Supporting Information

High Performance Electrocatalyst Consisting of CoS Nanoparticles on an Organized Mesoporous SnO_2 Film: Use as Counter Electrodes for Pt-free, Dye-sensitized Solar Cells

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Figure S1. TEM image of the CoS on om-SnO_2/FTO counter electrode.

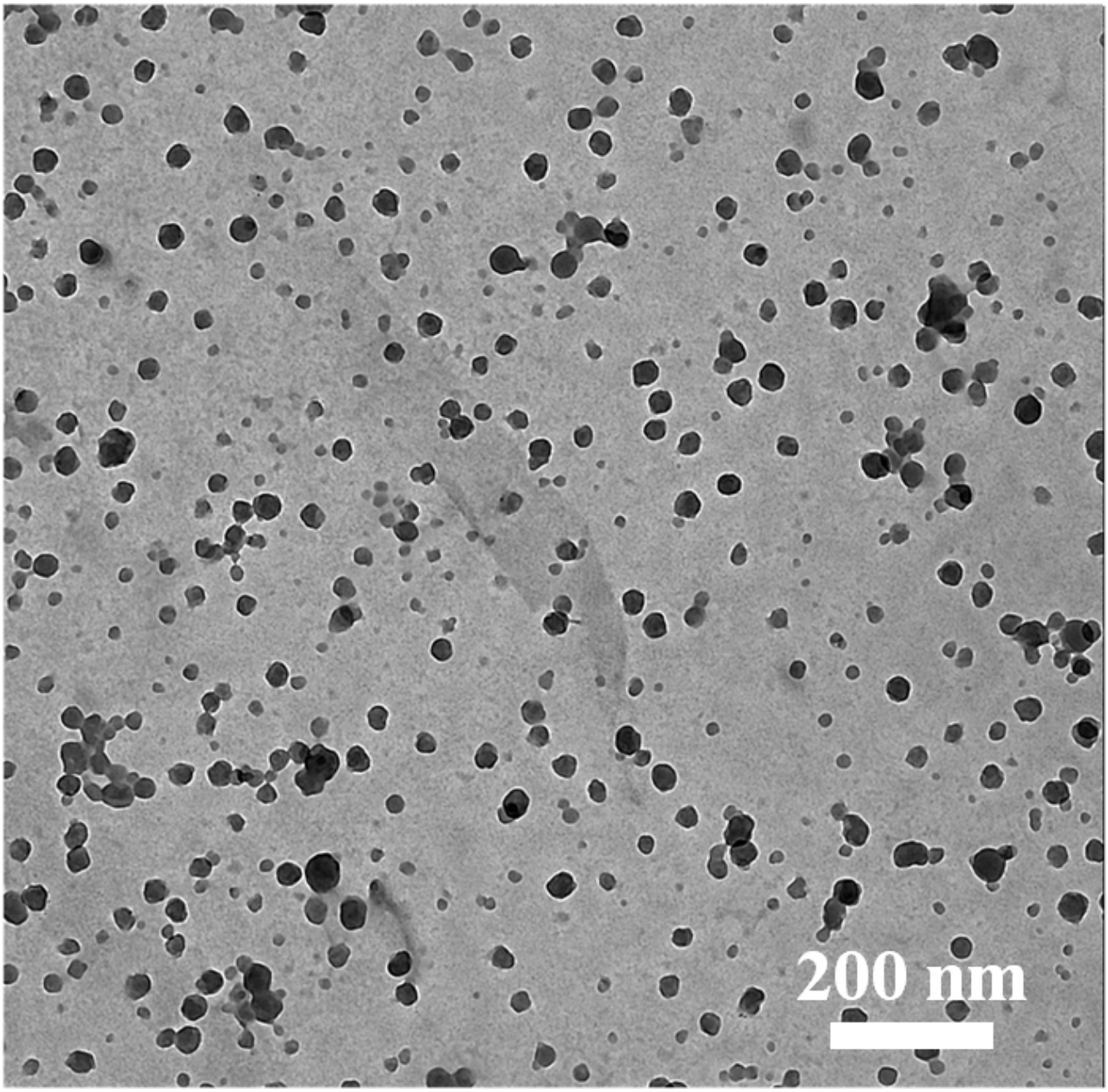


Figure S2. XPS profiles of (a) Co 2p, (b) S 2p regions for the CoS on om-SnO_2 counter electrode.

