

Supporting Information

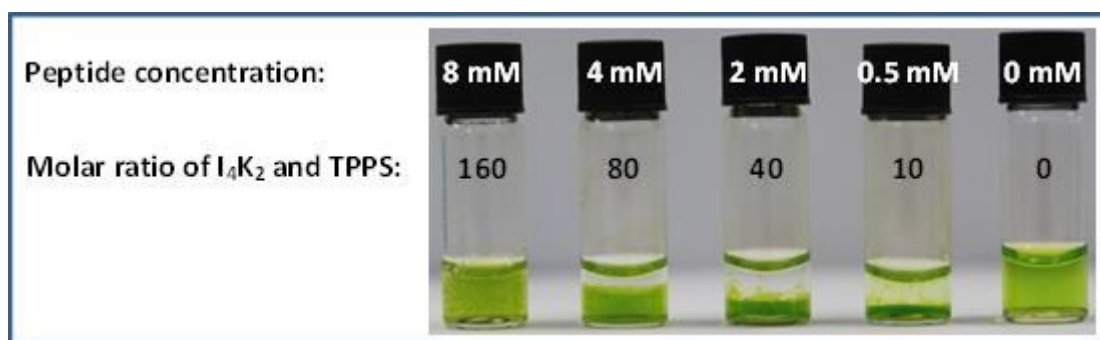
## **Short peptide-regulated aggregation of porphyrin for photoelectric conversion**

Shengjie Wang,<sup>\*a</sup> Dongxiu Zhang,<sup>†a</sup> Xiao Zhang,<sup>†a</sup> Daoyong Yu,<sup>a</sup> Xiaofeng Jiang,<sup>b</sup> Zhenyang Wang,<sup>b</sup>  
Meiwen Cao,<sup>a</sup> Yongqing Xia,<sup>a</sup> Heyuan Liu<sup>c</sup>

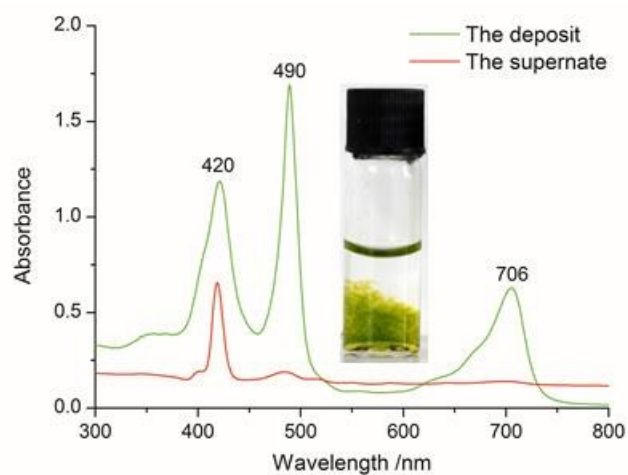
<sup>a</sup> State Key Laboratory of Heavy Oil Processing and Centre for Bioengineering and Biotechnology, China University of Petroleum, Qingdao 266580, P. R. China, Tel.: (+86) (0) 532 86983455, Email: [sjwang@upc.edu.cn](mailto:sjwang@upc.edu.cn)

<sup>b</sup> College of Chemistry, China University of Petroleum, Qingdao 266580, P. R. China

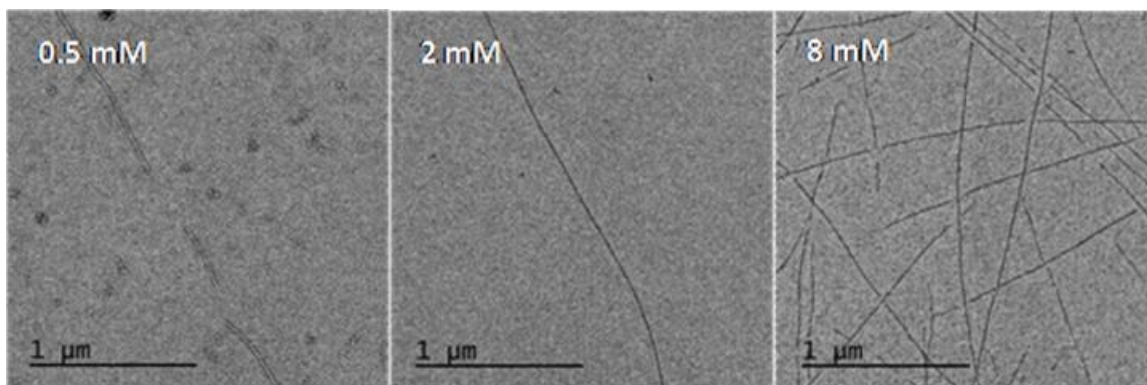
<sup>c</sup> Department of Chemistry, College of Science, China University of Petroleum, Qingdao 266580, P. R. China



