Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

NiO-decorated mesoporous TiO_2 flowers for improved photovoltaic dye sensitized solar cell

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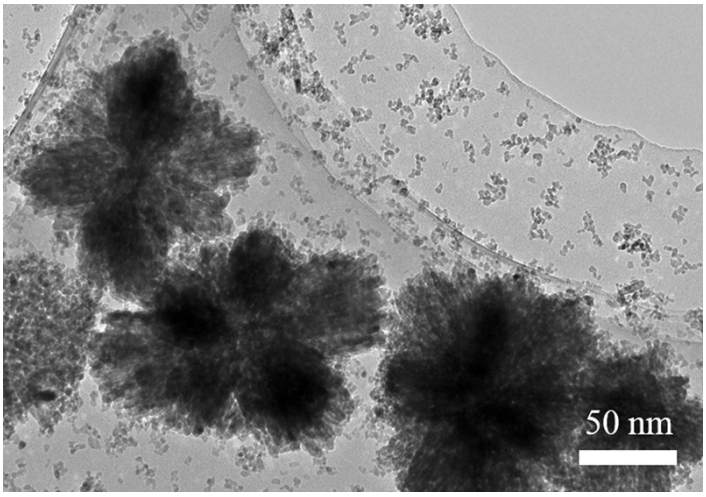

Figure S1. TEM image of pristine F-TiO_2 NPs

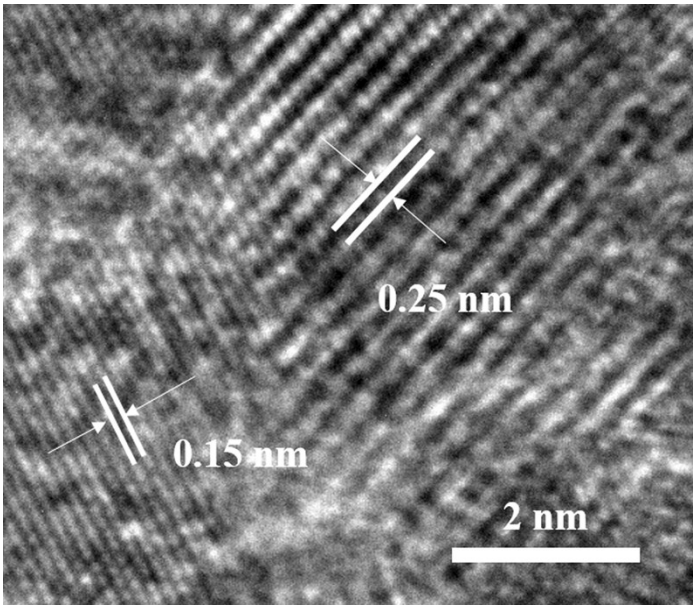

Figure S2. HR-TEM image of F-TiO_2-NiO NPs

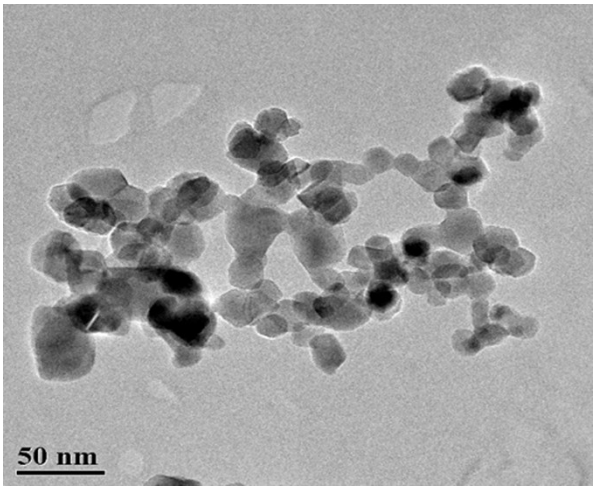

Figure S3. TEM images of P25 NPs

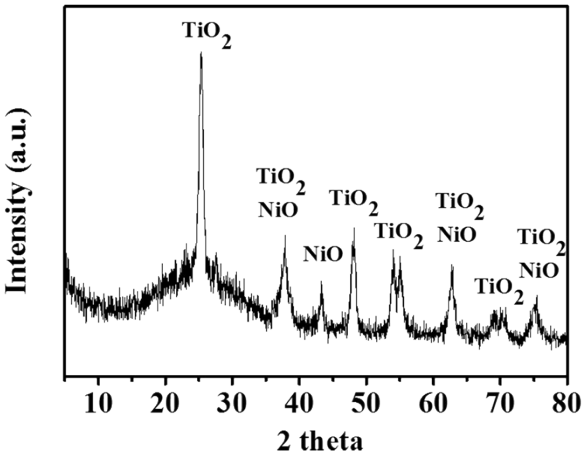

Figure S4. XRD patterns of F-TiO_2-NiO NPs.

