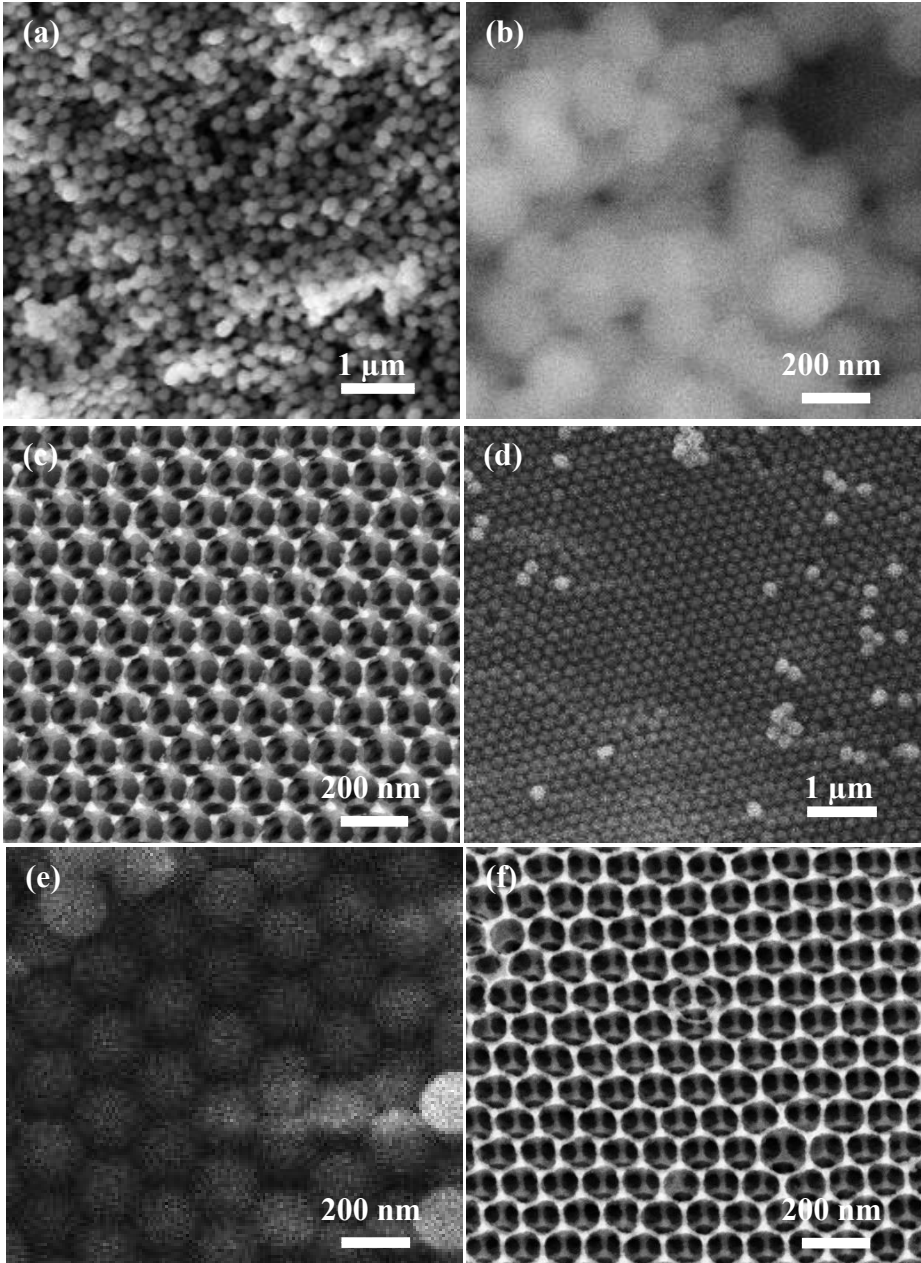


Supporting Information

Dye-Sensitized Solar Cells Based on Hierarchically Structured Porous TiO₂ Filled with Nanoparticles

