

Supporting information

**Planar Heterojunction (PHJ) Solar Cell
Employing Single Source Precursor
Solution Processed Sb₂S₃ Thin Film as the
Light Absorber**

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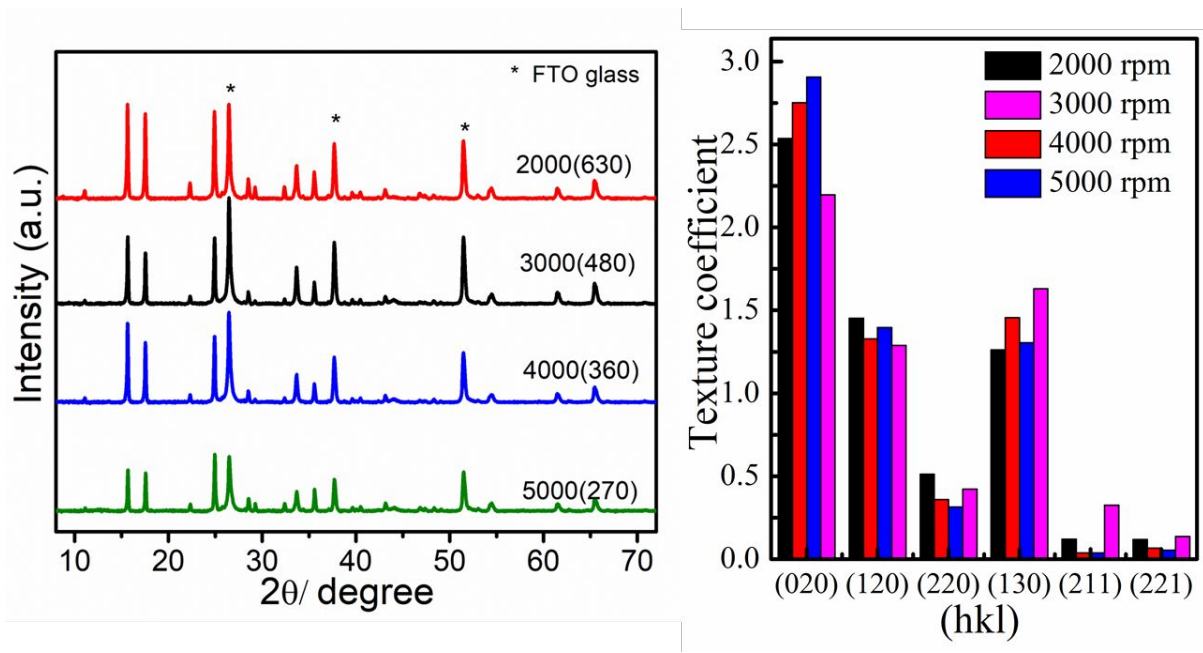


Figure S1. XRD patterns and texture coefficient of Sb_2S_3 film of different thickness sintered at 350 °C

