

Supporting Information

Size and Bandgap Tunability in Bi_2S_3 Colloidal Nanocrystals and its Effect in Solution Processed Solar Cells

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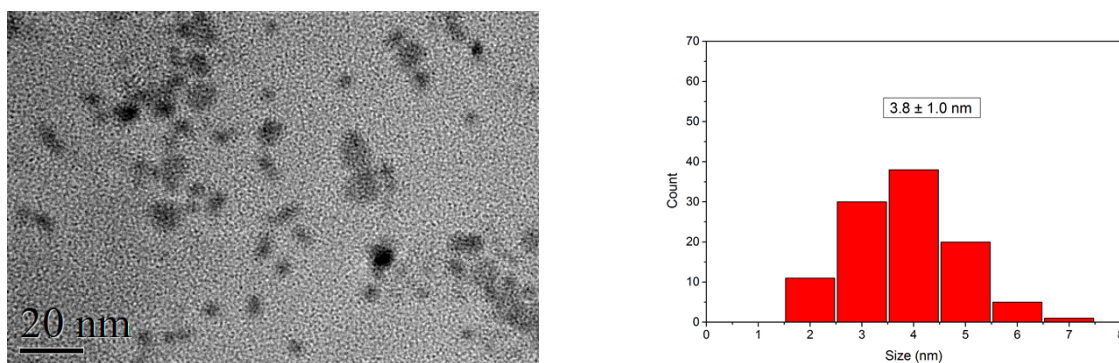


Figure S1. TEM micrograph and size distribution of 3.8 nm Bi_2S_3 nanocrystals, obtained after injection of HMS at 50°C and 1 hour of growing at 50°C.

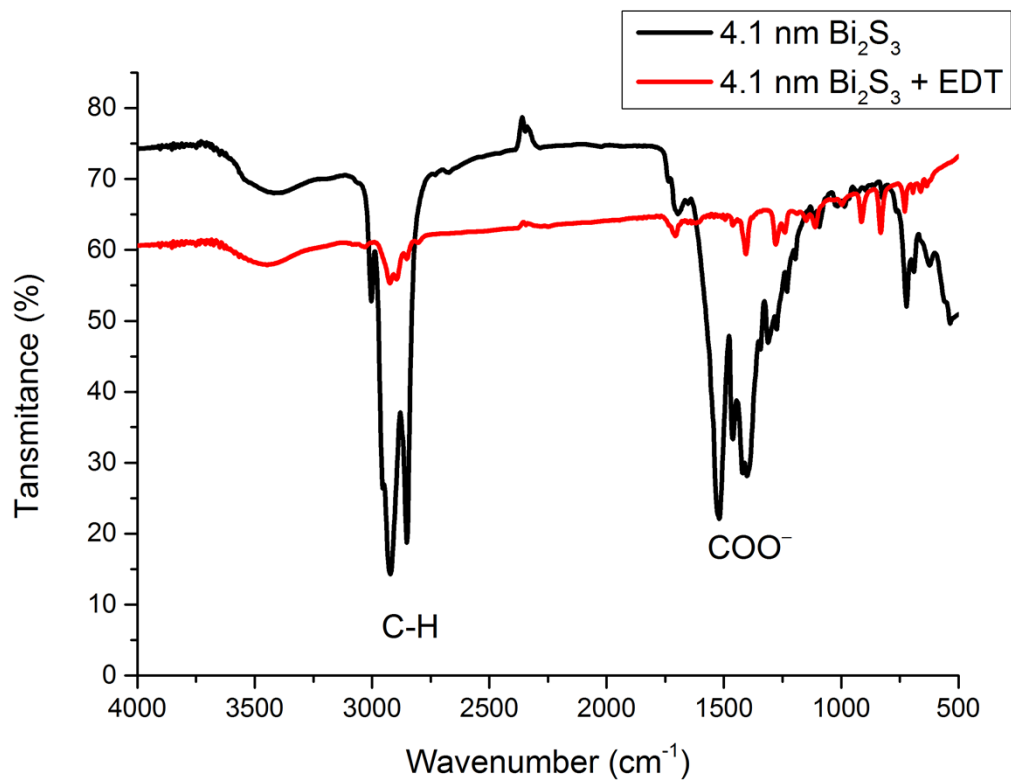


Figure S2. FTIR spectra of 4.1 nm NCs before and after EDT treatment, confirming the efficient replacement of the original oleic acid capping ligand after ligand exchange.