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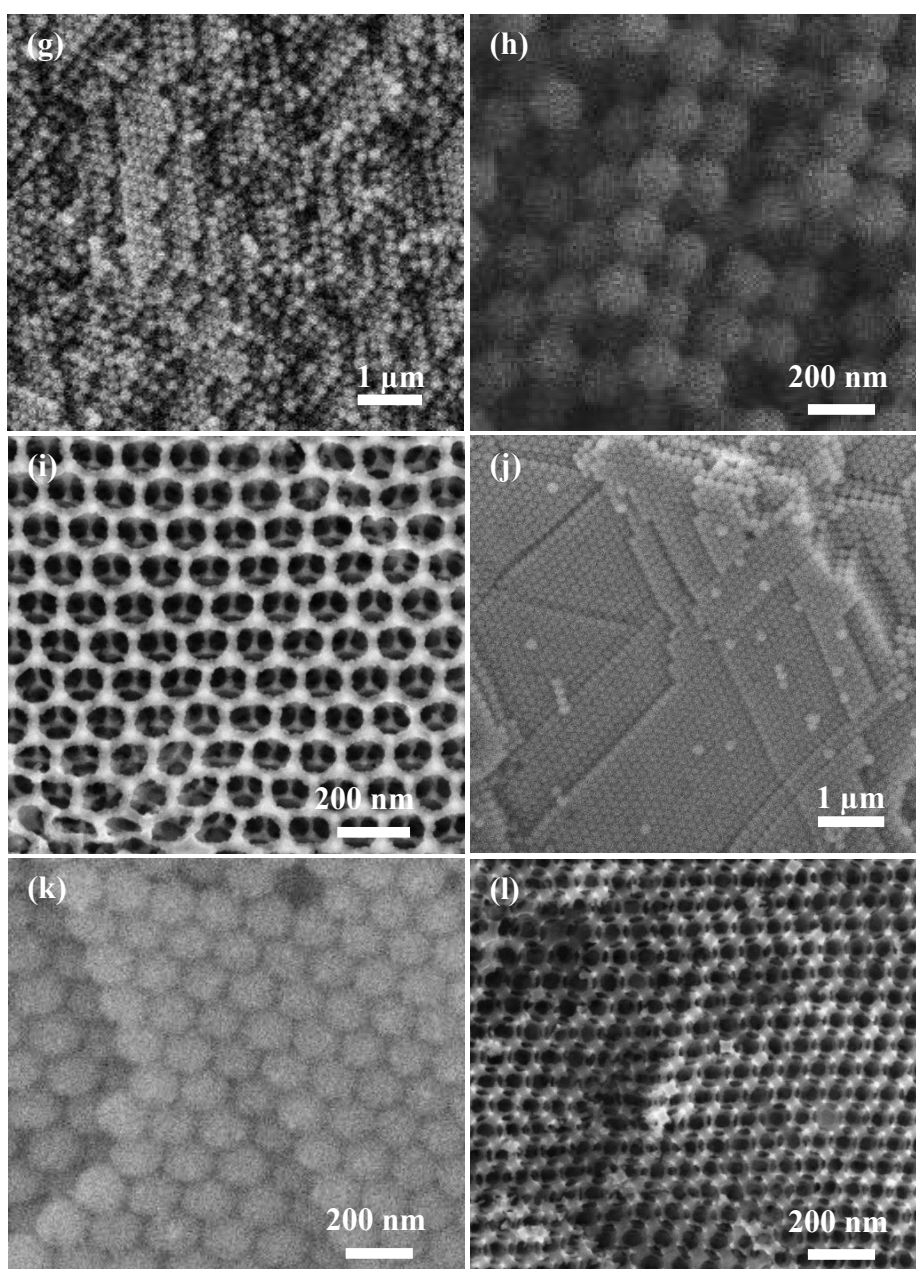


Figure S1. SEM images of PMMA- y (y represents the diameter of PMMA micro-sphere) and the 3DOM-TiO₂- x samples ($x = 155$ nm (c), 115 nm (f), 105 nm (j), and 85 nm (l)), copied by the corresponding PMMA-280 (a, b), PMMA-220 (d, e), PMMA-200 (g, h), and PMMA-150 (j, k) micro-spheres, respectively.