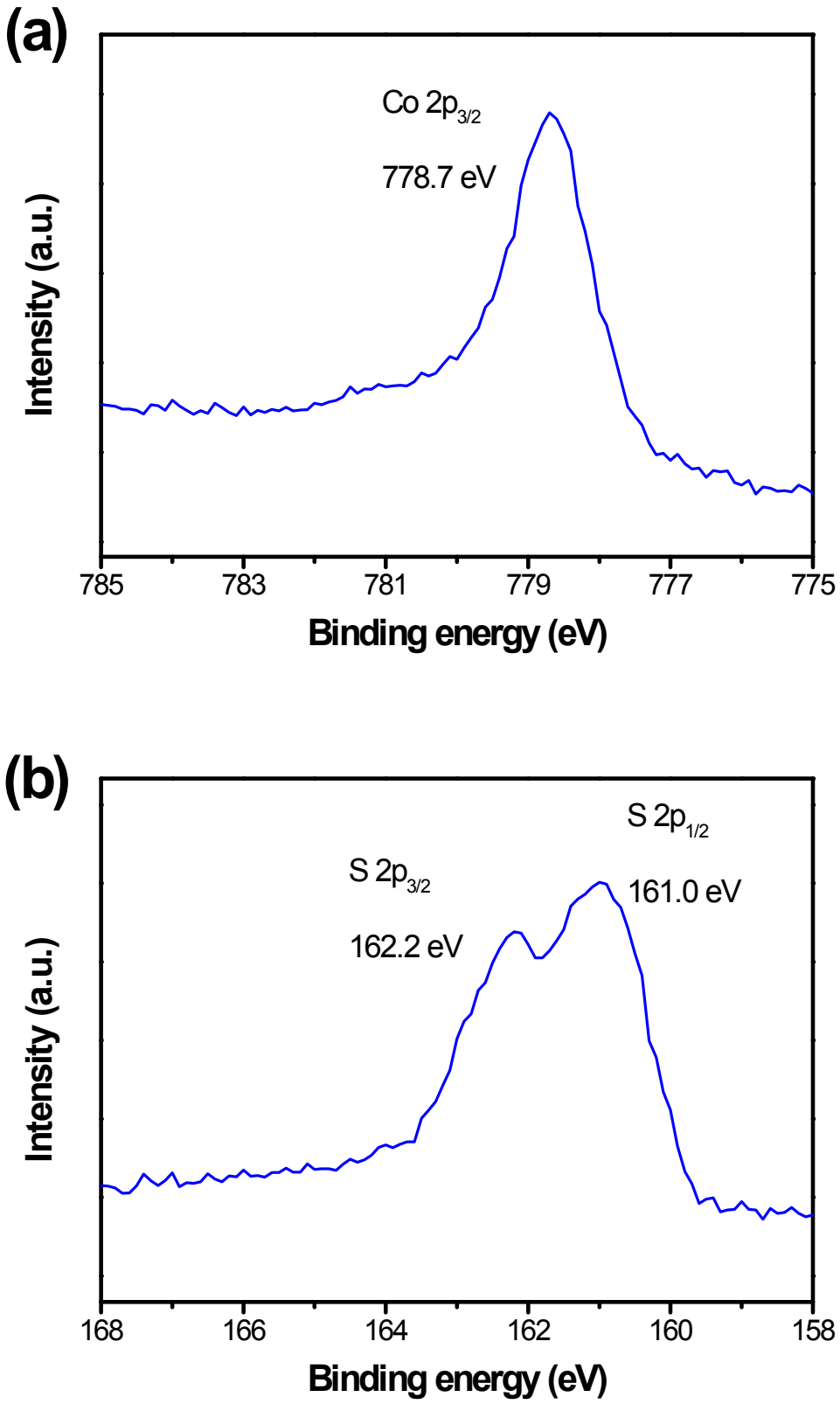


Figure S3. CV curves of the CoS and CoS on om-SnO_2 counter electrodes for the redox reactions of I_2/I_3^- and I^-/I_3^-. The scan rate was 50 mVs^{-1}.

