Supporting Information

For the manuscript

Ag nanoparticles-entrapped hydrogel as promising material for catalytic reduction of organic dyes

by

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Fig. S1 Swelling ratios of the hydrogel in AgNO₃ solutions with different concentrations. 
[NaBH₄]=10 mM.

Fig. S2 UV-vis spectra of Ag-entrapped hydrogels prepared from different AgNO₃ concentrations. 
[NaBH₄]=10 mM.
**Fig. S3** Swelling ratios of the Ag⁺-loaded hydrogel in NaBH₄ solutions with different concentrations. [AgNO₃]=5 mM.

**Fig. S4** UV-vis spectra of Ag-entrapped hydrogels prepared from different NaBH₄ concentrations, with immersion time of one day. [AgNO₃]=5 mM.
**Fig. S5** UV-vis spectra of Ag-entrapped hydrogels prepared from different NaBH₄ concentrations, with immersion time of one week. [AgNO₃]=5 mM.

**Fig. S6** The mechanism of catalytic electron transfer where the metal nanoparticles relay the electron from the donor to the acceptor.
Fig. S7 UV-vis spectra of MB reduction in solution after 2 min (black line) and 8 min (blue line). a and b denote the Ag-entrapped hydrogel with and without Al\(^{3+}\) crosslinking.

Fig. S8 UV-vis spectra of CR reduction in solution after 2 min (black line) and 8 min (blue line). a and b denote the Ag-entrapped hydrogel with and without Al\(^{3+}\) crosslinking.
**Fig. S9** The catalytic effects for MB and CR reduction in solutions with different amount of Ag-entrapped hydrogel. [dye]=20 mg/L, [NaBH₄]=10 mM.

**Fig. S10** The catalytic effects for MB and CR reduction in solutions with different pH values. [dye]=20 mg/L, [NaBH₄]=10 mM, Ag-entrapped hydrogel=10 mg.
**Fig. S11** The catalytic effects for MB and CR reduction in solutions with different ion strength. [dye]=20 mg/L, [NaBH₄]=10 mM, Ag-entrapped hydrogel=10 mg.