

Bio-inspired synthesis of PEGylated Polypyrrole@Polydopamine Nanocomposite as Theranostic agent for T₁-Weighted MR imaging guided Photothermal Therapy

Zhe Yang,^{‡a} Jinghua Ren,^{‡b} Zhilan Ye,^b We Zhu,^a Liji Xiao,^a Li Zhang,^a Qianyuan He,^a Zushun Xu,^{*a} and Haibo Xu^{*c}

*a. Hubei Collaborative Innovation Center for Advanced Organic Chemical Materials; Ministry of Education Key Laboratory for the Green Preparation and Application of Functional Materials, Hubei University, Wuhan, Hubei 430062, China. *E-mail: zushunxu@hubu.edu.cn Tel.: +852 34427724; fax: +852 34420542.*

b. Cancer centre, Union Hospital, Tongji Medical College of Huazhong University of Science and Technology, Wuhan, Hubei 430030, China.

*c. Department of Radiology, Union Hospital, Tongji Medical College of Huazhong University of Science and Technology, Wuhan, Hubei 430030, China. * E-mail: xuhaibo1120@hotmail.com Tel.: +86 27 85726410; fax: +86 27 85726919.*

[‡] These authors have contributed equally.

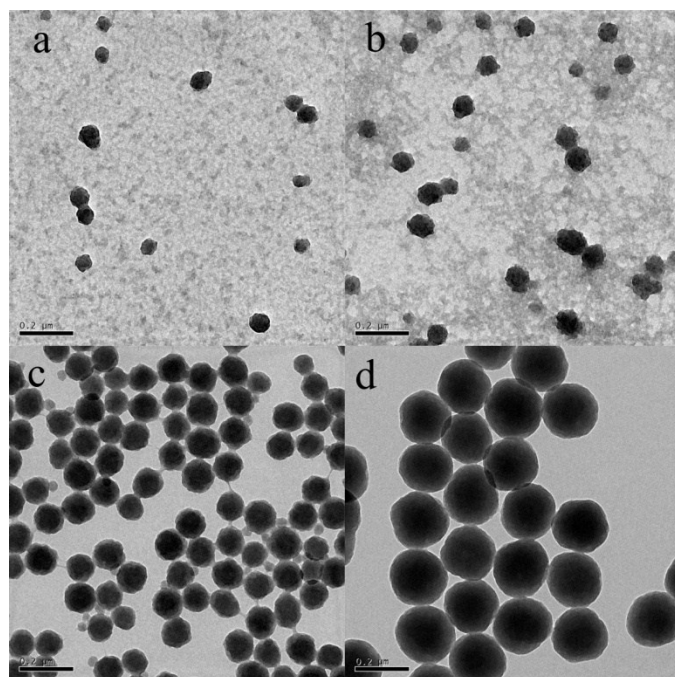


Fig. S1 TEM images of PPDE synthesized with different dose of dopamine, (a) dopamine:PPys = 1:2. (b) dopamine:PPys = 1:1. (c) dopamine:PPys = 3:1. (d) dopamine:PPys = 5:1.

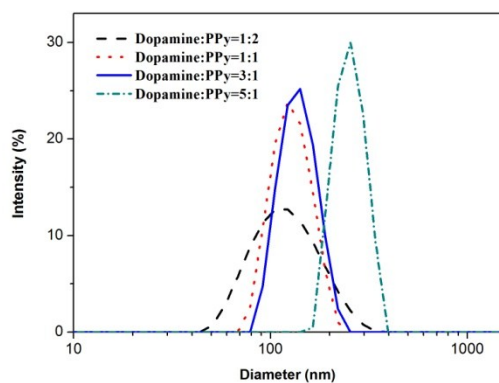


Fig. S2 Hydrodynamic size of different PPDE measured by dynamic light scattering (DLS) analysis.

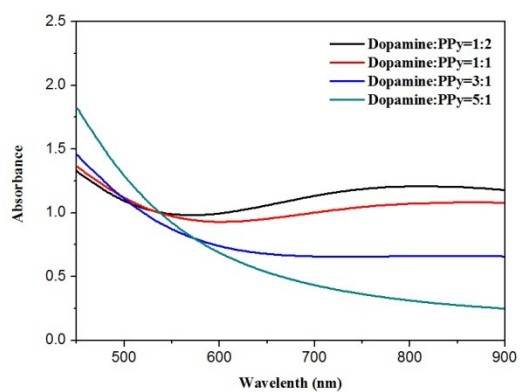


Fig. S3 Relevant UV-vis absorbance spectra of PPDE synthesized with different conditions, there were measured in the same concentration ($30 \mu\text{g mL}^{-1}$).

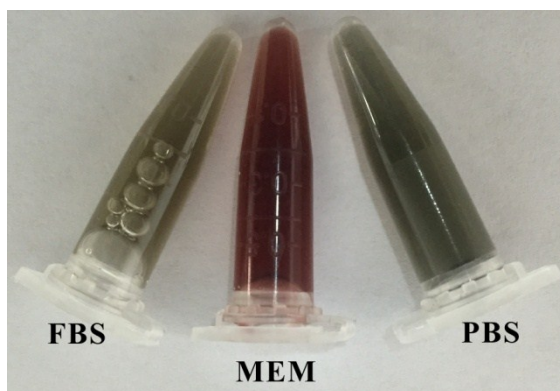


Fig. S4 Digital image of PPDE-3 dispersed in FBS, MEM and PBS for a month stored at $4 \text{ }^\circ\text{C}$.

