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Synthesis and characterization of nanosized $CuO\text{-}SnO_2$ and $CuO\text{-}SnO_2\text{-}Fe_2O_3$ Mixed Metal Oxides

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ABSTRACT

Mixed metal oxides (MMOs) have been widely used for various applications such as catalysts in organic synthesis, new materials that can be used as electrodes in electrochemical double layer capacitors (EDLC) or super capacitors. This work presents synthesis of a group of mixed metal oxides ($CuO\text{-}SnO_2$ and $CuO\text{-}SnO_2\text{-}Fe_2O_3$) by employing simple synthesis technique namely; hydrothermal method. The prepared MMOs were characterized using X-ray diffraction, infra-red spectroscopy, TG-DTA and scanning electron microscopy. The obtained XRD results showed that single phase double oxide compounds were the main components in each case and extent of crystallization of the both MMOs. From SEM images it is clear that $CuO\text{-}SnO_2$ and $CuO\text{-}SnO_2\text{-}Fe_2O_3$particles were obtained in nano size range and showed uniform-sized particles with somewhat spherical morphology.

Keywords: Mixed metal oxides, Catalysis, Nanochemistry, Transition and noble group metals.