

CuFeO_x-Based Nano-Rose Electrocatalysts for Oxygen Evolution Reaction

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Abstract : In this study, two-dimensional CuFeO_x is deposited on nickel foam for the fabrication of electrocatalyst for oxygen evolution reaction (OER). The in-situ hydrothermal synthesis of CuFeO_x in presence of aloe vera extract was found to yield unique nano-rose-like morphology which aided to improve the electrochemical surface area of the electrode. The phytochemical assisted synthesis of CuFeO_x using 75% aloe vera extract resulted in improved OER electrocatalytic performance by attaining the overpotential of 310 mV for 50 mA cm⁻² and 410 mV for 100 mA cm⁻². The electrode also sustained robust stability throughout the 50 h of chronopotentiometry studies under alkaline electrolyte conditions, thus proving to be prospective electrode material for efficient OER in electrochemical water splitting.

Keywords : water splitting, phytochemicals, oxygen evolution reaction, Tafel's slope, stability

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