Supporting Information

An attempt to improve the performance of pyrrole-containing dyes in dye sensitized solar cells by adjusting isolation groups

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Table S1 Dye sensitized solar cell performance data of dyes

sensitizer	CDCA (mM)	J_{sc} (mA cm^{-2})	V_{oc} (V)	*FF*	η (%)
LI-54	0	11.30	0.69	0.66	5.12
	5	12.23	0.72	0.61	5.36
	10	12.45	0.73	0.62	5.59
LI-55	0	12.61	0.72	0.65	5.94
	5	13.51	0.74	0.63	6.30
	10	13.49	0.72	0.61	5.92
LI-56	0	12.60	0.70	0.67	5.88
	5	13.69	0.72	0.60	5.94
	10	12.72	0.74	0.62	5.88
LI-57	0	13.85	0.72	0.64	6.43
	5	13.49	0.72	0.63	6.11
	10	12.92	0.75	0.59	5.76

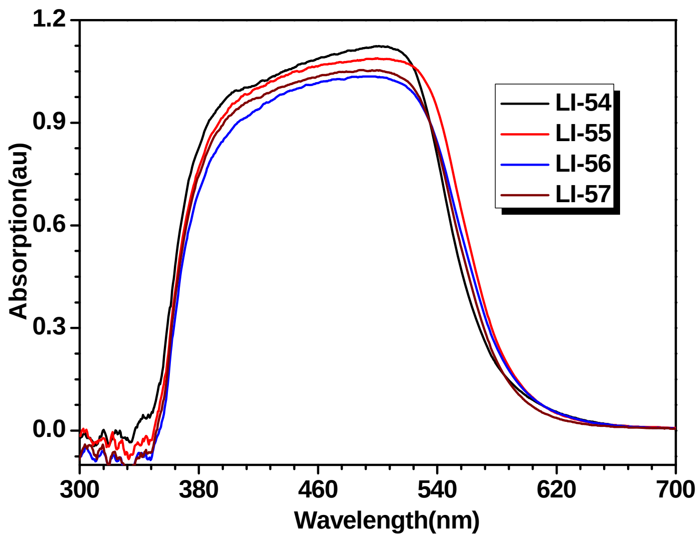


Figure S1. UV-vis spectra of the sensitizers on TiO_2 films.

