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Electronic Supplementary Information

Towards highly efficient CdS/CdSe quantum dots-sensitized solar cells incorporating with fullerene hybrid-nanostructure counter electrode on transparent conductive substrates

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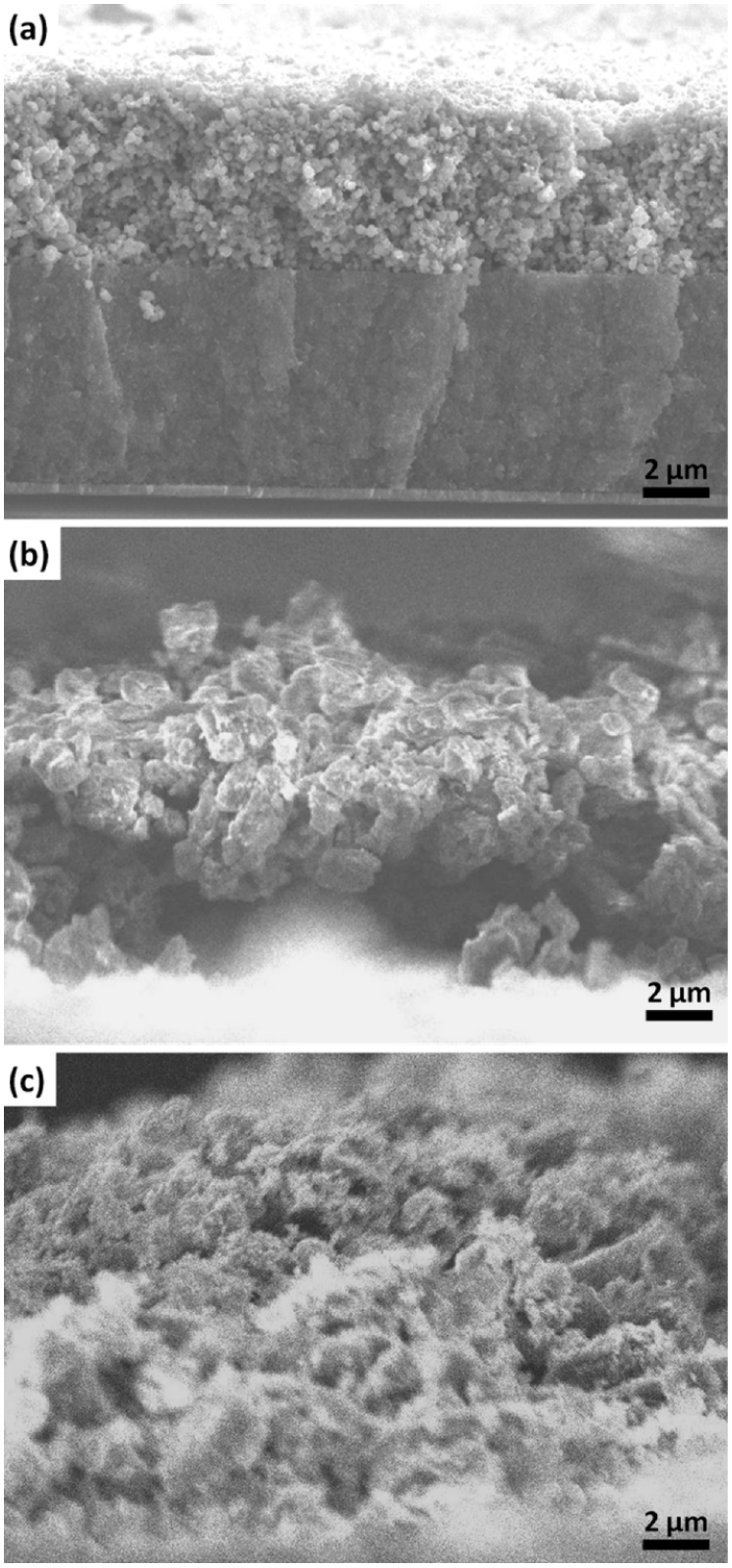

Fig. S1 Cross-section SEM of TiO_2 (a), C_{60} (b) and AC (c) film on FTO.

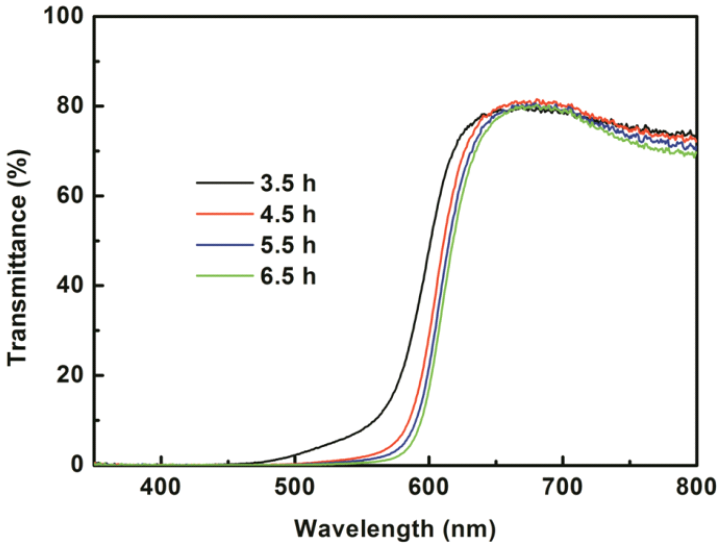

Fig. S2 Transmittance of photoanodes. The deposition time of CdSe is varied from 3.5 to 6.5 h.

Table S1 Photovoltaic performances of CdS/CdSe QDSCs after 3.5 to 6.5 h CdSe growth with C_{60} and AC counter electrodes

CdSe Time (h)	Sample	J_{SC} (mA cm^{-2})	V_{OC} (mV)	FF	η (%)
3.5	C_{60}	11.5	537	0.60	3.71
	AC	10.7	517	0.51	2.85
4.5	C_{60}	12.4	531	0.62	4.09
	AC	11.0	518	0.57	3.33
5.5	C_{60}	12.0	530	0.62	3.92
	AC	11.1	518	0.56	3.26
6.5	C_{60}	10.1	504	0.57	2.92
	AC	10.2	494	0.48	2.41

Table S2 Parameters of the EIS fitting data by using the electrical equivalent circuit model in Fig. 6b and the results obtained from BET analysis of the three counter electrodes.

Sample	R_S (Ω)	R_{CT1} (Ω)	R_{CT2} (Ω)	BET surface area ($m^2 \cdot g^{-1}$)	Average Pore Size (nm)	Volume of Pores ($cm^3 \cdot g^{-1}$)
C_{60}	12.6	1.73	84.0	146	9.86	0.366
AC	13.5	2.31	106	234	5.64	0.347
Pt	30.2	1.69	338	/	/	/