Short Communication

Facile Synthesis and Electrochemical Study of CuO Thin Films for Hydrogen Peroxide Reduction in Alkaline Medium

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In this work, we describe a simple electrochemical procedure for synthesis of structured copper (II) oxide (CuO) films on copper (Cu) substrate for the reduction of hydrogen peroxide (H₂O₂). Films are grown in a single step by direct electrochemical oxidation of Cu foil from a solution of 5 M KOH using cyclic voltammetry method. Scanning electron microscopy images reveal that CuO is uniformly grown on the surface of the substrate and presents a lawn-like microstructure. Electrocatalytic activity of the electrode toward hydrogen peroxide reduction is investigated by cyclic voltammetry and chronoamperometry in 3.0 M KOH solution. The prepared electrode exhibits remarkable catalytic activity, good reproducibility and stable electrochemical response.

Keywords: Copper oxide; electrocatalysis; hydrogen peroxide; thin film; cathode materials

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