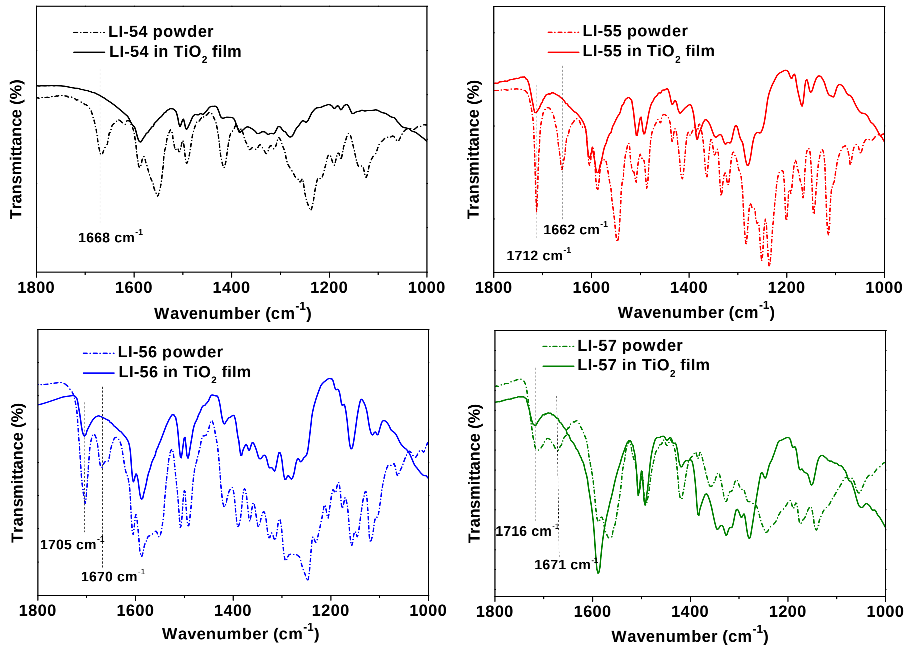


Fig. S2 IR spectra of the four pyrrole-containing dyes

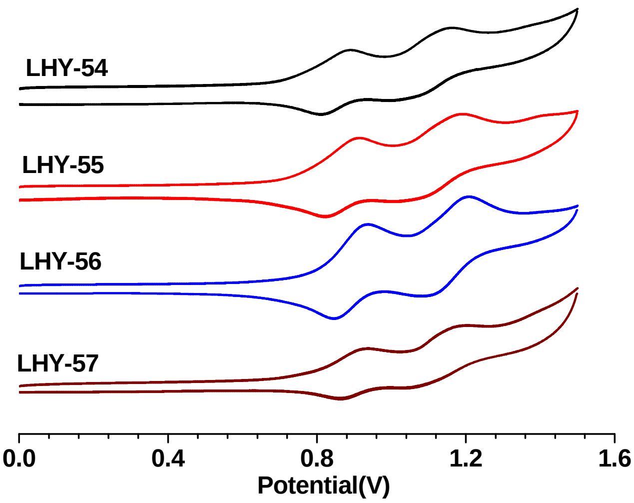
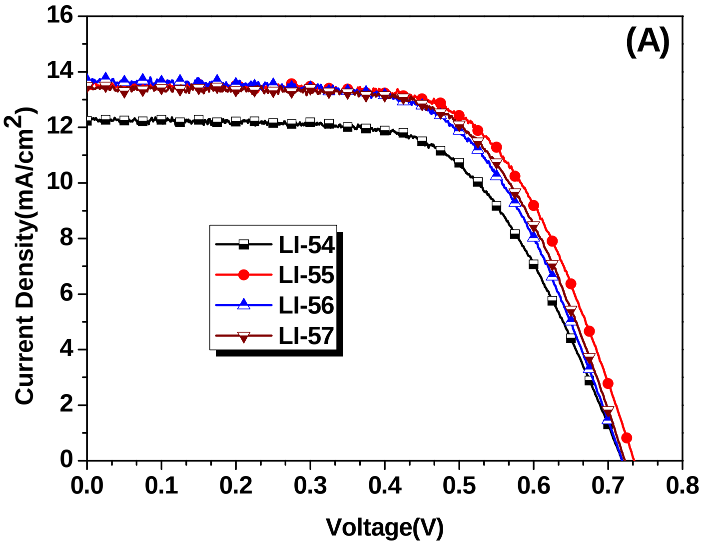


Figure S3. Cyclic voltammograms of sensitizers in CH_2Cl_2.



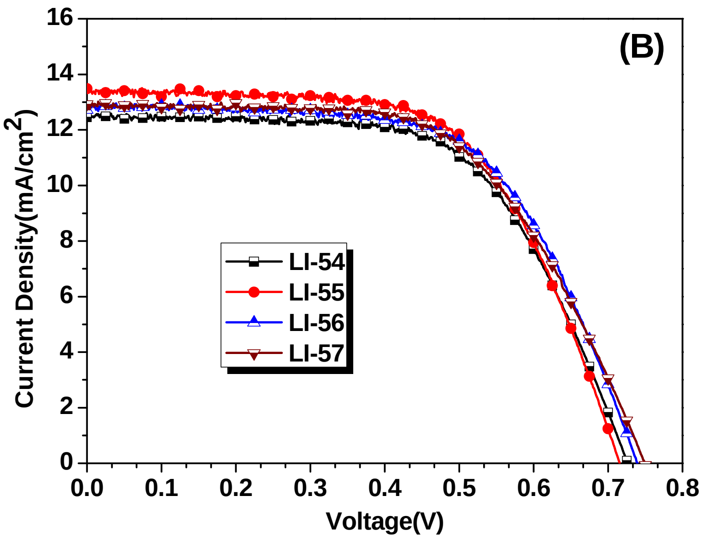


Figure S4. *J*-V characteristics of DSCs measured at simulated 100 $mWcm^{-2}$AM1.5 conditions. (A) The TiO_2 electrode (0.238 cm^2) was stained by immersing it into the CDCA solution (5 mM) for 6 h, then to the dye solution (0.3 mM) in CH_2Cl_2 for 24 h, (B) The TiO_2 electrode (0.238 cm^2) was stained by immersing it into the CDCA solution (10 mM) for 6 h,then to the dye solution (0.3 mM) in CH_2Cl_2 for 24 h.

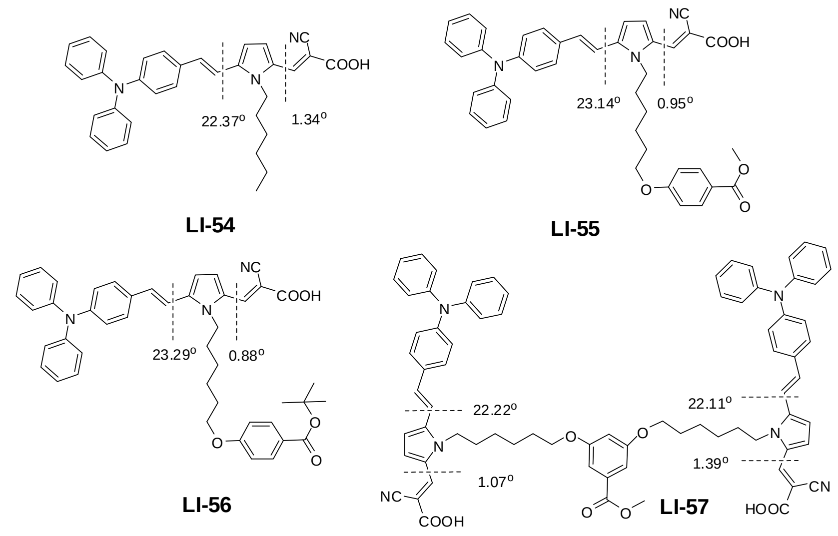


Figure S5. Dihedral angles between pyrrole unit and its neighboring units