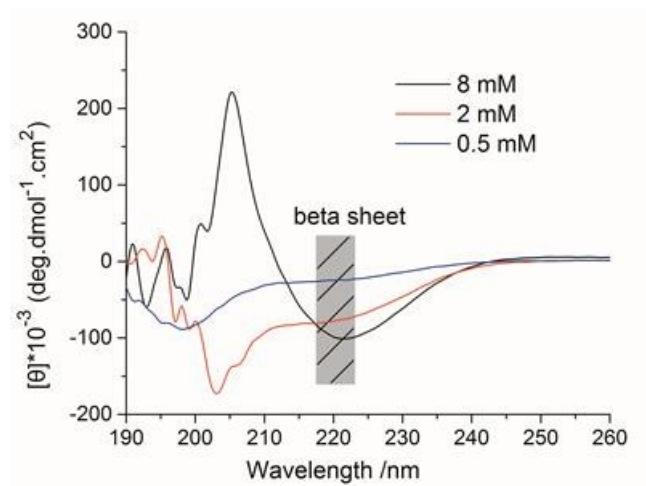
**Figure S1.** Photography of I<sub>4</sub>K<sub>2</sub>/TPPS co-aggregates under various peptide concentrations. TPPS concentration is constant at 50  $\mu$ M and the mixtures are kept at pH 2.5.



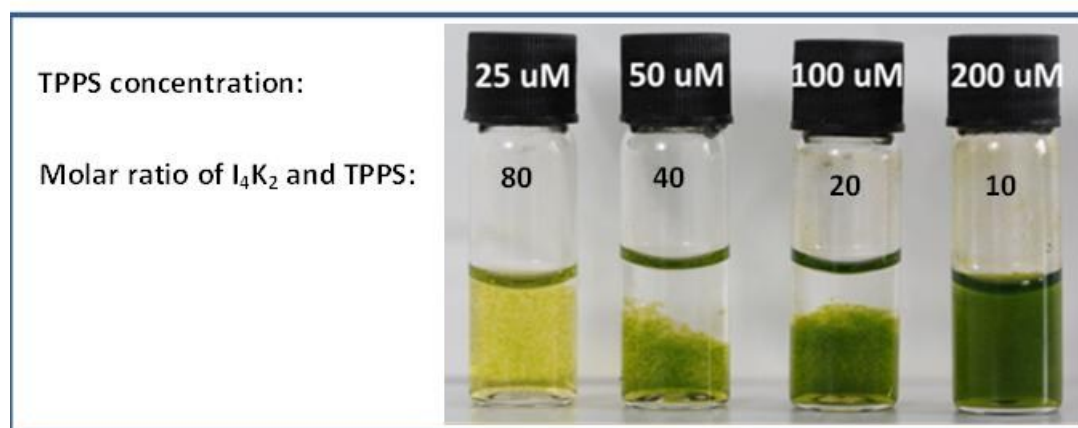
**Figure S2.** UV-vis spectra of the deposits and the supernatant obtained from the  $I_4K_2$ /TPPS co-aggregates ( $C_{I_4K_2}=2$  mM,  $C_{TPPS}=50$   $\mu$ M, pH2.5) via centrifugation. The deposit collected by centrifugation and dispersed into ultrapure water for before UV-vis characterization.



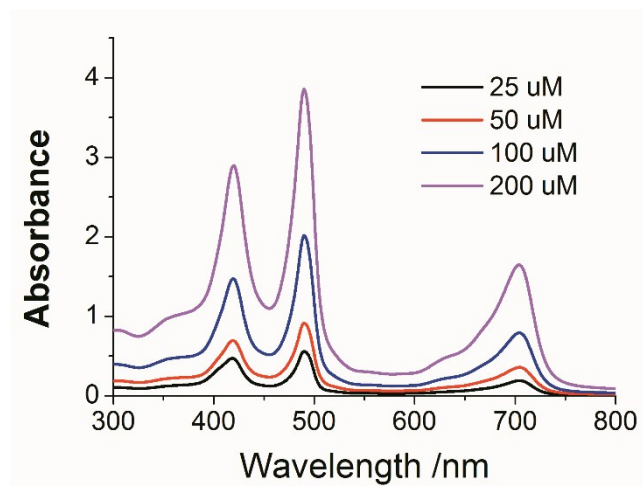
**Figure S3.** Negatively stained TEM images of I<sub>4</sub>K<sub>2</sub> assembly at various concentration diluted from 16 mM and stored at room temperature for one week.



