Supporting Information

Preparation of polydopamine hollow capsule in miscible tetrahydrofuran/buffer mixture

Yun-Zhou Ni,[a] Wen-Feng Jiang,[a] Gang-Sheng Tong,[b] Jian-Xin Chen,[a] Jie Wang,[a] Hui-Mei Li,[a] Chun-Yang Yu,[a] Xiao-hua Huang,[c*] and Yong-Feng Zhou[a*]

[a]*School of Chemistry and Chemical Engineering, State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University,800 Dongchuan Road, Shanghai 200240, P. R. China. E-mail: yfzhou@sjtu.edu.cn*
[b]*Instrumental Analysis Center, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, P. R. China*
[c]*Key Laboratory of New Processing Technology for Nonferrous Metal & Materials, Ministry of Education, and School of Material Science and Engineering, Guilin University of Technology, Guilin 541004, P.R. China. E-mail: hxh2002405@163.com*

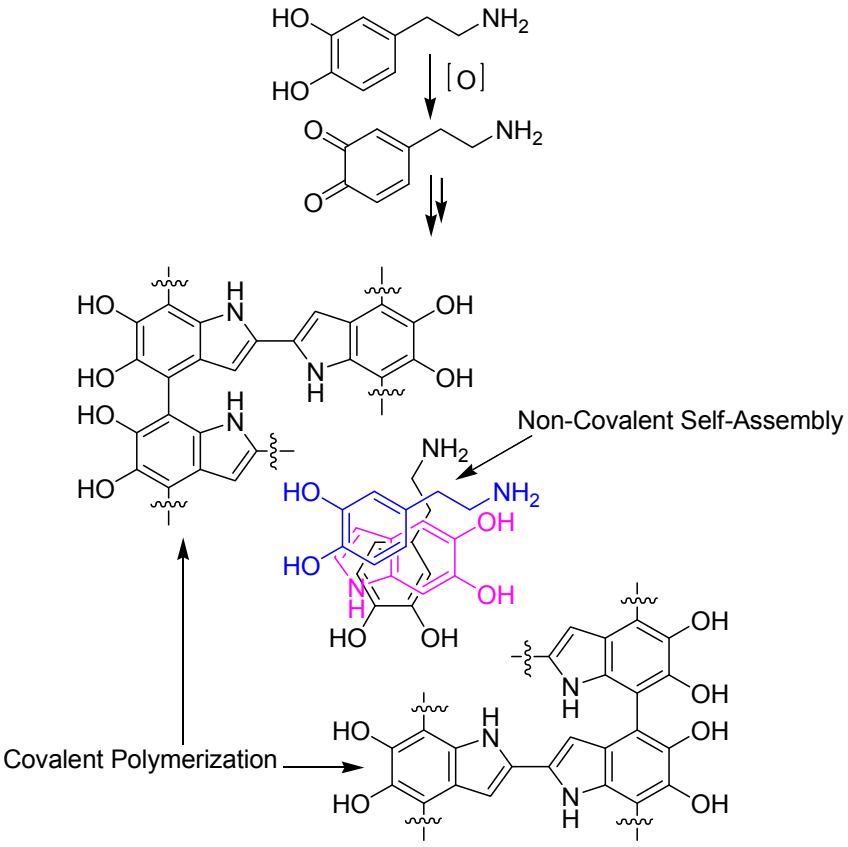


Figure S1. A proposed polydopamine self-polymerization mechanism.[1]

