Supplementary Material (ESI) for Journal of Materials Chemistry

Supporting Information

Preparation, characterization and responsive catalysis of novel thermoresponsive gold nanoparticles

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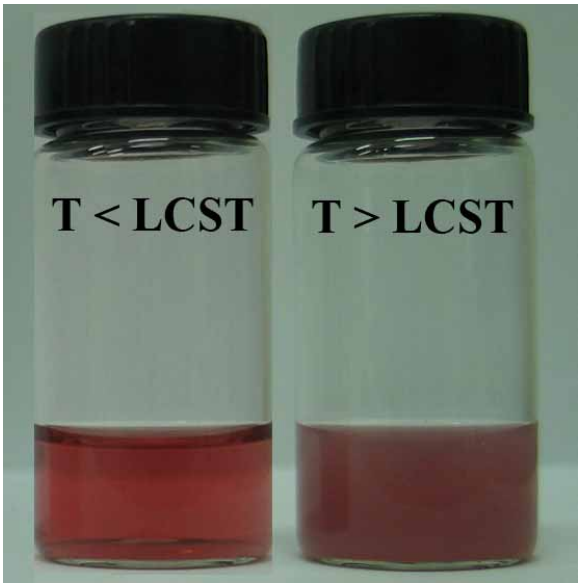

Fig. S1 Illustration of the thermoresponsive property of the aqueous solutions of AuNPs capped with HPEI-IBAm polymers

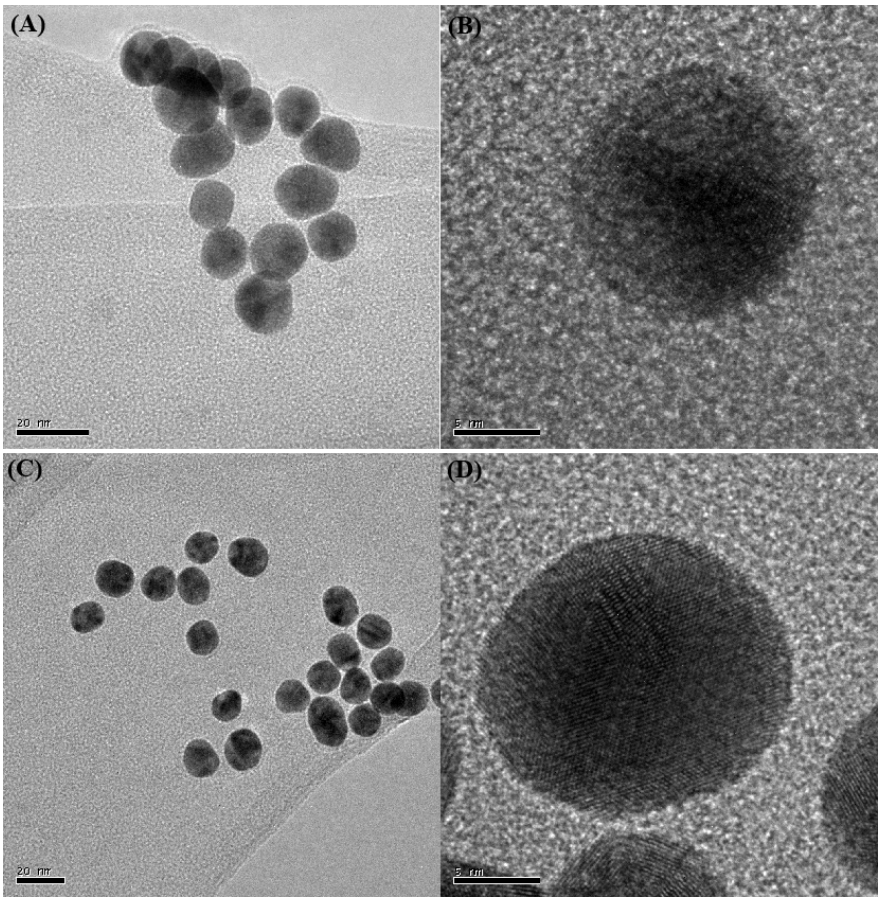

Fig. S2 TEM images of (A, B) citrate protected AuNPs; (C, D) composite of AuNPs with HPEI-IBAm polymers

