Supporting Information

In Situ Growth of CuS and $Cu_{1.8}S$ Nanosheet Arrays as Efficient Counter Electrodes for Quantum Dot-Sensitized Solar Cells

Meidan Ye,[a] Xiaoru Wen,[b] Nan Zhang,[b] Wenxi Guo,[a] Xiangyang Liu,[a] Changjian Lin,[*ab]

[a]Research Institute for Soft Matter and Biomimetics, School of Physics and Mechanical & Electrical Engineering, Xiamen University, Xiamen, 361005, China
[b]State Key Laboratory of Physical Chemistry of Solid Surfaces, and Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen, 361005, China

[*]To whom correspondence should be addressed. Email: cjlin@xmu.edu.cn

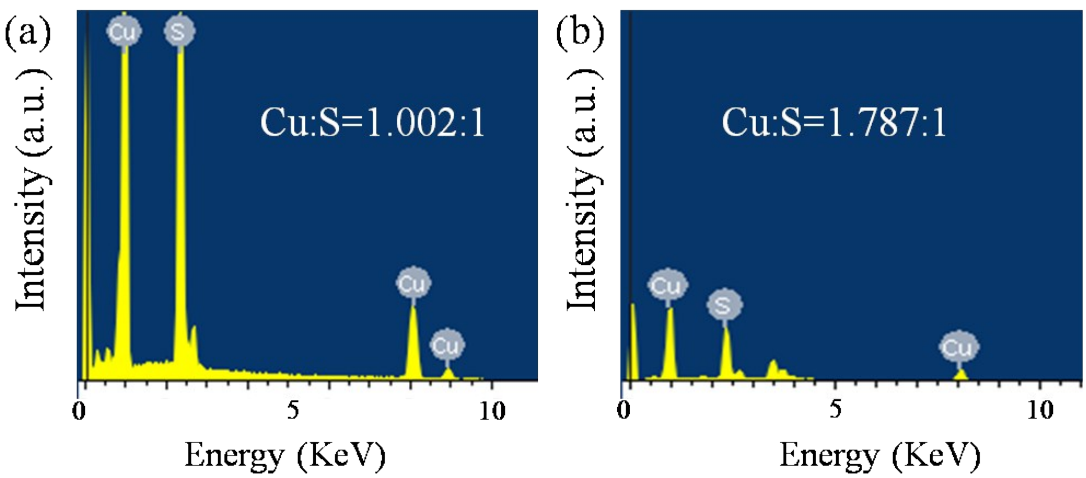

Fig. S1 EDS results of (a) CuS and (b) $Cu_{1.8}S$ CEs.

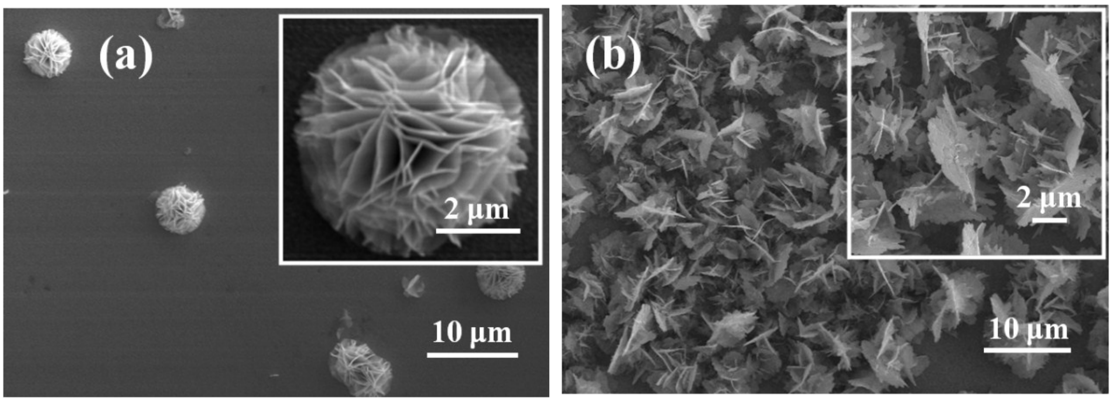

Fig. S2 SEM images of CuS products prepared at other different conditions: (a) the FTO substrate without seeding treatment, (b) the FTO substrate seeded via drop cast method. Insets are the magnified images of (a, b), respectively.

