Supporting Information

Band Engineered Ternary Solid Solution $\text{CdS}_x\text{Se}_{1-x}$-Sensitized Mesoscopic TiO$_2$ Solar Cells

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X-ray diffraction patterns of CdS and CdSe-sensitized TiO$_2$ electrodes:

Figure S1. X-ray diffraction patterns of CdS and CdSe-sensitized TiO$_2$ electrodes made on glass microscope slides before and after heat treatment. The standard $2\theta$ values for TiO$_2$ (Anatase), wurtzite CdS and CdSe crystals are also shown for comparison.
Photocurrent-Voltage characteristics of cells made with platinised FTO counter electrode:

**Figure S2.** IPCE (a) and j-V characteristics (b) of solar cells made with 6CdS\_xSe\_1-x and 5CdS/5CdSe-sensitized TiO\_2 photoanodes (5 \( \mu m \) thick TiO\_2 electrodes without scattering layers) with platinised FTO counter electrodes for impedance study.

**Table S1.** Characteristics of 6CdS\_xSe\_1-x and 5CdS/5CdSe-sensitized TiO\_2 solar cells under simulated AM1.5 100 mW cm\(^{-2}\) illumination made with platinised FTO cathode and TiO\_2 electrodes (5 \( \mu m \) transparent Degussa P25 layers) without scattering layers.

<table>
<thead>
<tr>
<th>Photoanode</th>
<th>Sensitizer</th>
<th>Voc (V)</th>
<th>( j_{sc} ) (mA.cm(^{-2}))</th>
<th>ff (%)</th>
<th>( \eta ) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TiO_2 (5 ( \mu m ))</td>
<td>6CdS_xSe_1-x</td>
<td>0.539</td>
<td>12.57</td>
<td>43.83</td>
<td>2.97</td>
</tr>
<tr>
<td></td>
<td>5CdS/5CdSe</td>
<td>0.563</td>
<td>12.70</td>
<td>41.76</td>
<td>3.00</td>
</tr>
</tbody>
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