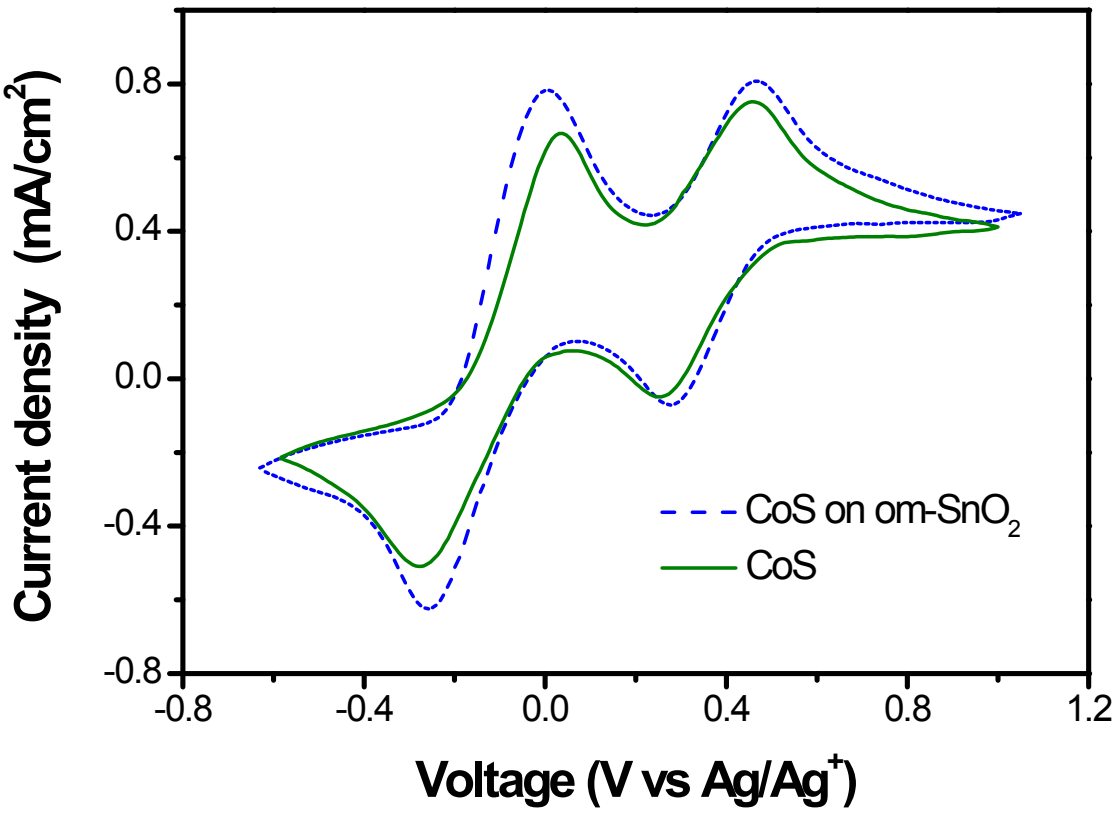


Figure S4. (a) Nyquist plots of DSSCs fabricated with a liquid electrolyte and different counter electrodes (CoS and CoS on om-SnO_2) at the open circuit condition under simulated AM 1.5G one sun light.

