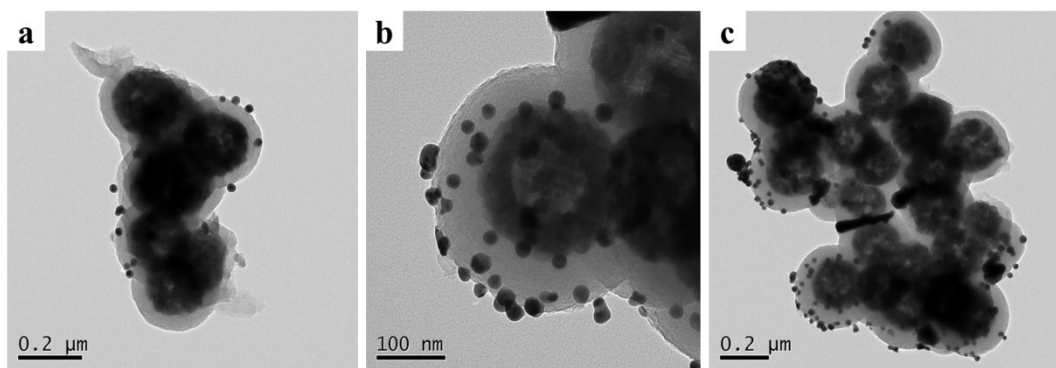


**Synthesis of gold nanoparticles loaded magnetic carbon microsphere  
based on reductive and binding property of polydopamine for  
recyclable catalytic applications**

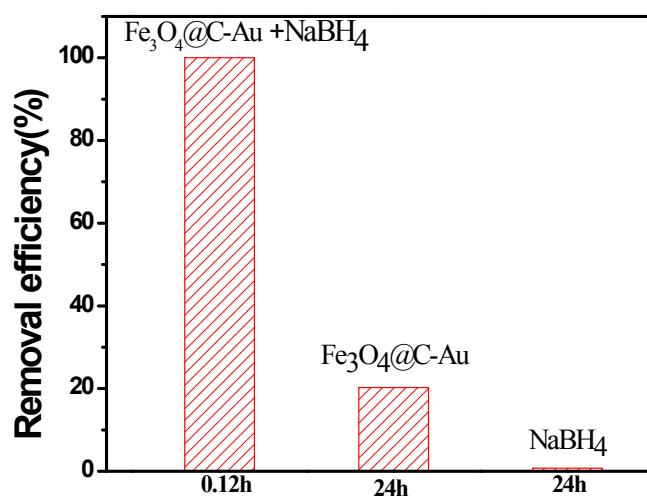
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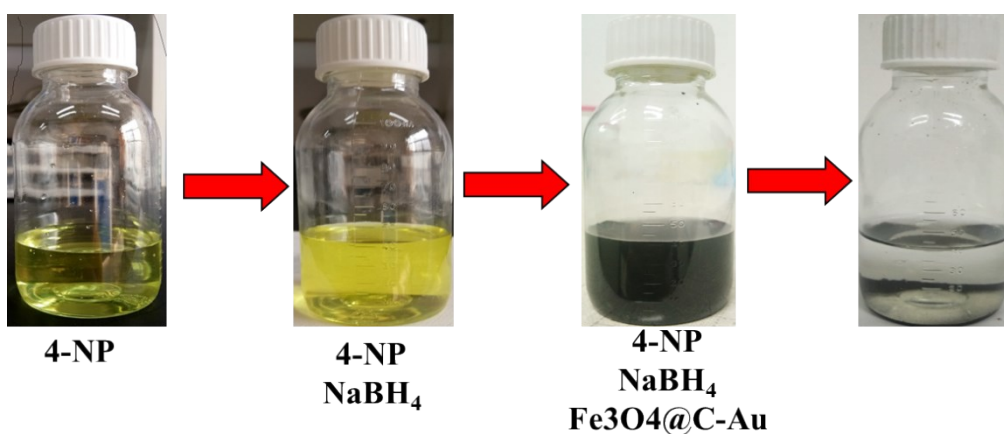
E-mail: gaotp@ldu.edu.cn



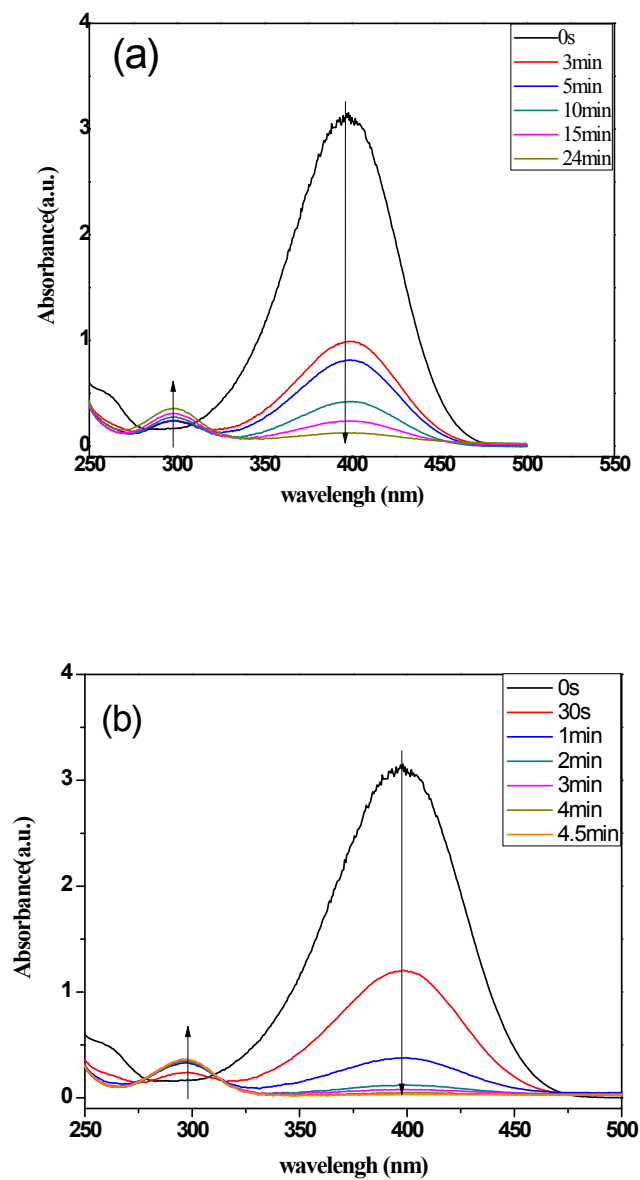
**Fig. S1** TEM images of  $\text{Fe}_3\text{O}_4@\text{C-Au}(1\%)$ (a),  $\text{Fe}_3\text{O}_4@\text{C-Au}(5\%)$ (b),  $\text{Fe}_3\text{O}_4@\text{C-Au}(7\%)$ (c).



**Fig. S2** The effect of different reaction systems on the removal efficiency of 4-NP.



**Fig. S3** The colour change of  $\text{Fe}_3\text{O}_4@\text{C-Au}$  catalyzed the reduction of 4-nitrophenol.



**Fig. S4** Time-dependent UV-vis absorption spectra of the reduction of 4-nitrophenol catalyzed by Fe<sub>3</sub>O<sub>4</sub>@C-Au(1%) (a) and Fe<sub>3</sub>O<sub>4</sub>@C-Au(7%) (b).