Supporting Information for

Template-free synthesis of hierarchical flower-like platinum counter electrode and its application in dye-sensitized solar cells

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Fig S1. SEM images of flower-like Pt counter electrode at lower (a,b,c) or higher magnifications (d).

Fig. S1 gives more SEM images for flower-like Pt counter electrode at lower (a,b,c) or higher
magnifications. From the lower magnification SEM images, we can see that the Pt “flowers” uniformly and continuously exist in large area instead of only exist in small area. From the magnified SEM image we can clearly see that the diameter of the petal-like Pt nanosheets on Pt “flowers” is around 25-30 nm. Additionally, numerous of pores appear on the surface of Pt “flowers”, such structure is advantage for the absorption of liquid electrolyte with I/I₃ redox couple.
**Fig S2.** The SEM images of the Pt counter electrodes prepared at different concentration: (A1-A3) 0.01 M; (B1-B3) 0.015 M; (C1-C3) 0.02 M; (D1-D3) 0.1 M; (E1-E3) 0.5 M.

According to the SEM observation, the flower-like structure can only be observed at the H₂PtCl₆ concentration of 0.02 M. According to the SEM observation, one can see that flower-like Pt electrodes are obtained at H₂PtCl₆ of 0.02, 0.1 and 0.5 M. However, the size of the Pt flowers become larger and larger with concentration. Much lower concentration, such as lower than 0.02 M, the ball-like Pt structure is composing of nanoparticles instead of nanosheets, but, we can find there is a trend to form Pt flowers on the concentration order of 0.01 M—0.015 M—0.02 M. Therefore, we can conclude that there is not a critical concentration to form such an unique structure. In our conditions, 0.02 mM of H₂PtCl₆ solution is the best concentration to synthesize flower-like Pt nanostructure with enhanced cell performances.