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Synthesis And Characterization of Copper Oxide Nanopowders And Their Nanofluids

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ABSTRACT

Two copper oxide nanopowders were synthesized by chemical reduction method in which sodium hydroxide solution was used as a reducing agent. The copper nitrate trihydrate and copper acetate monohydrate precursors were used for the synthesis of CuO nanopowders. Solid state characterizations of synthesized nanopowders were carried out by infrared spectroscopy (FTIR) and X-ray diffraction (XRD) techniques. Nanofluids of synthesized nanopowders were prepared in water as well as in ethylene glycol: water (40:60) media. Thermal conductivity measurements of prepared nanofluids were studied at 25^0C in which maximum thermal conductivity enhancement was observed in NF-4 nanofluid. The electrochemical behavior of synthesized CuO nanopowders were also carried out in acidic aqueous medium.

Keywords: CuO nanopowders and nanofluids, FTIR, X-ray diffraction, Thermal conductivity and Electrochemistry.