Supplementary information: Isotype heterojunction solar cells using *n*-type Sb_2Se_3 thin films

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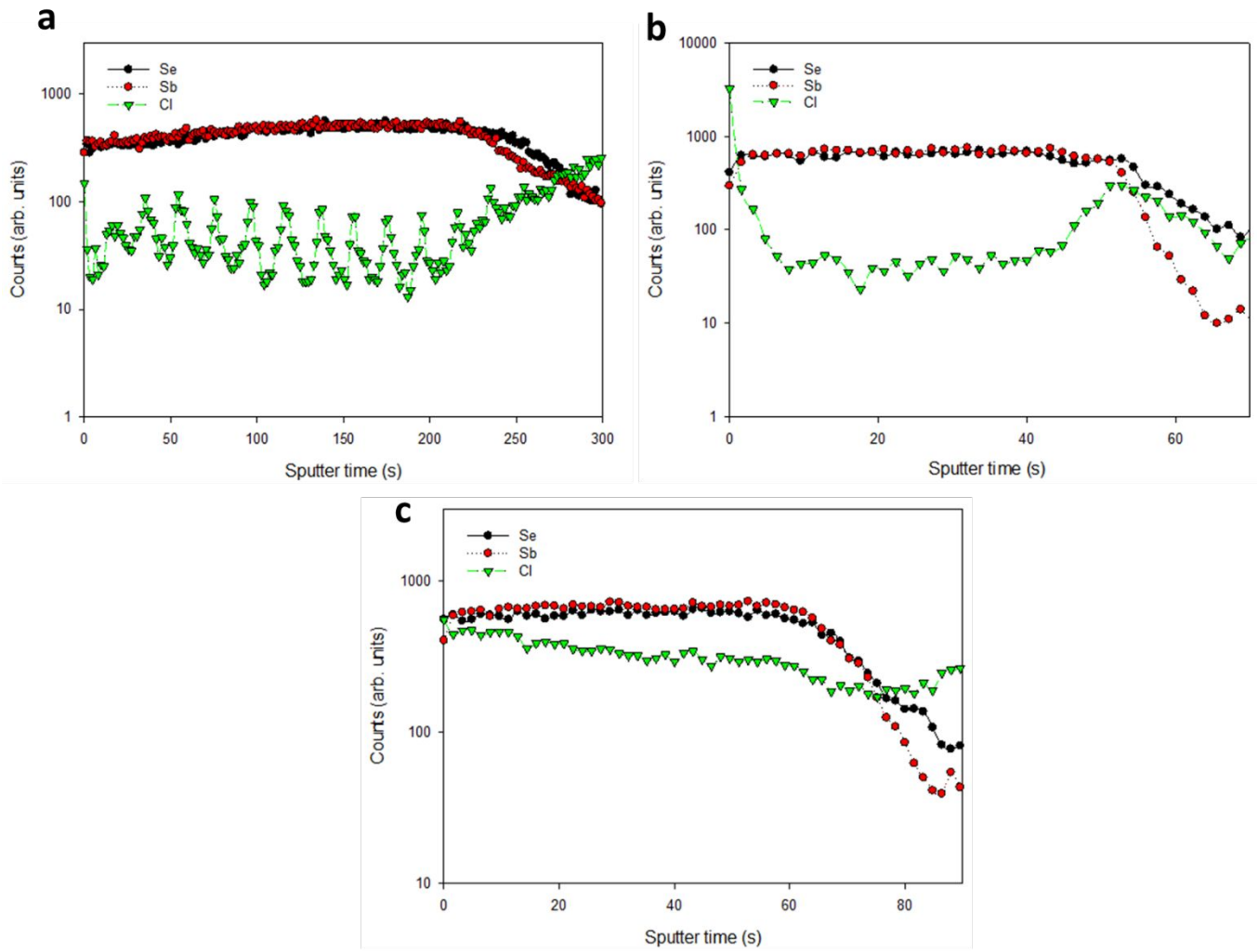
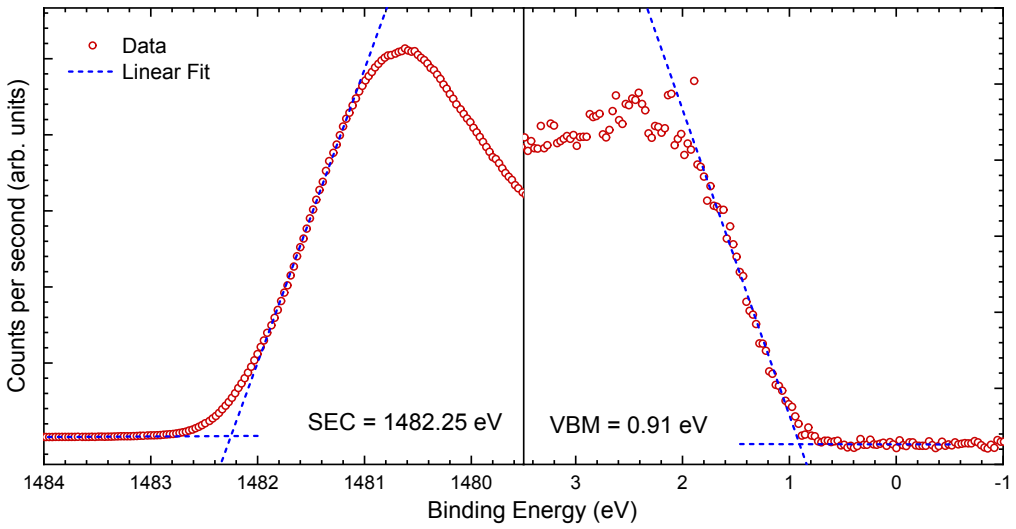


