

## Supporting Information

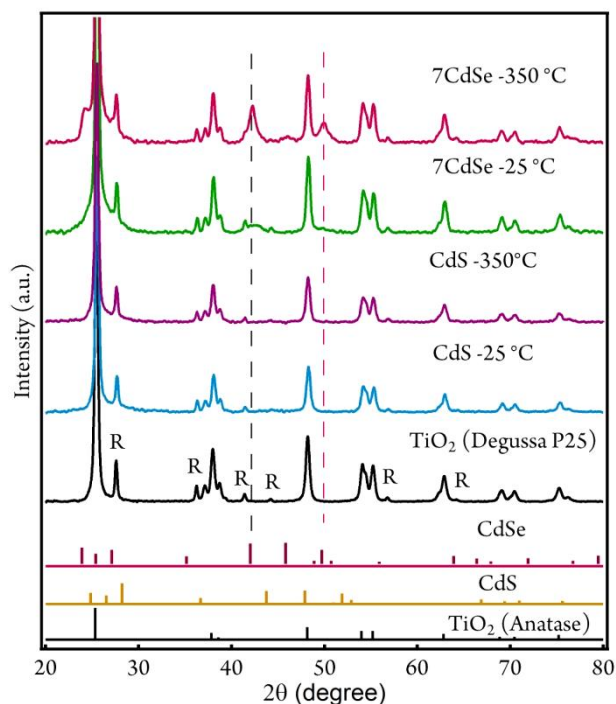
# Band Engineered Ternary Solid Solution $\text{CdS}_x\text{Se}_{1-x}$ -Sensitized Mesoscopic $\text{TiO}_2$ Solar Cells

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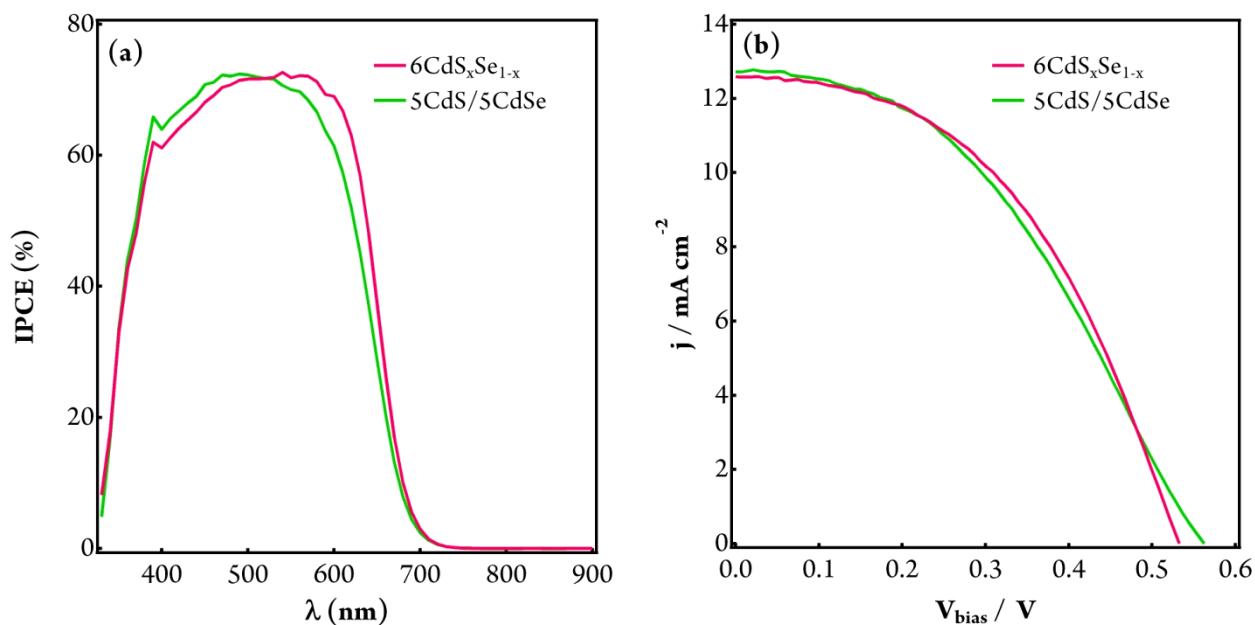
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**X-ray diffraction patterns of CdS and CdSe-sensitized  $\text{TiO}_2$  electrodes:**



**Figure S1.** X-ray diffraction patterns of CdS and CdSe-sensitized  $\text{TiO}_2$  electrodes made on glass microscope slides before and after heat treatment. The standard  $2\theta$  values for  $\text{TiO}_2$  (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<sub>x</sub>Se<sub>1-x</sub> and 5CdS/5CdSe-sensitized TiO<sub>2</sub> photoanodes (5 μm thick TiO<sub>2</sub> electrodes without scattering layers) with platinised FTO counter electrodes for impedance study.

**Table S1.** Characteristics of 6CdS<sub>x</sub>Se<sub>1-x</sub> and 5CdS/5CdSe-sensitized TiO<sub>2</sub> solar cells under simulated AM1.5 100 mW cm<sup>-2</sup> illumination made with platinised FTO cathode and TiO<sub>2</sub> electrodes (5 μm transparent Degussa P25 layers) without scattering layers.

Photoanode	Sensitizer	V <sub>oc</sub> (V)	$j_{sc}$ (mA.cm <sup>-2</sup> )	$ff$ (%)	$\eta$ (%)
TiO <sub>2</sub> (5 μm)	6CdS <sub>x</sub> Se <sub>1-x</sub>	0.539	12.57	43.83	2.97
	5CdS/5CdSe	0.563	12.70	41.76	3.00