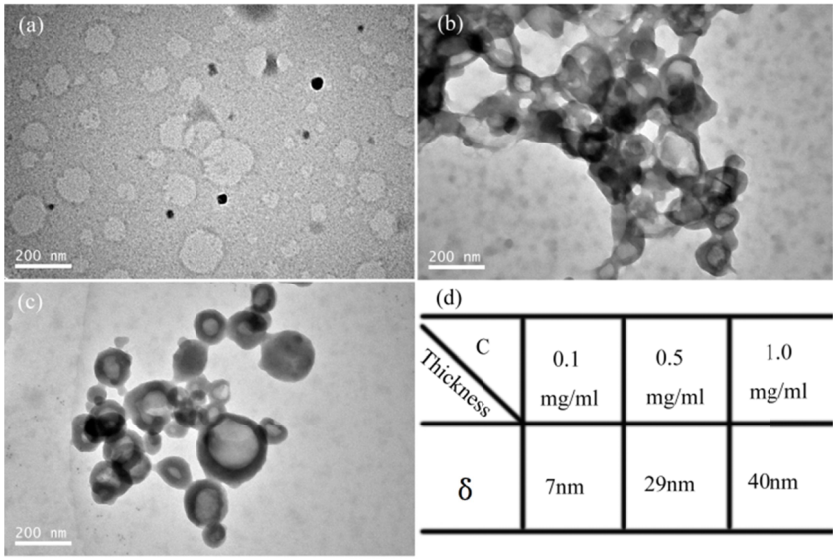


Figure S2. The TEM images of dopamine particles via 8 days oxidation and self-polymerization in Tetrahydrofuran/Tris buffer mixture (φ=0.7). The dopamine concentration in the mixture is (a) 0.1, (b) 0.5, (c) 1.0 mg/ml; (d) Thickness values of the PDA capsule shell