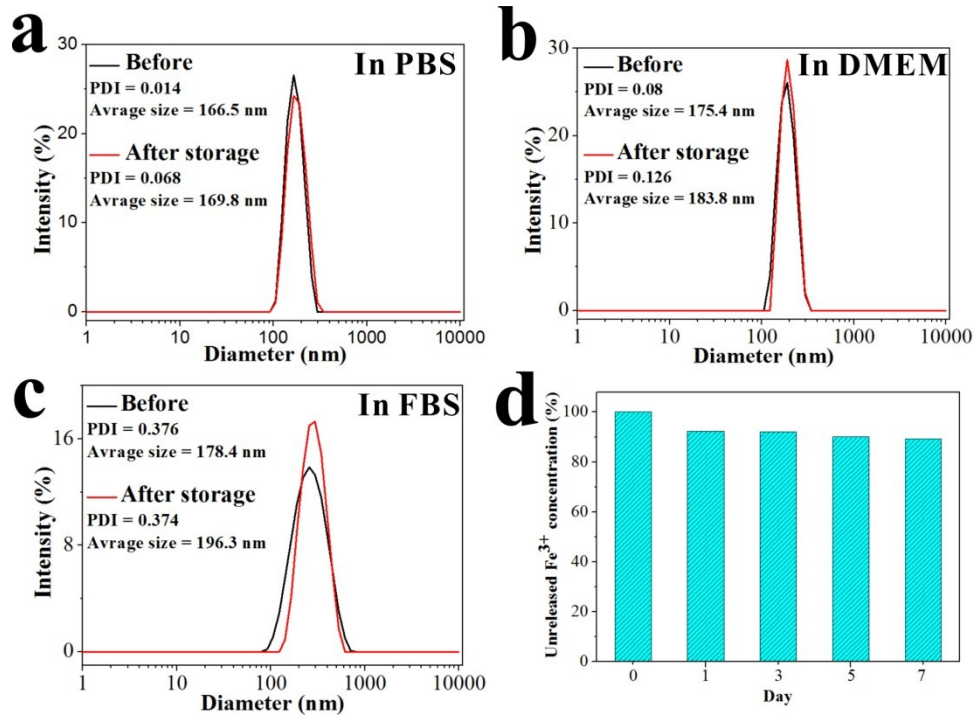


Fig. S5 DLS analysis of PPDE-3 before and after the storage in PBS (a), DMED (b) and FBS (c) for a month. (d) Stability study of Fe³⁺ in the PPDE-3 in PBS (PH = 7.4, 37 °C).

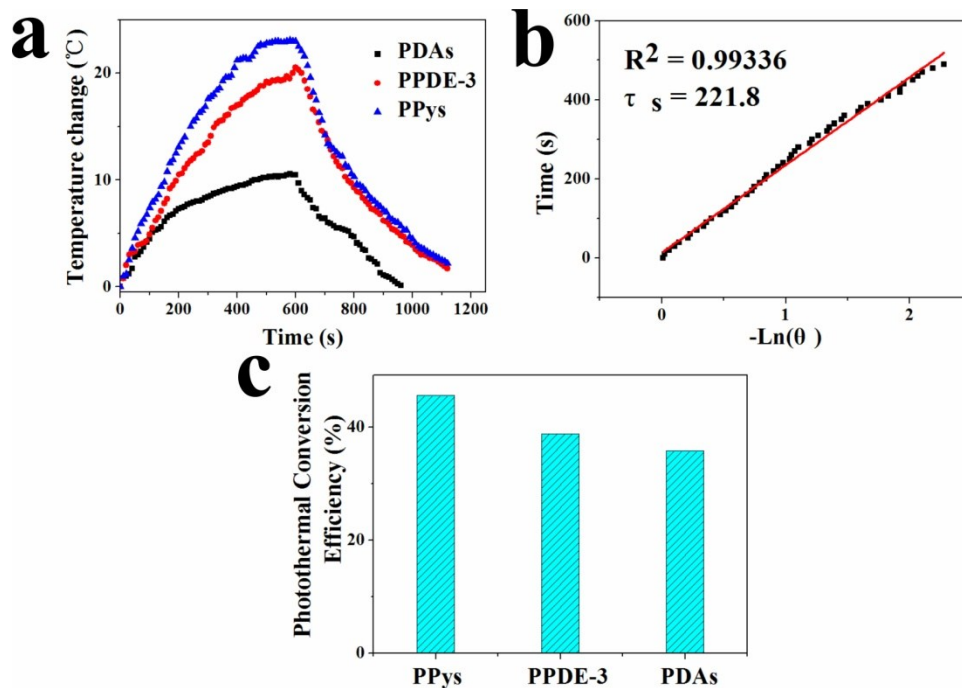


Fig. S6 (a) Temperature elevation of PPDE-3, PDAs and PPys suspensions with the same concentration (20 $\mu\text{g mL}^{-1}$) under NIR laser (808 nm, 1 W cm^{-2}). (b) Linear time data versus $-\ln\theta$ obtained from the cooling period of Fig. S6 (a). (c) Photothermal conversion efficiencies of PPDE-3 and PDA.

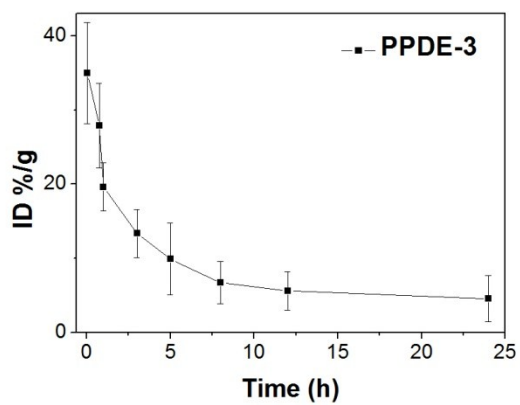


Fig. S7 Blood circulation of PPDE-3 as determined by measuring Fe^{3+} levels with ICP-AES.