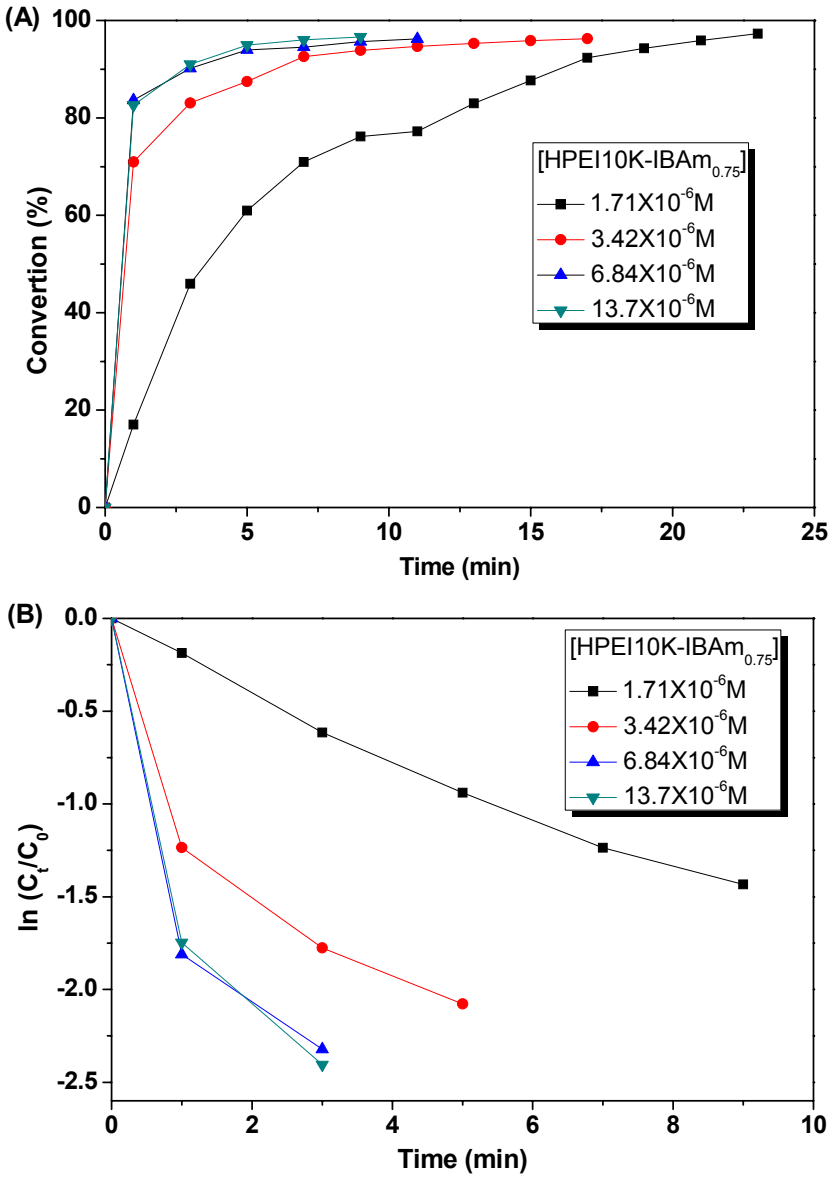

Fig. S3 The kinetics of the reduction reaction of 4-nitrophenol by $NaBH_4$ catalyzed by the composites of AuNPs with different amount of HPEI10K-IBAm$_{0.75}$ polymers at 20 ^{o}C (A) plots of Conversion versus Time; (B) plots of ln(C_t/C_0) versus Time. ([4-nitrophenol]=1.0×10^{-4}M, [$NaBH_4$]=1.0×10^{-2}M, [Au]=9.48×10^{-6}M)