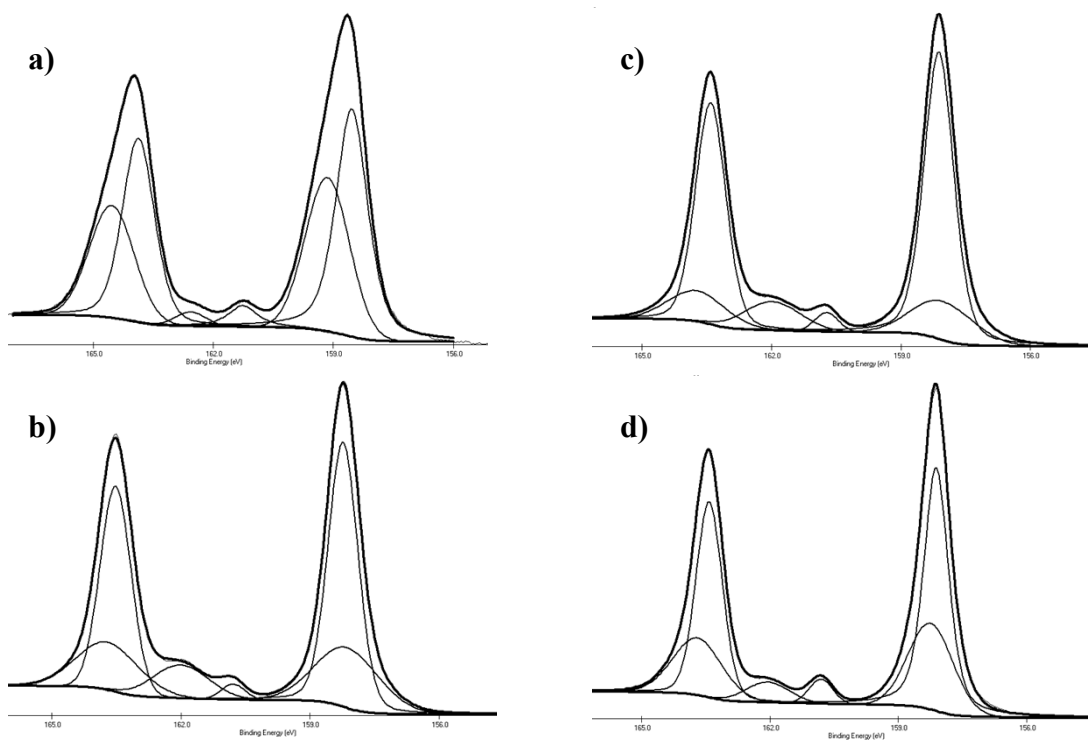


Figure S3. XPS spectrum of Bi 4f core level corresponding to a) 2.6 nm sample, b) 2.6 nm sample with EDT treatment, c) 4.1 nm sample with EDT treatment, and d) 14 x 19 nm sample with EDT treatment.

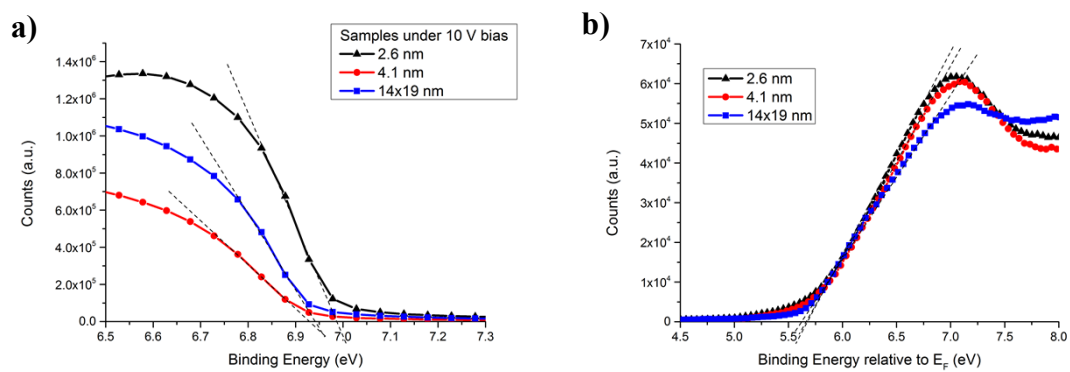


Figure S4. a) High binding energies of secondary electron cut-off for Fermi level calculation while 10 V bias was applied. b) Low binding energies of secondary electron cut-off, corrected to Fermi level position, for valence band calculation.

Table S1. Average solar cell performance parameters of devices in this study. Open circuit voltage (V_{oc}), short circuit current density (J_{sc}), fill factor (FF), power conversion efficiency (PCE) series resistance (R_s) and shunt resistance (R_{sh}).

Sample	V_{oc} [V]	J_{sc} [mA/cm ²]	EQE J_{sc} [mA/cm ²]	FF	PCE [%]	R_s (k Ω)	R_{sh} (k Ω)
2.6 nm 2	0.54±0.0	1.12±0.22	1.68	0.55±0.01	0.34±0.07	1.418±0.379	0.608±0.084
4.1 nm 3	0.43±0.0	1.01±0.27	2.64	0.55±0.02	0.24±0.07	0.753±0.187	0.406±0.150
14x19 nm 1	0.35±0.0	2.28±0.63	5.13	0.49±0.11	0.49±0.10	0.439±0.086	0.267±0.136