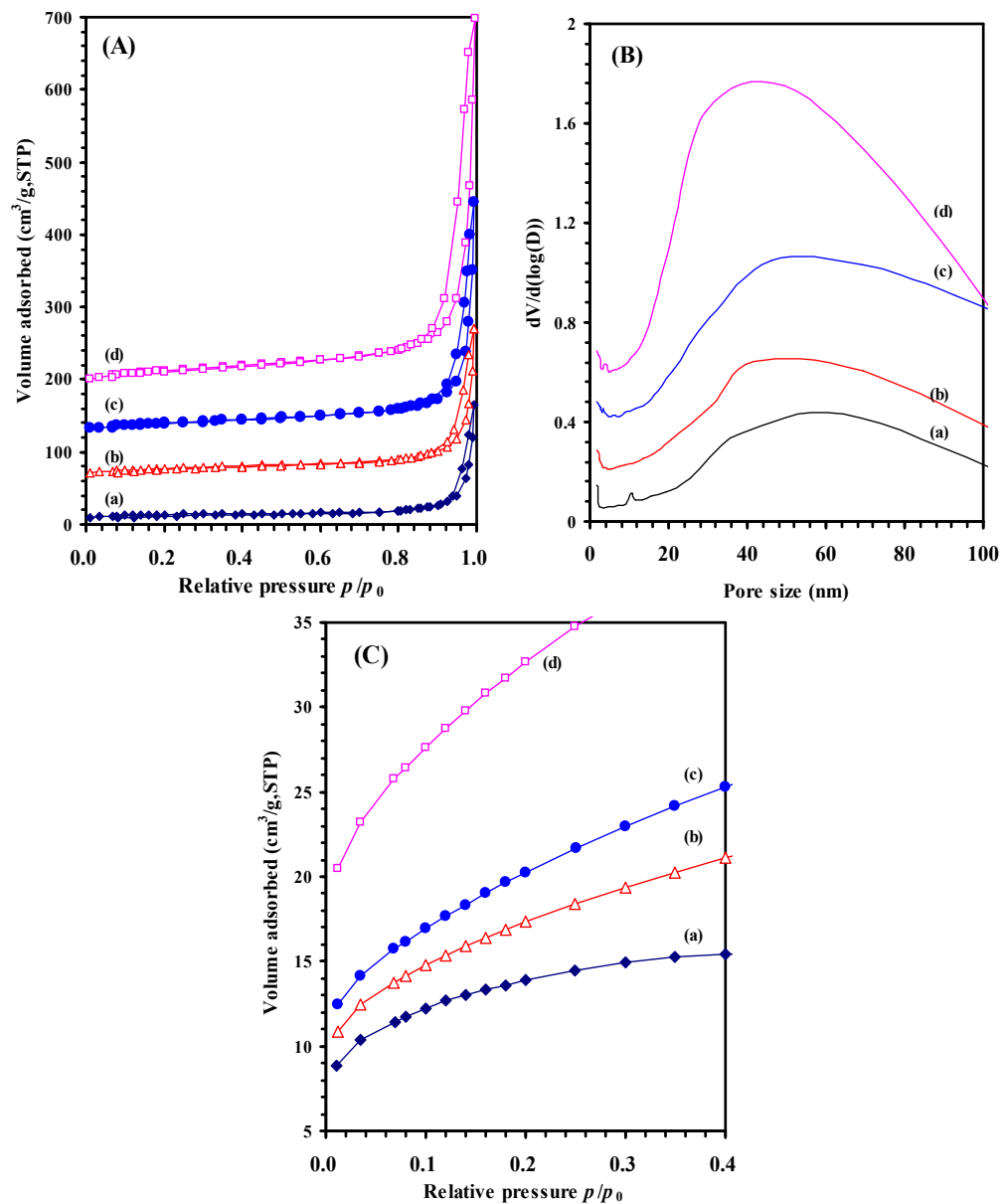


Figure S2. (A) N₂ adsorption-desorption isotherms at 77 K and (B) pore-size distributions calculated by the Barrett-Joyner-Halenda (BJH) method and (C) N₂ adsorption isotherms at low-pressure section of (a) Ti-155, (b) Ti-115, (c) Ti-105, and (d) Ti-85 samples.

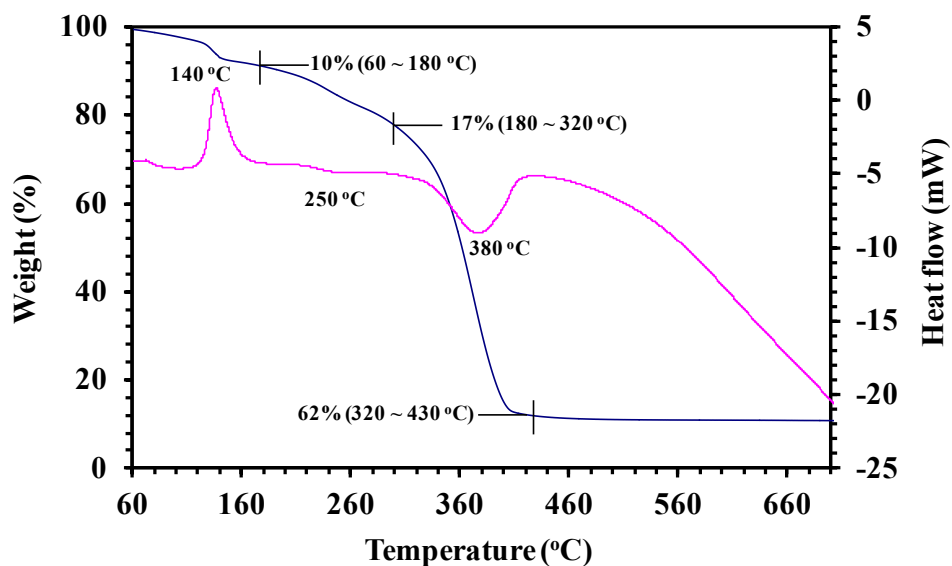


Figure S3. TGA/DSC profiles of the representative Ti-105 sample after drying without calcination at high temperatures.

Figure S3 shows the TGA/DSC profiles of the Ti-105 sample before calcination at high temperatures. It is found that a gradual small weight loss of 10 wt% happened below 180 °C accompanying by the appearance of a exothermal signal at 140 °C, ascribable to the remove of adsorbed water form atomsphere; there were a weight losses of 17 wt% in the 180 – 320 °C and another obvious one of 62 wt% in the range of 320 - 430 wt%. Their correspoing endothermic signals at 250 °C and 380 °C, assignable to the decomposition of Ti precursor and the elimination of the template PMMA and the surfactant PEG. There is no further weight loss above 500 °C indicating that the calcination temperature 550 °C is appropriate for the formation of single crystal-phase TiO₂ crystallinites.

Table S1. Textural parameters of the as-prepared three-dimensional ordered hierarchical-porous TiO₂ samples

Sample	BET surface area (m ² /g) ^a	Pore diameter ^b (nm)	Pore volume ^b (cm ³ /g)	surface area/ Pore volume (cm ⁻¹)
Ti-155	46.1	24.6	0.25	184
Ti-115	60.4	23.5	0.33	183
Ti-105	72.2	22.5	0.52	138
Ti-85	114.5	25.6	0.82	140

^a calculated according to BET method, ^b calculated according to BJH method.