Figure S1: Se, Sb and Cl spectra from TOF SIMS analysis for close space sublimation (CSS) or thermally evaporated (TE) Sb_2Se_3 layers for a) CdS/CSS-Sb_2Se_3, b) TiO_2/TE-Sb_2Se_3 and c) CdS/ TE-Sb_2Se_3 devices.

a



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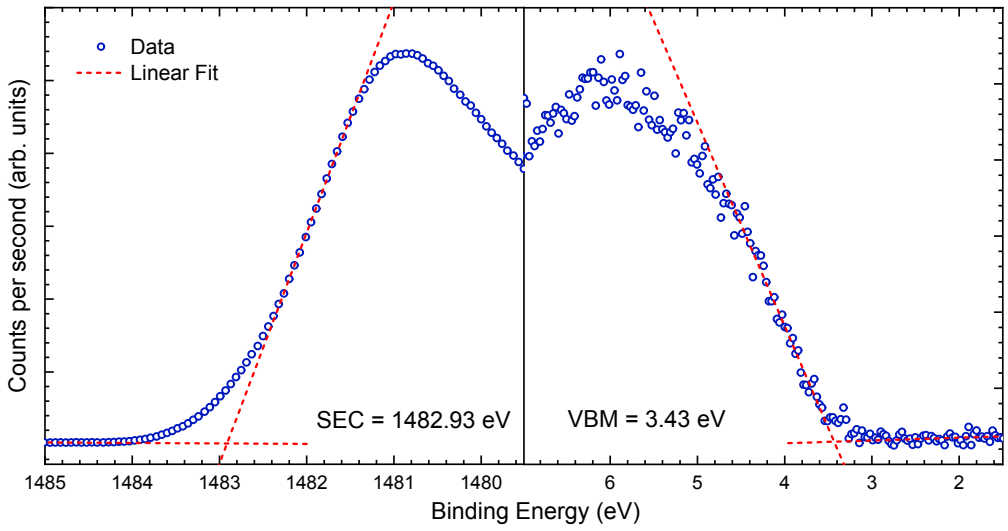

Figure S2: Secondary electron cut-off (SEC) and valence band maximum (VBM) obtained by XPS for a) Sb_2Se_3 and b) TiO_2. Linear fits to both edges and background are used to determine SEC and VBM energy with respect to the Fermi level, from which the work function and ionisation potential are calculated.

