Abstract Submitted
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Interface Defect States and Charge Transport Properties in Low-Cost Photovoltaic Devices made from Scalable Deposition Methods[1] ANDREW MARIN, DAVID MUNOZ-ROJAS, DIANA IZA, TALIA GERSHON, JUDITH MACMANUS-DRISCOLL, University of Cambridge — Electrochemical deposition and Atmospheric Atomic Layer Deposition (AALD) are high-throughput, scalable methods that can be used to produce low-cost transition metal oxides for photovoltaic devices. Previous work by our group has used electrochemical deposition to fabricate ZnO/Cu_2O cells, however the performance of these cells is limited by poor Cu_2O transport properties and recombination at interface states. AALD has been shown to produce much smoother films of Cu_2O but little work has been done to characterize the electrical properties of these films. Similarly little work has been done to show the ability of AALD to reduce interface defect states. In this investigation, we use impedance spectroscopy and illuminated solar cell performance to examine the electrical properties of Cu_2O films and ZnO/Cu_2O photovoltaic devices. We also show how AALD can deposit seed layers for further improved electrochemical deposition.

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