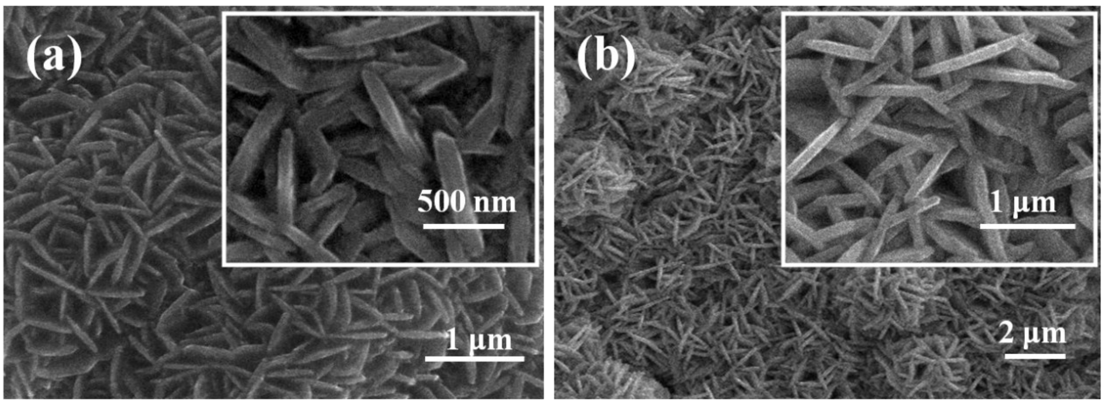

Fig. S3 SEM images of CuS nanosheets grown on FTO substrates via solvothermal process in 40 mL ethanol containing (a) 0.6 g $Cu(NO_3)_2$, 0.8 g thiourea, at 150 ^oC for 24 h; (b) 0.3 g $Cu(NO_3)_2$, 0.4 g thiourea, at 180 ^oC for 24 h. The FTO substrates were seeded CuS via spin coating method; insets are the corresponding magnified images of (a, b), respectively.

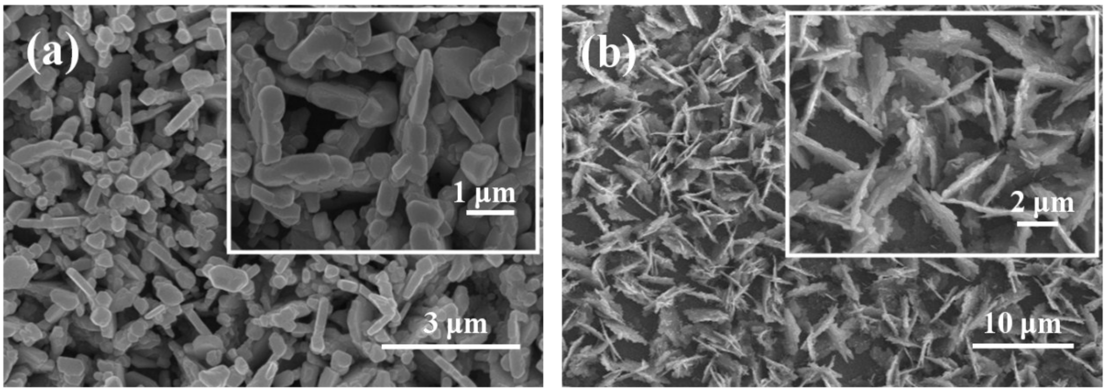

Fig. S4 SEM images of $Cu_{1.8}S$ nanosheets grown on FTO substrates via solvothermal process in 40 mL ethanol containing (a) 0.25 g CuCl, 0.4 g thiourea, at 180 °C for 24 h; (b) 0.25 g CuCl, 0.4 g thiourea, at 150 °C for 12 h. The FTO substrates were all seeded CuS via spin coating method; insets are the corresponding magnified images of (a, b), respectively.

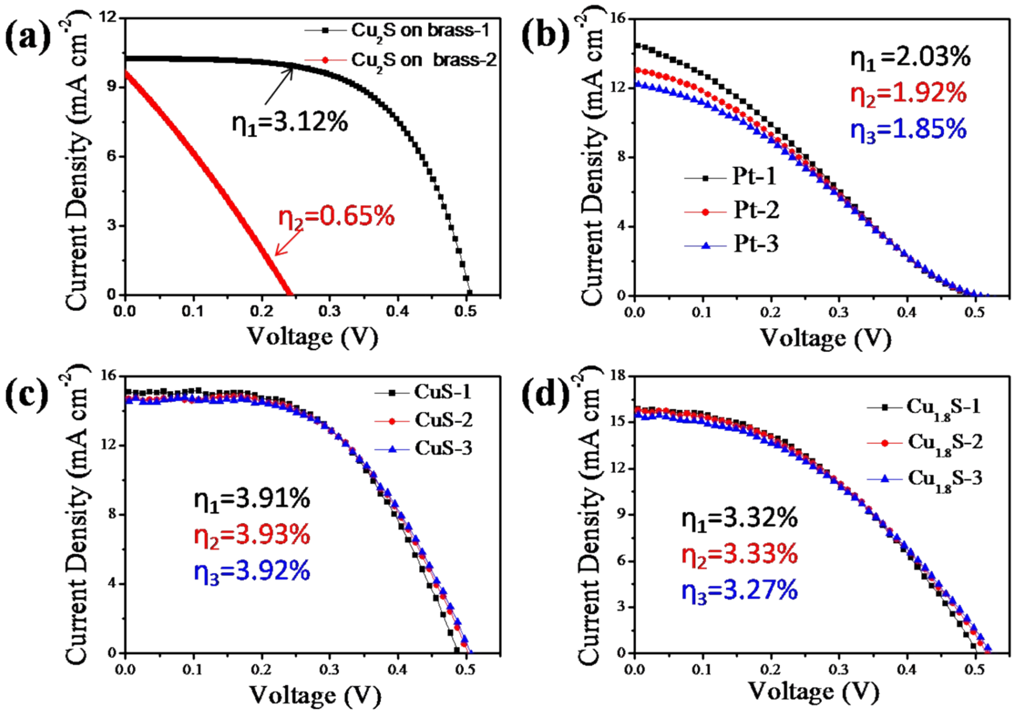

Fig. S5 *J-V* curves of the QDSSCs based on different CEs with several tests in a period time of about 3 hours: (a) Cu_2S on brass, (b) Pt, (c) CuS, and (d) $Cu_{1.8}S$.