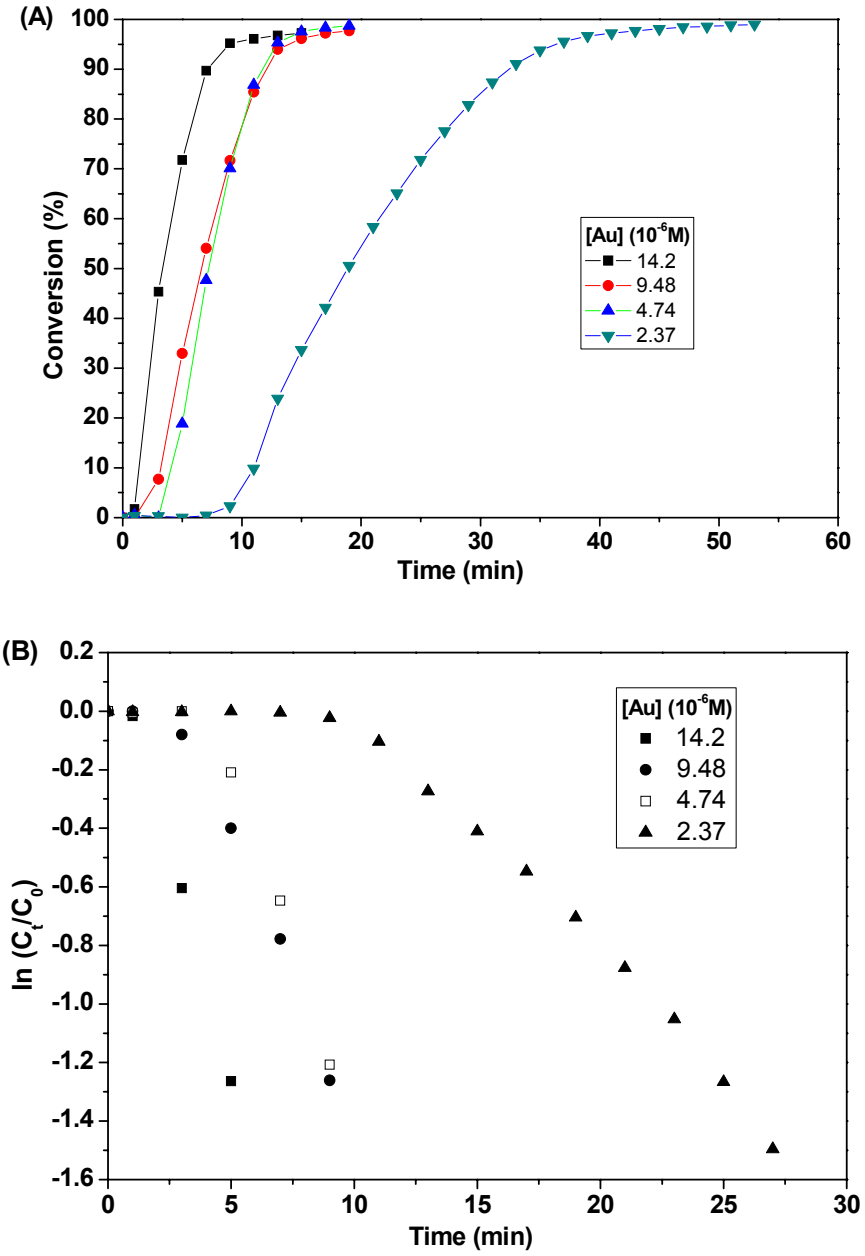

Fig. S4 The kinetics of the reduction reaction of 4-nitrophenol by $NaBH_4$ catalyzed by the composites of HPEI10K-IBAm$_{0.80}$ polymers with different concentrations of AuNPs at 20 ^{o}C (A) plots of Conversion versus Time; (B) plots of ln(C_t/C_0) versus Time. ([4-nitrophenol]=1. 0×10^{-4}M, [$NaBH_4$]=1. 0×10^{-2}M, [HPEI10K-IBAm$_{0.80}$]=6. 84×10^{-6}M)

