Supporting Information

High Performance Electrocatalyst Consisting of CoS Nanoparticles on an Organized Mesoporous SnO₂ 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-SnO₂/FTO counter electrode.
Figure S2. XPS profiles of (a) Co 2p, (b) S 2p regions for the CoS on om-SnO₂ 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$^-$/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.  

\[ \text{Cell efficiency (4%)} \]

- \( \text{Voc} (0.73 \text{ V}) \)
- \( \text{Jsc} (10.7 \text{ mA/cm}^2) \)
- \( \text{FF} (0.51) \)
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 °C for 30 min under air.