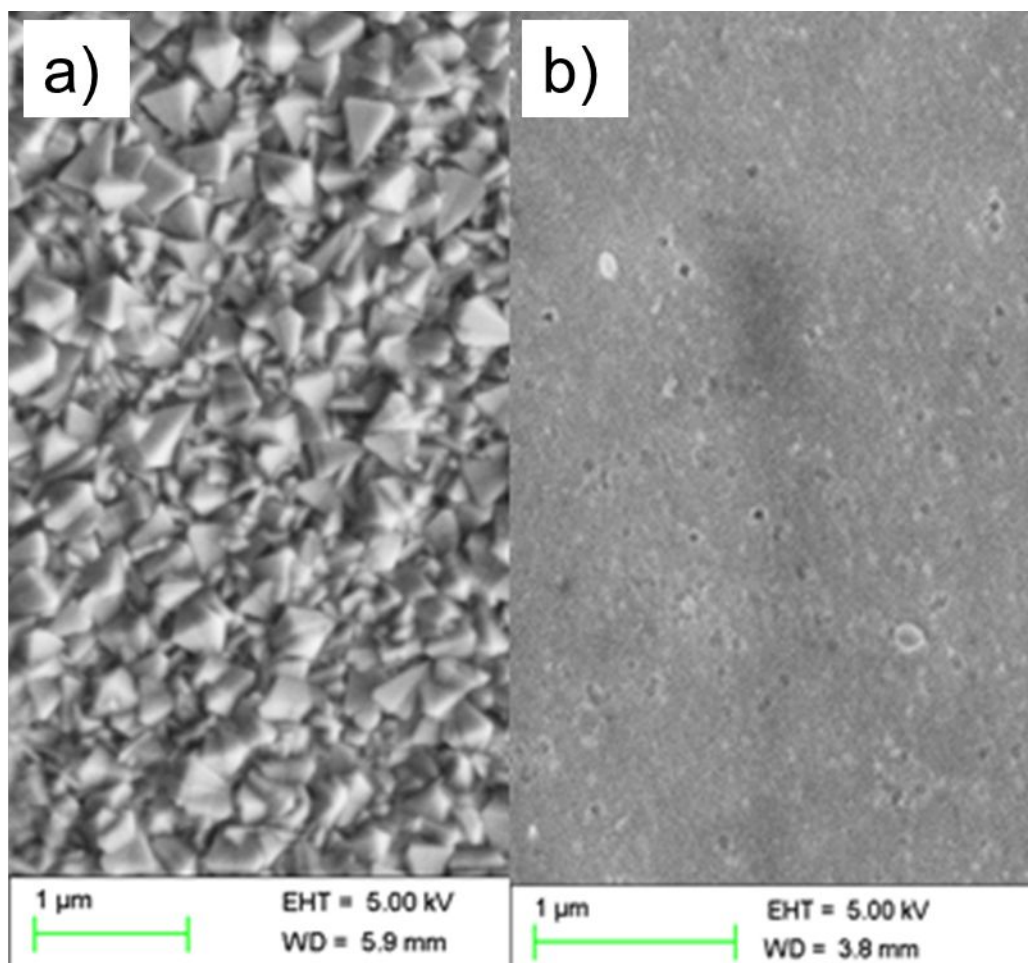


Figure S2. FESEM images of a) bare FTO glass, b) CdS coated FTO glass

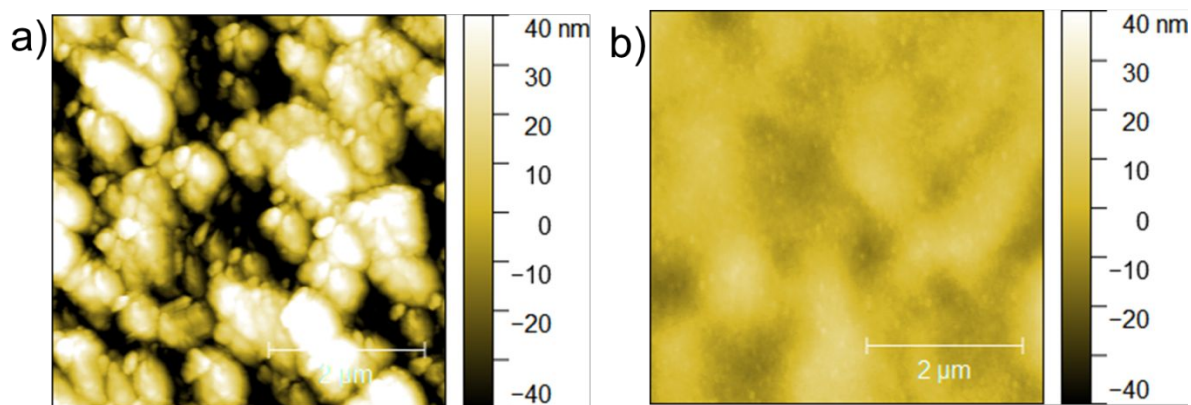


Figure S3. a) AFM images of a) bare FTO glass, b) CdS coated FTO glass

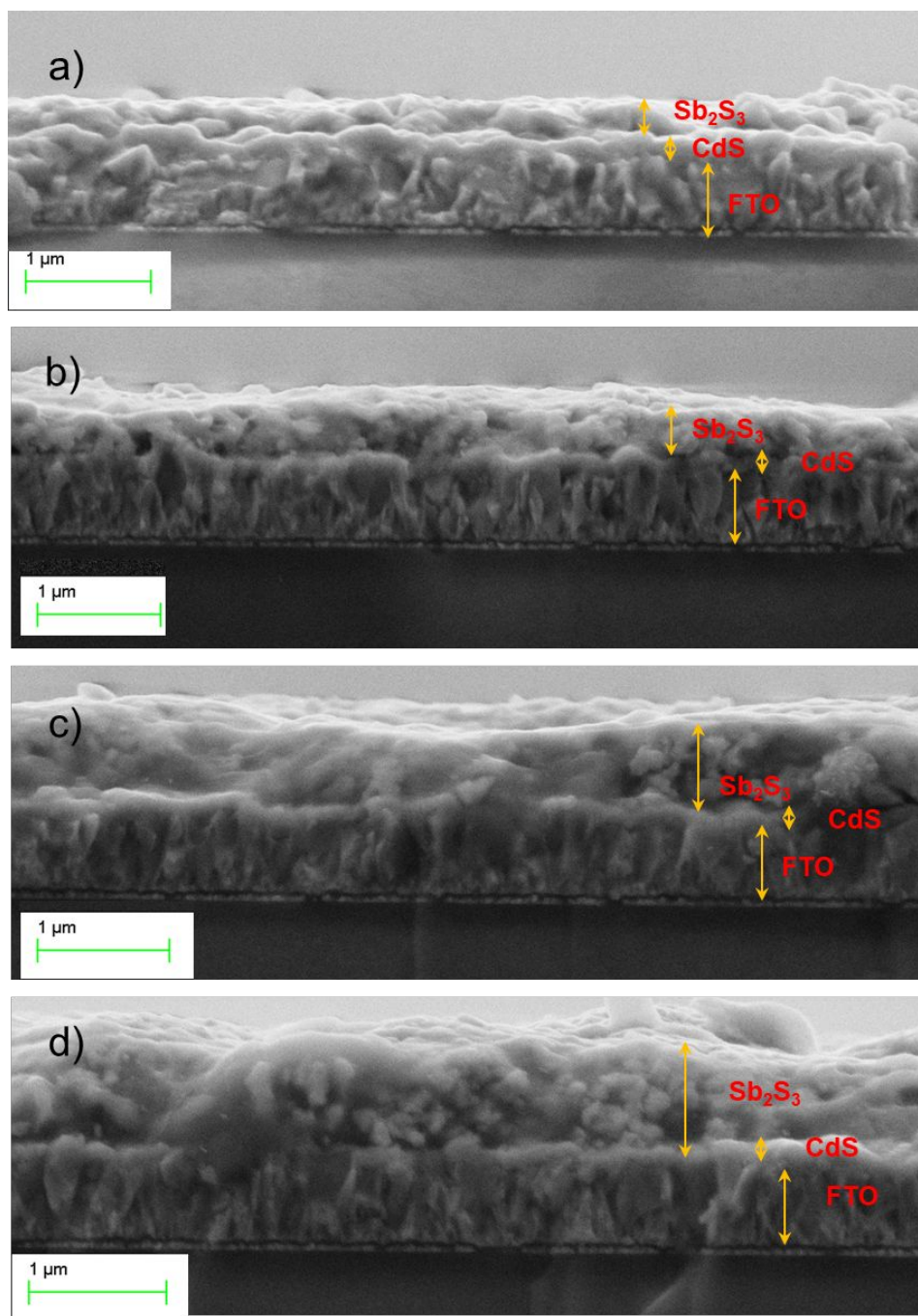


Figure S4. Cross section of FESEM images of deposited Sb_2S_3 on CdS/FTO glass at different spin rate. a) 5000, b) 4000, c) 3000 and d) 2000 rpm.

Table S1. Elemental analysis (EDS) of Sb_2S_3 films deposited on bare glass substrate. The theoretical concentration ratio between sulphur and antimony is 1.5. Sample at 275 and 300°C are show slightly higher sulphur concentration, and samples sintered at 325 and 350°C shows lower deficiency in sulphur.

Temperature (°C)	S(%)	Sb(%)	Ratio(S/Sb)
275	61.7	38.3	1.610
300	60.41	39.58	1.526
325	59.74	40.255	1.484
350	58.55	41.44	1.412

Table S2. The average photovoltaic device parameters of five solar cells for optimum sintering temperature (350° C) and film thickness (480 nm). Standard deviation values are given inside the parentheses.

sintering temperature 350° C					
V_{oc} (V)	J_{sc} (mAcm ⁻²)	FF	PCE (%)	R_{sh} (ohm cm ²)	R_s (ohm cm ²)
0.52(0.004)	8.2(0.32)	0.38(0.02)	1.62(0.08)	182(46.7)	32(2.1)
Spinning speed/ Film thickness (3000rpm/480 nm)					
0.52(0.001)	9.4(0.13)	0.48(0.007)	2.35(0.045)	391(46.5)	18(1.9)