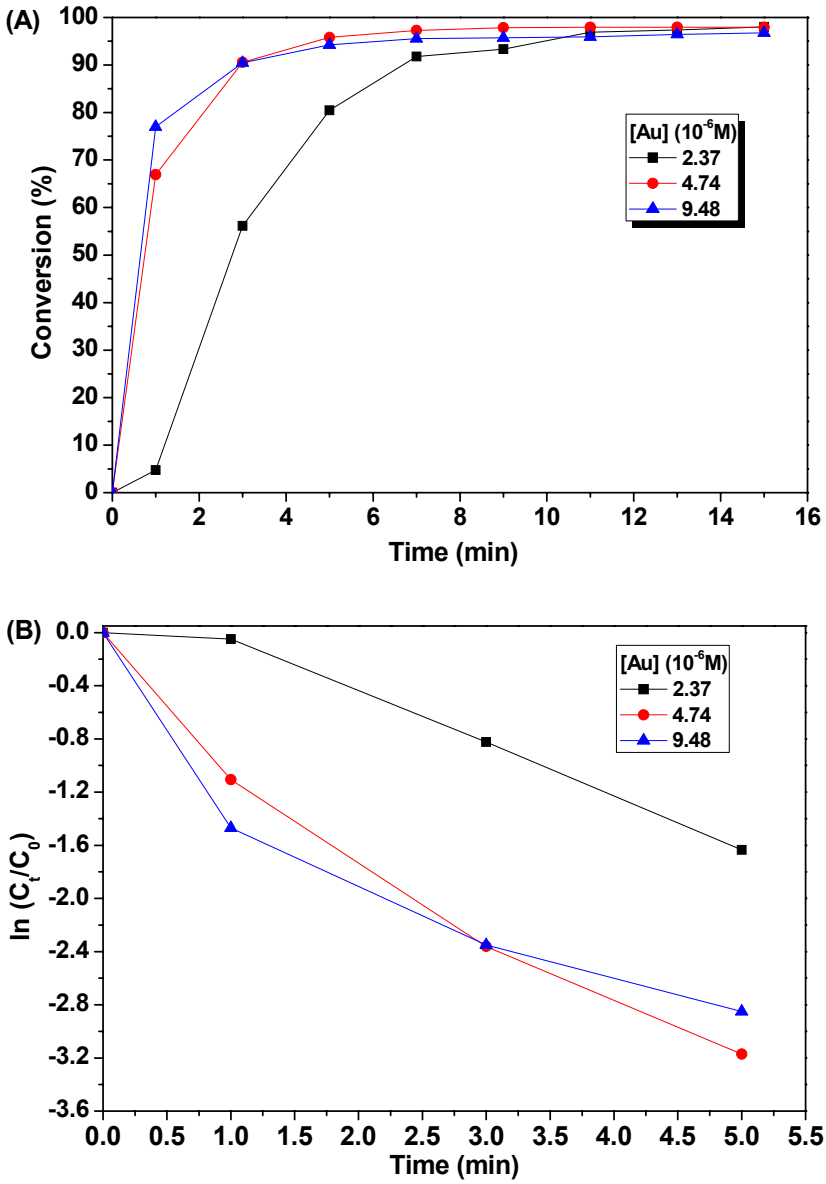

Fig. S5 The kinetics of the reduction reaction of 4-nitrophenol by $NaBH_4$ catalyzed by the composites of HPEI10K-$IBAm_{0.75}$ polymers with different concentrations of AuNPs at 20 ^{o}C (A) plots of Conversion versus Time; (B) plots of $\ln(C_t/C_0)$ versus Time. ([4-nitrophenol]=1. 0×10^{-4}M, [$NaBH_4$]=1. 0×10^{-2}M, [HPEI10K-$IBAm_{0.80}$]=6. 84×10^{-6}M)

