Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Environmentally friendly light-driven synthesis of Ag nanoparticles *in situ* grown on magnetically separable biohydrogels as highly active and recyclable catalysts for 4-nitrophenol reduction

Lunhong Ai,* Haitao Yue and Jing Jiang*

Chemical Synthesis and Pollution Control Key Laboratory of Sichuan Province, College of Chemistry and Chemical Engineering, China West Normal University, Shida Road 1#, Nanchong 637002, P.R. China

* Corresponding author. Tel.: +86-817-2568081; Fax: +86-817-2582029.

E-mail address: ah_aihong@163.com (L. Ai); 0826zjjh@163.com (J. Jiang)

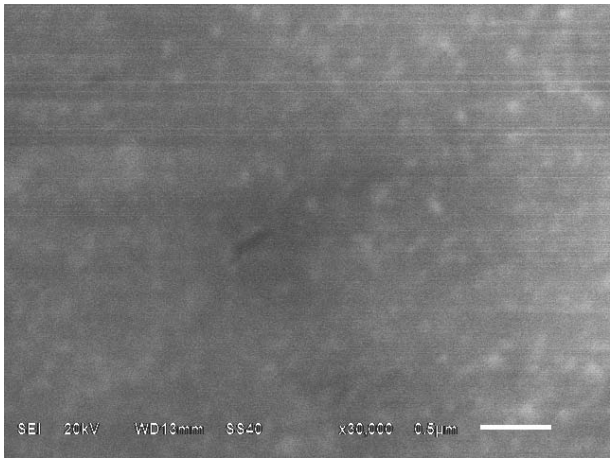

Fig. S1 SEM image of dried Ag@alginate beads. Scale bar in figure is 500 nm.

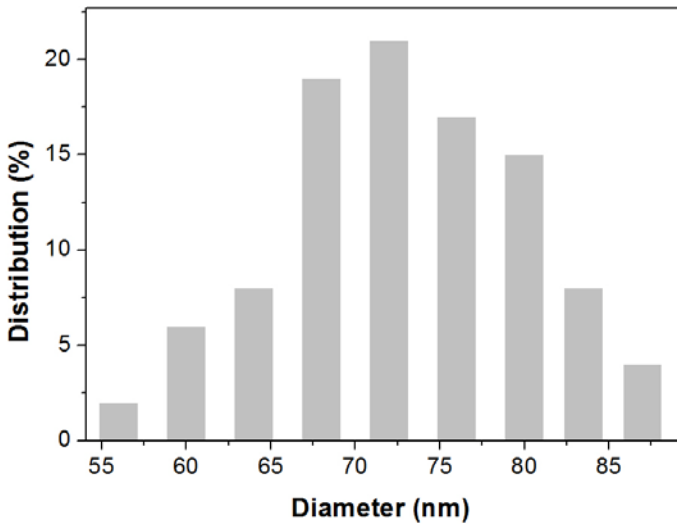

Fig. S2 The particle size distribution of Ag NPs in Ag@AMH.

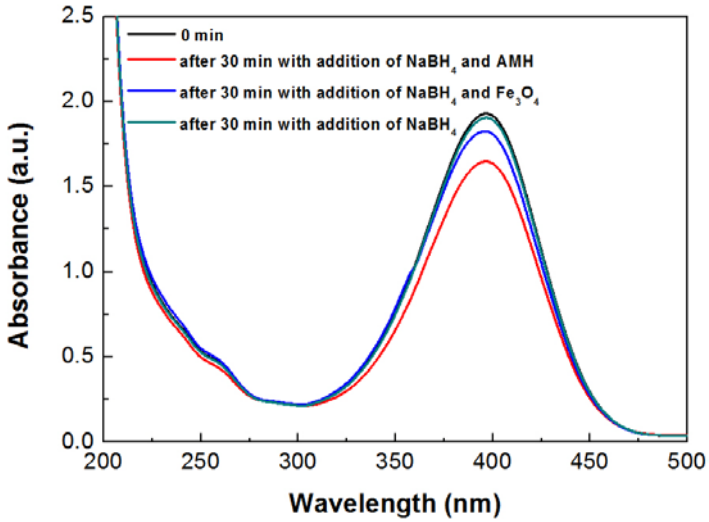

Fig. S3 UV-vis spectra of 4-NP in the presence of the AMH and $NaBH_4$ (red line), the Fe_3O_4 and $NaBH_4$ (blue line), and $NaBH_4$ (dark cyan line) for 0 and 30 min.

As shown in Fig. S3, in the absence of the catalyst, the solution is very stable, and the absorption intensity remains unchanged after 30 min. We have also carried out control experiments to compare catalytic activity of Ag@AMH with that of AMH and Fe_3O_4 particles. A slight decrease in intensity of the characteristic peak of 4-nitrophenolate ion (400 nm) but no new peak at 300 nm (the characteristic peak of 4-AP) were observed after reaction

of 30 min, indicating that this reaction process should be the adsorption of 4-nitrophenolate but not due to reduction.