formed in the mixture at different dopamine concentration (0.1, 0.5, 1.0 mg/ml) respectively. Note that the reaction solutions were directly used for TEM without any purification.

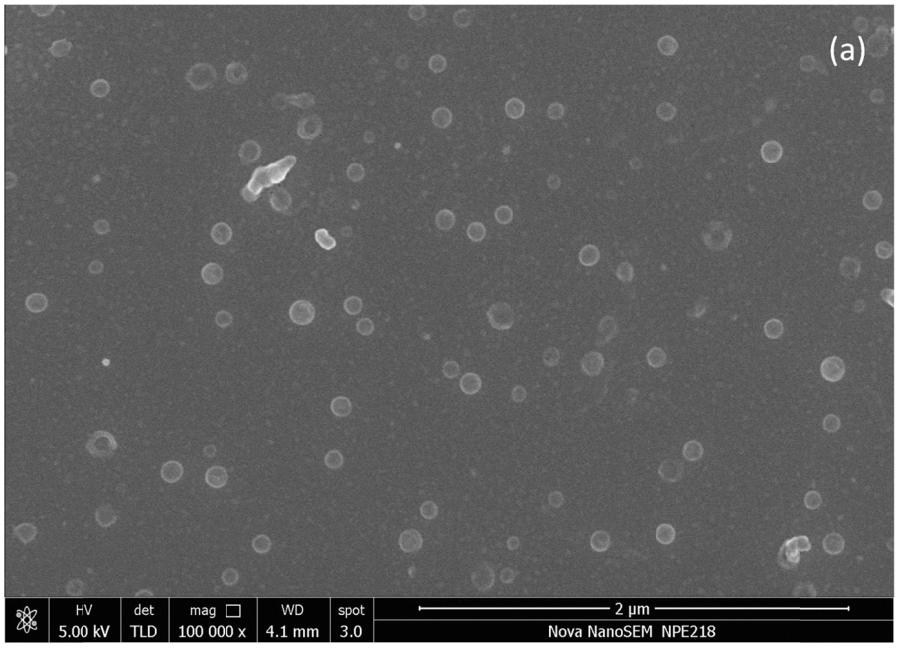
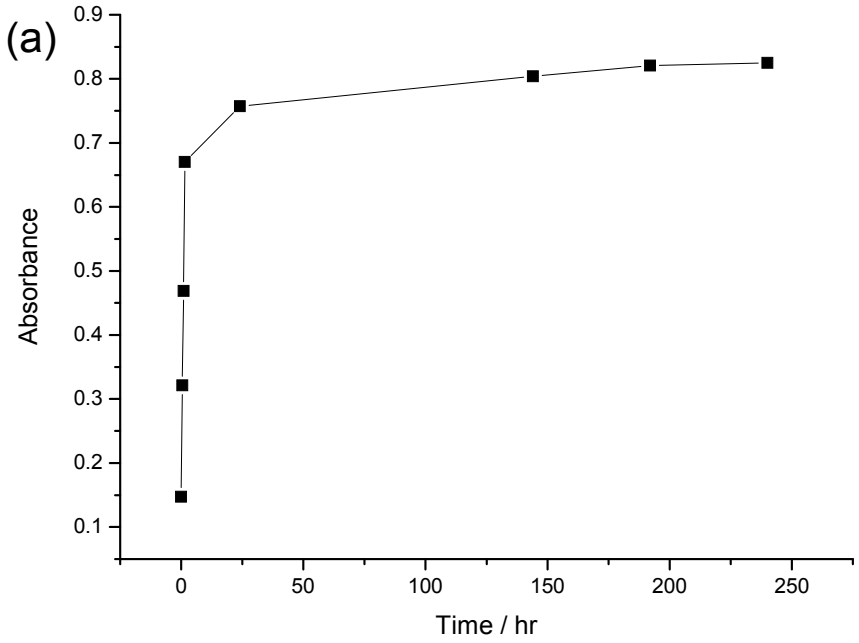
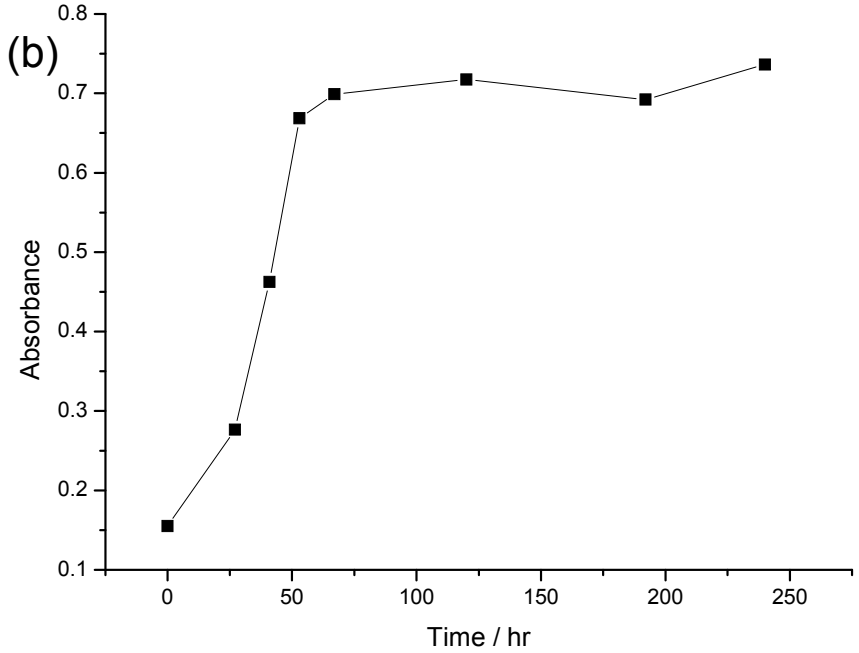


