Electronic Supplementary Information

Etching of Electrodeposited Cu_2O Films Using Ammonia Solution for Photovoltaic Applications

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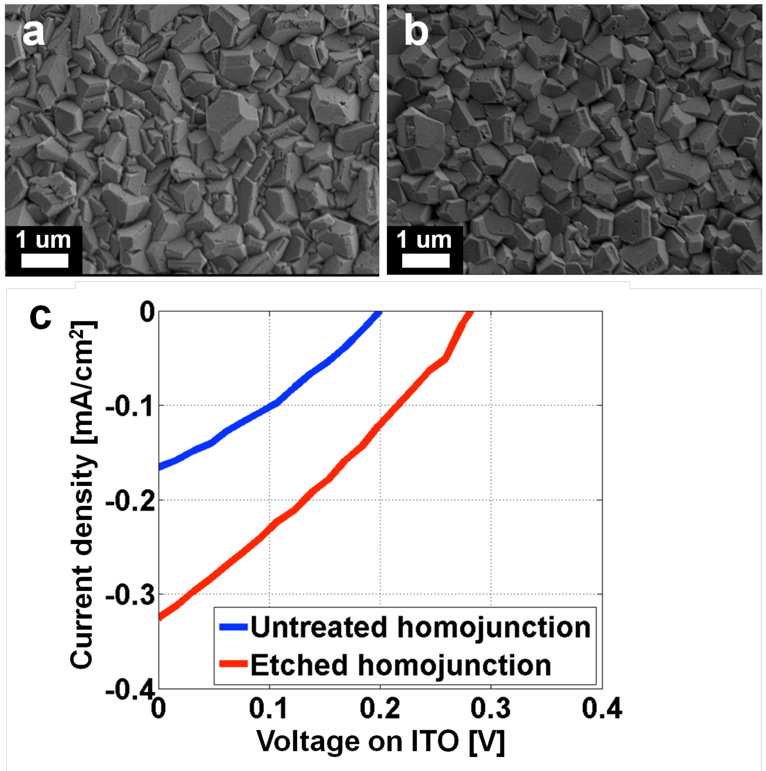

Figure S1 Top view SEM images of: (a) untreated homojunction with as-deposited p-Cu_2O (~2 μm thick) as the bottom layer; (b) etched homojunction with 10 min. etched p-Cu_2O (~2 μm thick) as the bottom layer. (c) Current density-voltage characteristics of the two homojunction PV devices under 100 mW/cm^2 simulated solar illumination.

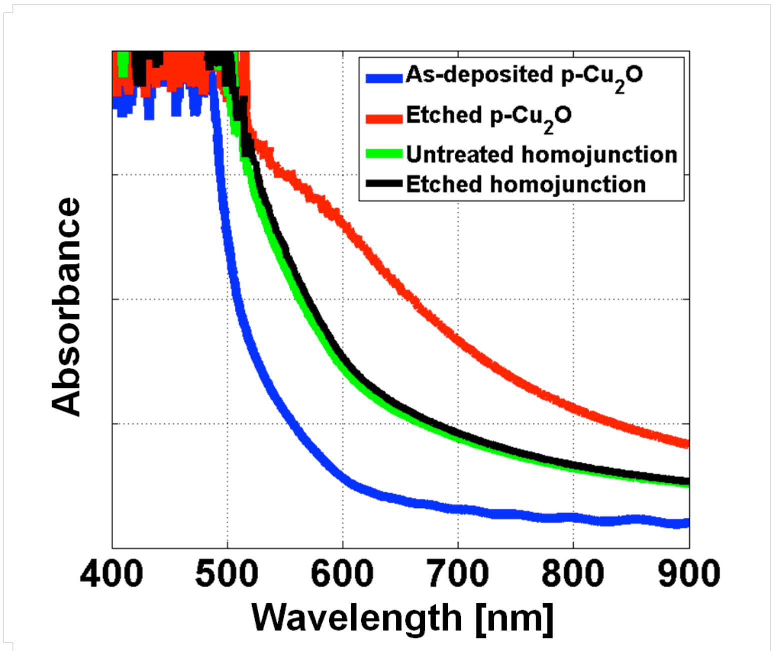

Figure S2 UV-Visible absorption spectra of: a ~2 μm thick as-deposited p-Cu_2O film, an identically prepared p-Cu_2O film etched by ammonium hydroxide solution for 10 min., the untreated homojunction incorporating the as-deposited p-Cu_2O layer, and the etched homojunction incorporating the etched p-Cu_2O layer.

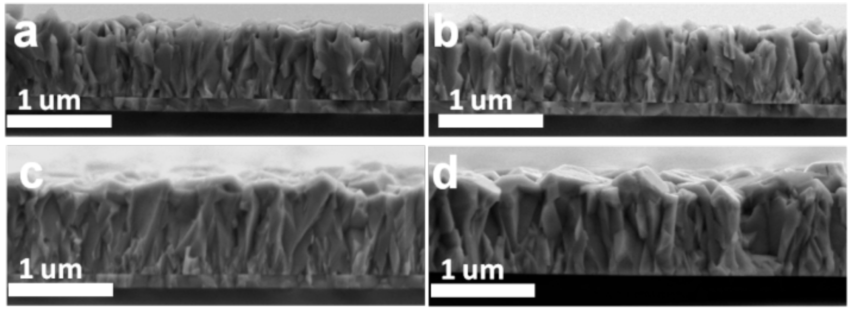

Figure S3 SEM cross-sectional view images of electrodeposited films grown on ITO-coated glass substrates: (a) ~750 nm thick p-Cu_2O film as-deposited; (b) identically prepared p-Cu_2O film etched by ammonium hydroxide solution for 1 min.; (c) untreated homojunction with the as-deposited p-Cu_2O film as the bottom layer; (d) etched homojunction with the etched p-Cu_2O film as the bottom layer.

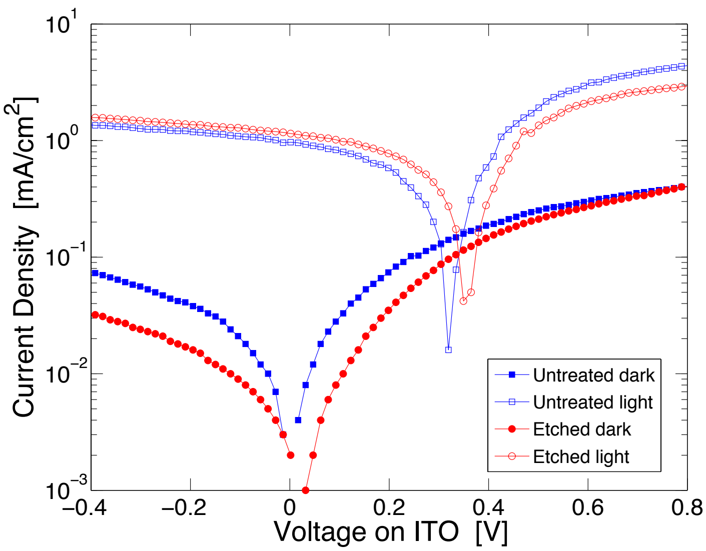

Figure S4 Current density-voltage characteristics of an untreated homojunction vs. an etched homojunction device measured both in the dark (filled symbols) and under 100 mW/cm^2 simulated solar illumination (open symbols). Both homojunctions were constructed using identically prepared p-Cu_2O (~750 nm thick) bottom layers; the etched homojunction p-Cu_2O bottom layer was etched by ammonium hydroxide solution for 1 min.