Table S1. The Photovoltaic and electron transport properties of the TiO_2-NiO NFs, TiO_2 NFs and P25 NPs DSSCs

DSSc	V_{oc} (V)	J_{sc} (mA cm^{-2})	F.F.	η(%)	Dye uptake (mol^{-8} cm^{-2})	R_t (Ω)	R_{rec} (Ω)	L_n(μm)	Film thickness
TiO_2-NiO NFs	0.66	16.93	0.74	8.20	19.43	2.13	18.21	29.23	10 μm
TiO_2 NFs	0.60	15.12	0.71	6.49	18.62	2.41	17.03	26.58	10 μm

P25 NPs	0.57	13.58	0.70	5.56	11.54	2.05	10.73	22.88	10 µm

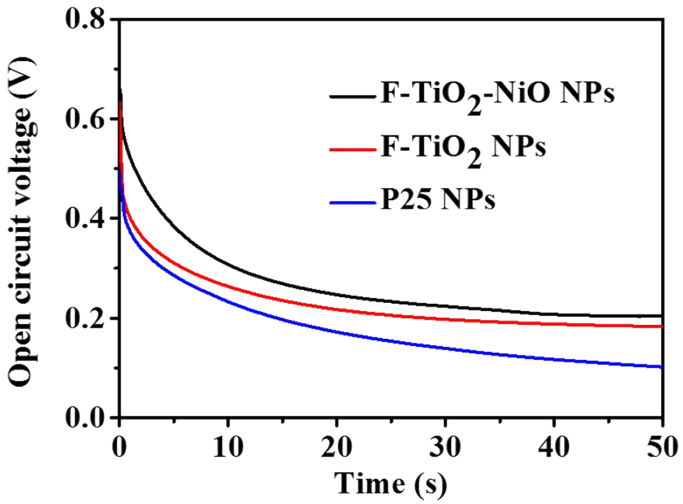

Figure S5. Open-circuit voltage decay profiles for DSSCs with anodes made of F-TiO_2-NiO NPs, F-TiO_2 NPs and P25 NPs.

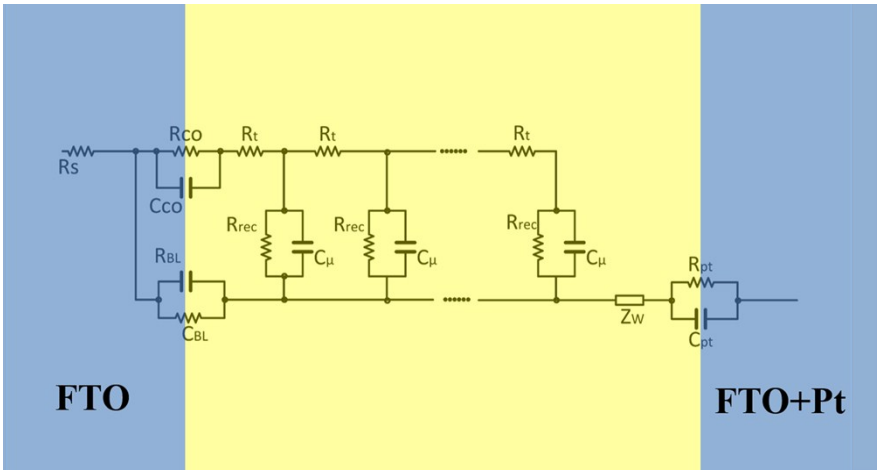

Figure S6. General transmission line model of DSSCs. The (R_{rec}) is the charge recombination resistance at the TiO_2/dye/electrolyte interface; (C_μ) is the chemical capacitance of the TiO_2 film; (R_t) is the transport resistance of electrons in TiO_2 film; Z_W is the Warburg element showing the Nernst diffusion of I^{3-} in electrolyte; (R_{Pt}) and (C_{Pt}) are the charge-transfer resistance and double-layer capacitance at the platinized counter electrode; (R_{BL}) and (C_{BL}) are the charge-transfer resistance and the corresponding double-layer capacitance at exposed FTO/electrolyte interface; (R_{CO}) and (C_{CO}) are the resistance and the capacitance at FTO/TiO_2 contact; R_s is the series

resistance, including the sheet resistance of FTO glass and contact resistance of the cell.