Figure S3. The SEM image of PDA nanocapsules (φ = 0.7) kept in the THF/buffer mixture (φ=0.7) for 5 month at 4 ^{o}C. Note that the reaction solutions were directly used for SEM observation without any purification.


(a)
Absorbance
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
100
150
200
250
Time / hr


(b)
Absorbance
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
100
150
200
250
Time / hr

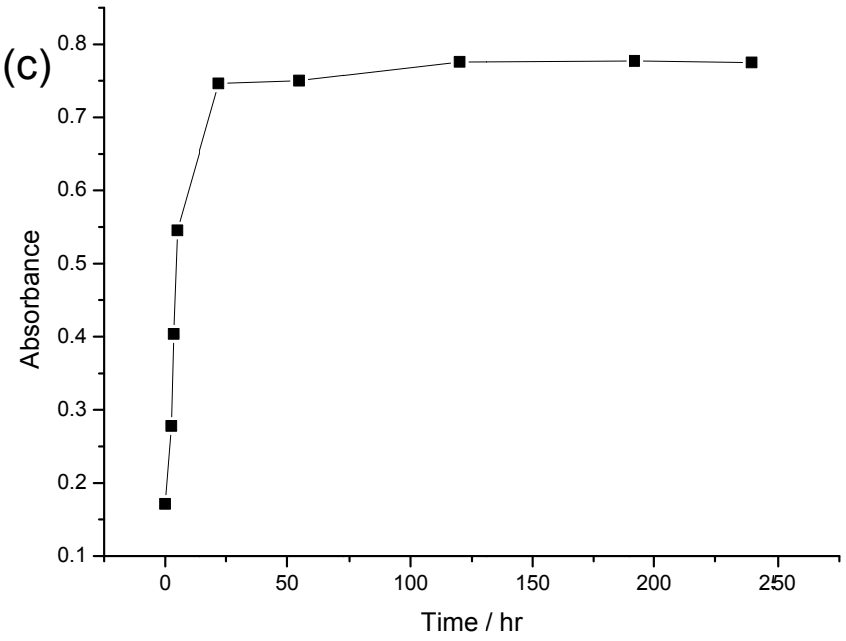


Figure S4. Dopamine self-polymerization dynamics in the THF/tris buffer mixture at (a) $\varphi \approx 0$, (b) $\varphi \approx 0.2$ and (c) $\varphi \approx 0.5$.

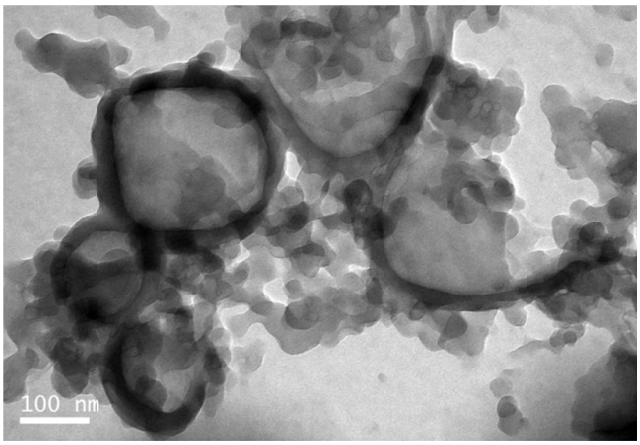


Figure S5. The TEM image of dopamine particles via 7 days oxidation and self-polymerization in THF/Phosphate Buffer mixture at $\varphi = 0.7$. Note that the reaction solution was directly used for TEM observation without any purification.

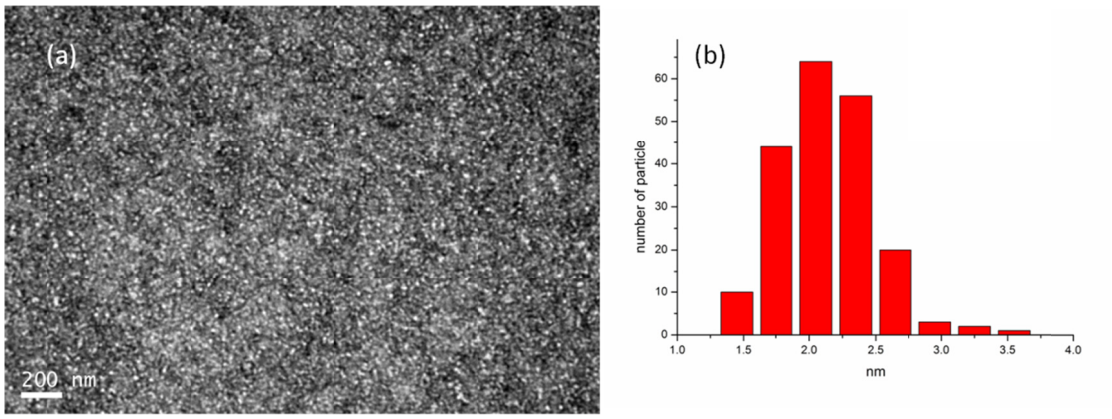


Figure S6. (a)The TEM image of PDA nanoparticles via 7 days oxidation and self-polymerization in DMSO/Tris buffer mixture (φ=0.7); **(b)** The size distribution of PDA nanoparticles based on the statistical anylyses of 200 particles. Note that the reaction solution was directly used for TEM observation without any purification.

1. Hong, S.; Na, Y. S.; Choi, S.; Song, I. T.; Kim, W. Y.; Lee, H. *Adv. Funct. Mater.* 2012, 22, 4711-4717