrations, a CuO-water nanofluid was prepared for enhancing the thermal conductivity.

Keywords: Nanoparticle, Copper Oxide, Nanofluid, Reactants, SDR (Spinning Disk Reactor), SEM (Scanning Electron Microscope).