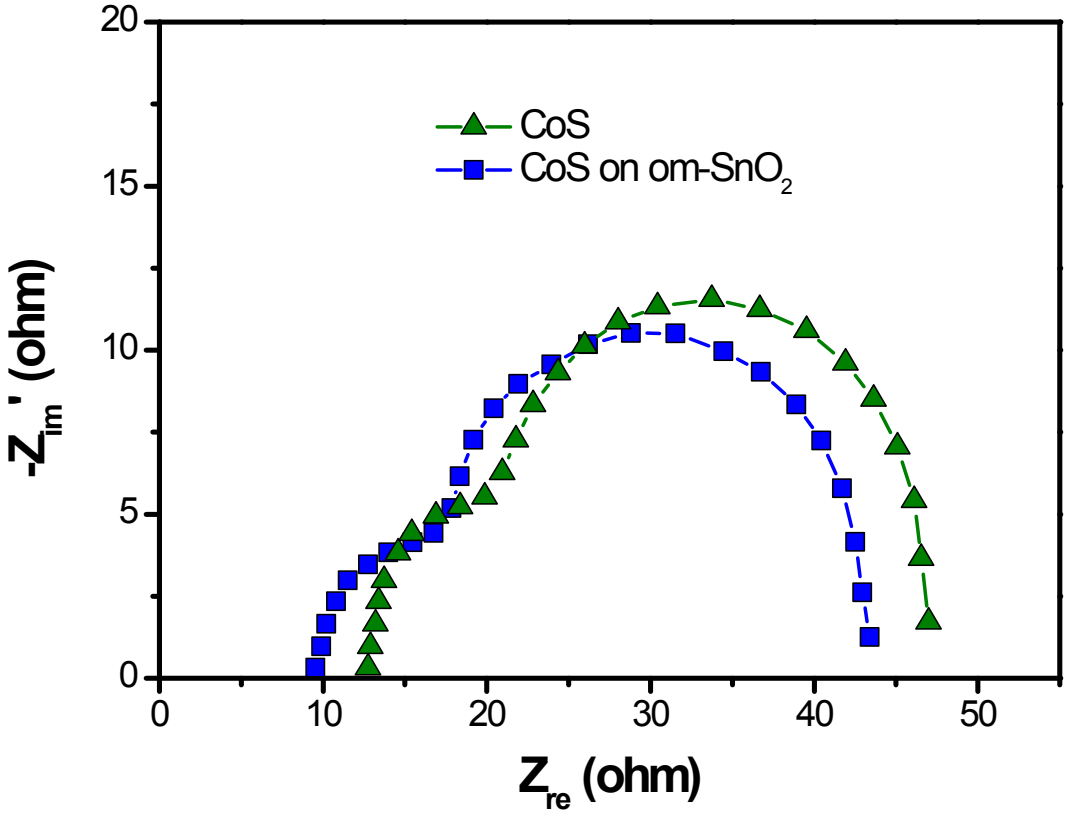


Figure S5. *J-V* curves of ssDSSCs fabricated with a solid PEBII electrolyte and CoS on dense SnO_2 counter electrode under one sun illumination (AM 1.5, 100 $mWcm^{-2}$).