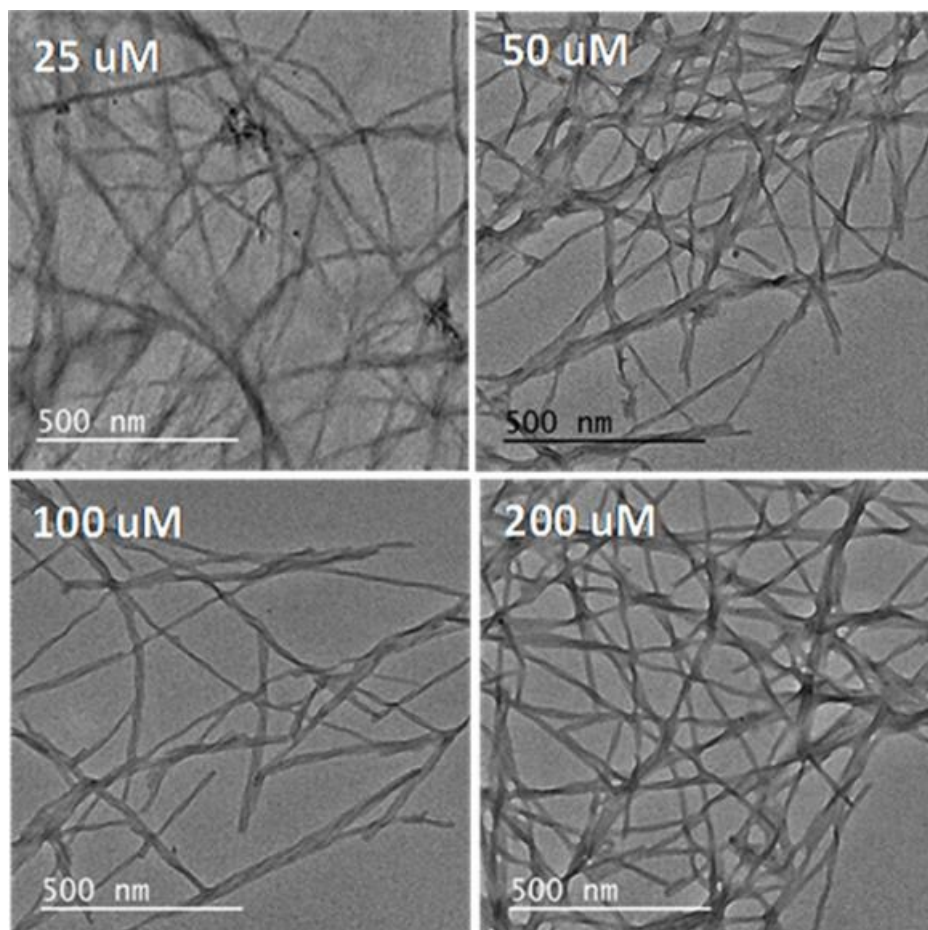
**Figure S4.** CD spectra of  $I_4K_2$  assemblies with different concentration. All the samples were diluted from a preassembled  $I_4K_2$  solution (16 mM) and kept static for two days before characterization.



**Figure S5.** Photography of  $I_4K_2$ /TPPS at various porphyrin concentrations. Noting that  $I_4K_2$  concentration is constant at 2 mM and solution pH values are 2.5.

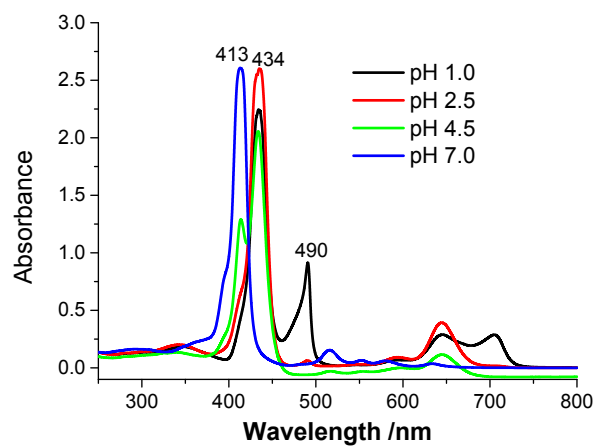


**Figure S6.** UV-vis spectra of the I<sub>4</sub>K<sub>2</sub>/TPPS co-aggregates formed with different TPPS concentration. Noting that I<sub>4</sub>K<sub>2</sub> concentration is 2 mM, and the solution pH value is 2.5 for all the samples.



**Figure S7.** Unstained TEM images of I<sub>4</sub>K<sub>2</sub>/TPPS at various porphyrin concentrations. I<sub>4</sub>K<sub>2</sub> concentration is constant at 2 mM and solution pH value is 2.5.





**Figure S8.** UV-vis spectra of TPPS solutions (50 μM) at various pH values.