Short Communication

Photoelectrochemical Reduction of Carbon Dioxide to Ethanol at Cu₂O Foam Cathode

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Direct reduction of CO₂ to ethanol with a high rate at a low overpotential is quite difficult. In this study, the Cu₂O foam electrode with three-dimensional coaxial network structure is fabricated by electrodeposition of Cu₂O coatings on copper foam substrate. It shows unprecedented photoelectrocatalytic performance on the reduction of CO₂ to ethanol. The formation rate of ethanol as high as 71.67 μmol cm⁻² h⁻¹ is obtained at the overpotential as low as 131 mV within 1.5 h.

Keywords: Carbon dioxide, Ethanol, Photoelectrochemical reduction, Cuprous oxide, Foam electrode.

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