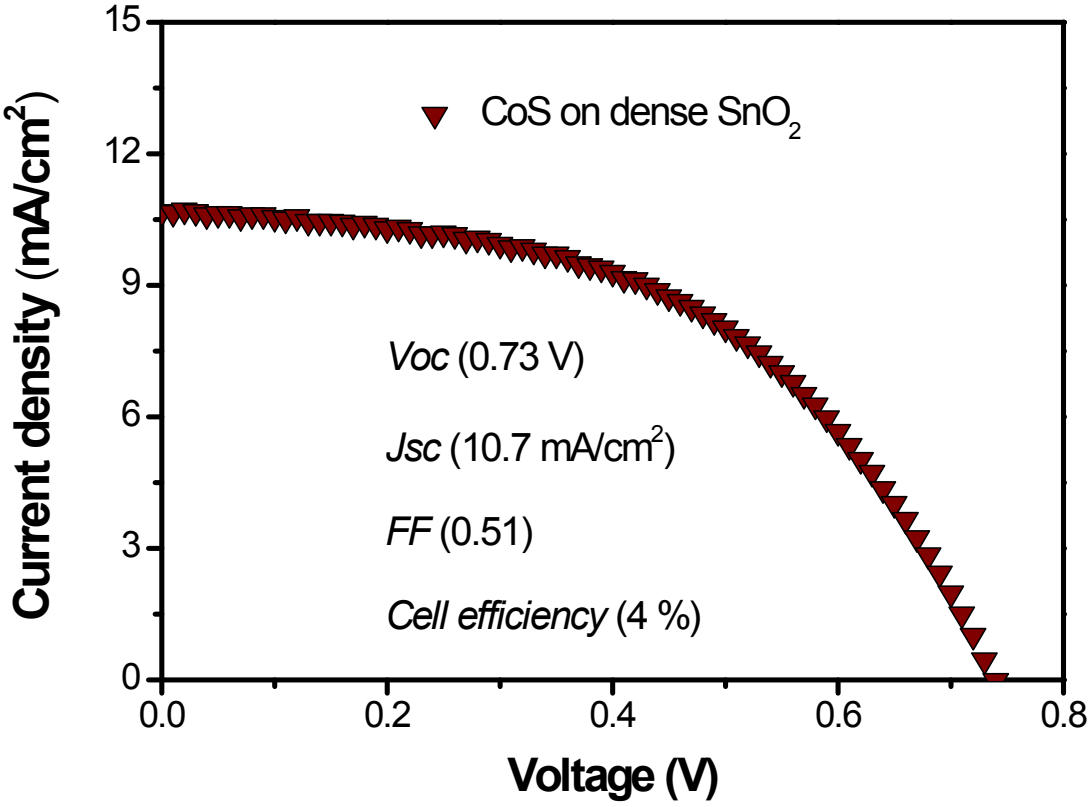
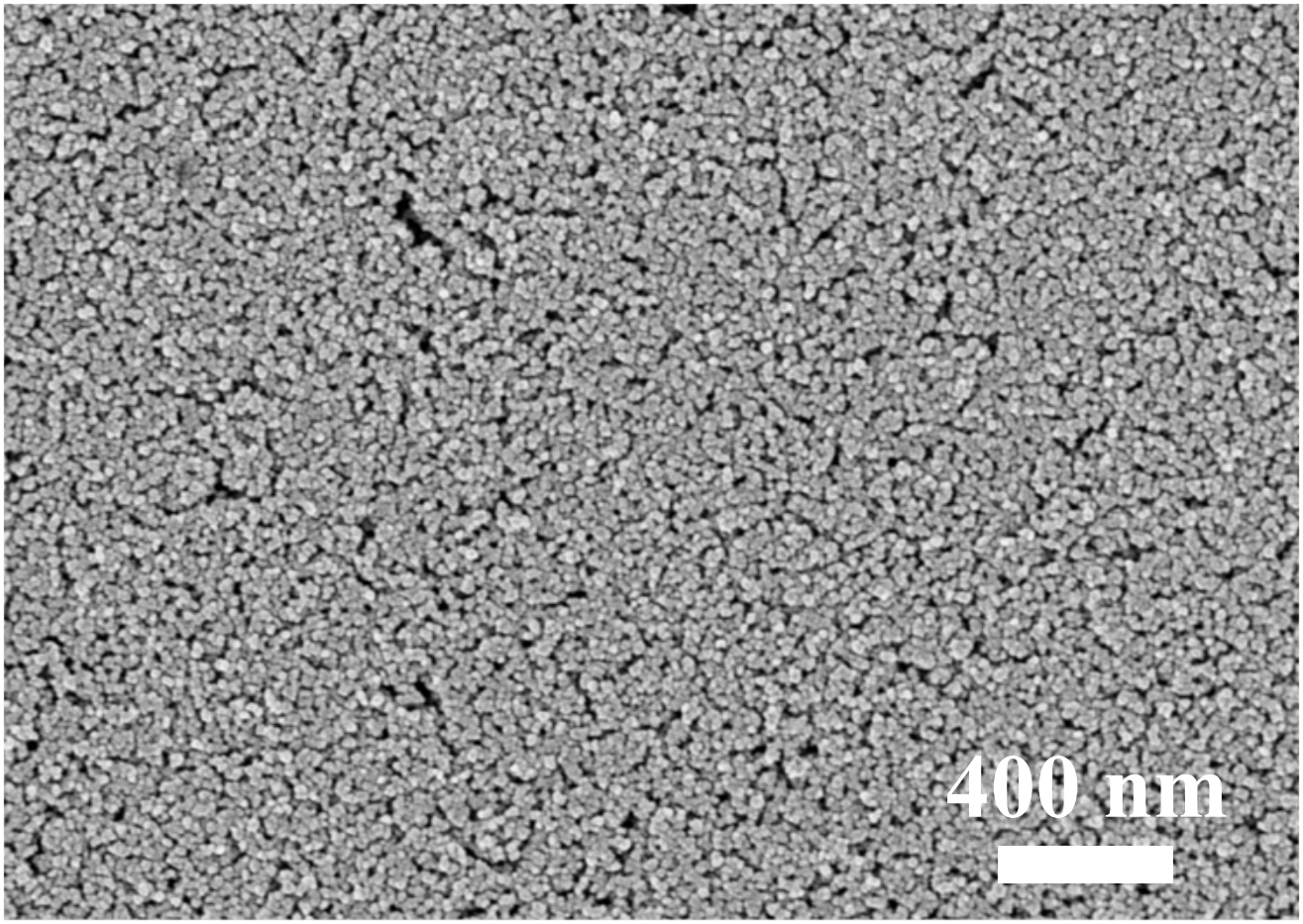


Figure S6. FE-SEM surface image of the dense SnO_2 platform. [a]



[a] A conducting FTO glass was sequentially cleaned in isopropanol and then in chloroform, and subsequently dried overnight in air before dense SnO_2 platform fabrication. Then, commercial available nanocrystalline SnO_2 based paste was spread on the FTO glass using the doctor blade technique and an adhesive tape spacer to achieve a flat and smooth surface. Finally, the films were calined at 450 ^oC for 30 min under air.