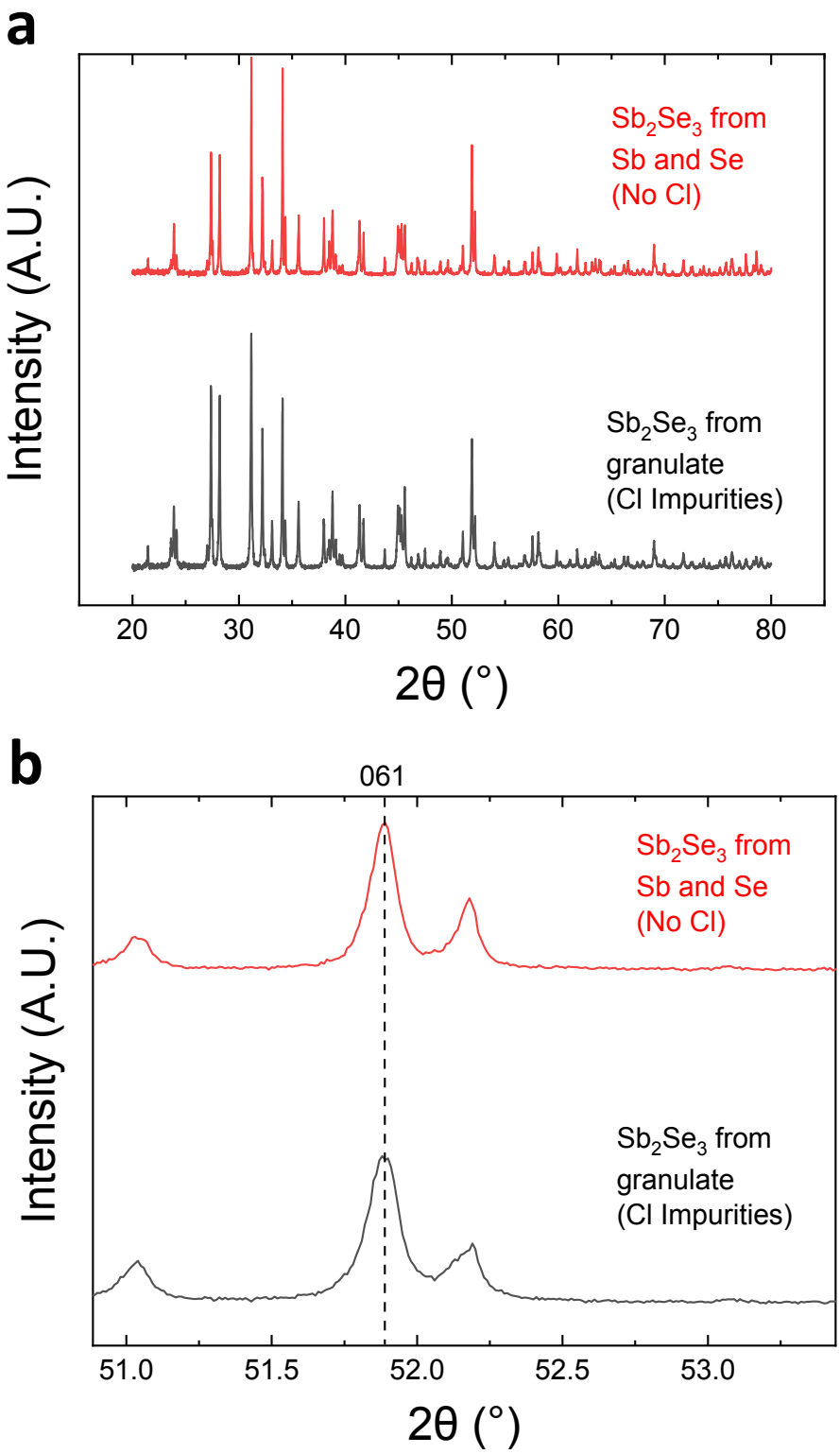

Figure S3: X-ray diffraction (XRD) of Sb_2Se_3 crystals synthesized from either elemental Sb and Se (no Cl impurities) or granulate Sb_2Se_3 showing a) full XRD spectra and b) high resolution of (061) peak with no shift due to dopant incorporation or secondary phases apparent.