

## Supplementary Information

### Enhanced Conversion Efficiency for Flexible Dye-Sensitized Solar Cells by Optimization of Nanoparticle Size with Electrophoretic Deposition Technique

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**Figure S1** FESEM images of P25 films before and after compression

Particle Size	Film Thickness ( $\mu\text{m}$ )	Photovoltaic Properties <sup>a</sup>			
		$V_{\text{oc}}$ (V)	$J_{\text{sc}}$ ( $\text{mA cm}^{-2}$ )	FF	$\eta$ (%)
10 nm	4	0.79	9.3	0.64	4.8
	8	0.77	10.6	0.64	5.3
	11	0.75	10.2	0.64	5.1
	15	0.75	10.1	0.64	4.9

<sup>a</sup> measured under AM 1.5G ( $100 \text{ mWcm}^{-2}$ );

**Table S1** Photovoltaic parameters of D149-sensitized solar cells fabricated from 10 nm nanoparticles on rigid glass substrate

Particle Size	Film Thickness ( $\mu\text{m}$ )	Photovoltaic Properties <sup>a</sup>			
		$V_{\text{oc}}$ (V)	$J_{\text{sc}}$ ( $\text{mA cm}^{-2}$ )	FF	$\eta$ (%)
14 nm	4	0.80	6.2	0.65	3.2
	8	0.79	10.7	0.63	5.4
	11	0.78	10.9	0.63	5.3
	15	0.77	10.5	0.63	5.3

<sup>a</sup> measured under AM 1.5G ( $100 \text{ mWcm}^{-2}$ );

**Table S2** Photovoltaic parameters of D149-sensitized solar cells fabricated from 14 nm nanoparticles on rigid glass substrate

Particle Size	Film Thickness ( $\mu\text{m}$ )	Photovoltaic Properties <sup>a</sup>			
		$V_{\text{oc}}$ (V)	$J_{\text{sc}}$ ( $\text{mA cm}^{-2}$ )	FF	$\eta$ (%)
19 nm	4	0.81	10.6	0.65	5.3
	8	0.79	12.4	0.65	6.2
	11	0.79	14.3	0.65	7.0
	15	0.78	10.7	0.65	5.6

<sup>a</sup> measured under AM 1.5G ( $100 \text{ mWcm}^{-2}$ );

**Table S3** Photovoltaic parameters of D149-sensitized solar cells fabricated from 19 nm nanoparticles on rigid glass substrate

Particle Size	Film Thickness ( $\mu\text{m}$ )	Photovoltaic Properties <sup>a</sup>			
		$V_{\text{oc}}$ (V)	$J_{\text{sc}}$ ( $\text{mA cm}^{-2}$ )	FF	$\eta$ (%)
27 nm	4	0.85	8.6	0.68	4.5
	8	0.85	9.0	0.68	4.7
	11	0.84	9.2	0.68	5.3
	15	0.83	8.0	0.63	4.1

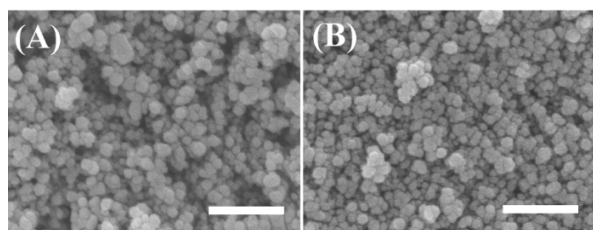
<sup>a</sup> measured under AM 1.5G ( $100 \text{ mWcm}^{-2}$ );

**Table S4** Photovoltaic of D149-sensitized solar cells fabricated from 27 nm nanoparticles on rigid glass substrate

Particle	Film Thickness ( $\mu\text{m}$ )	Photovoltaic Properties <sup>a</sup>			
		$V_{oc}$ (V)	$J_{sc}$ ( $\text{mA cm}^{-2}$ )	FF	$\eta$ (%)
Degussa P25	4	0.80	7.0	0.65	3.7
	8	0.79	9.4	0.65	4.9
	11	0.77	12.7	0.64	6.3
	15	0.75	10.0	0.64	4.9

<sup>a</sup> measured under AM 1.5G ( $100 \text{ mWcm}^{-2}$ );

**Table S5** Photovoltaic parameters of D149-sensitized solar cells fabricated from P25 nanoparticles on rigid glass substrate



**Fig S1.** FESEM images of the P25 film prepared by EPD (A) ~ as prepared. (B) ~ after compression. Scale bar represents 100 nm