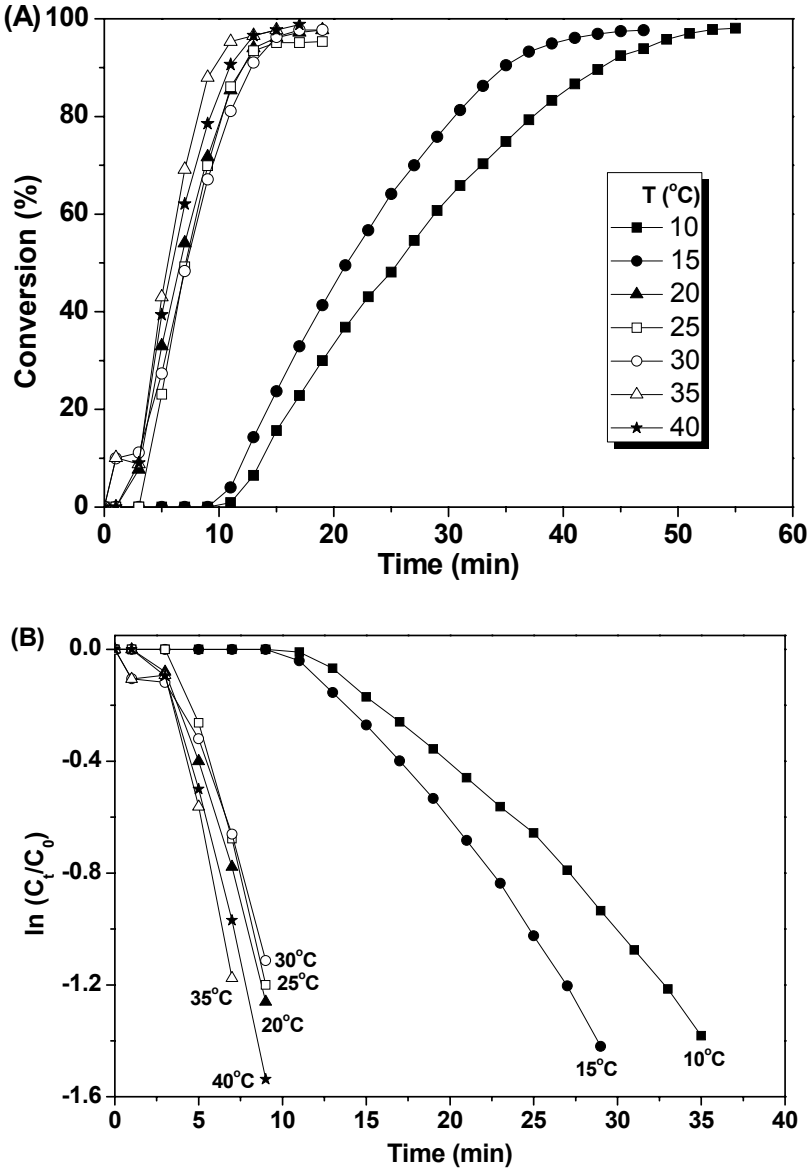

Fig. S6 The kinetics of the reduction reaction of 4-nitrophenol by $NaBH_4$ catalyzed by the composites of AuNPs with HPEI10K-IBAm$_{0.80}$ polymers at different temperatures (A) plots of Conversion versus Time; (B) plots of $\ln(C_t/C_0)$ versus Time. ([4-nitrophenol]=1.0×10^{-4}M, [$NaBH_4$]=1.0×10^{-2}M, [Au]=9.48×10^{-6}M, [HPEI10K-IBAm$_{0.80}$]=6.84×10^{-6}M)

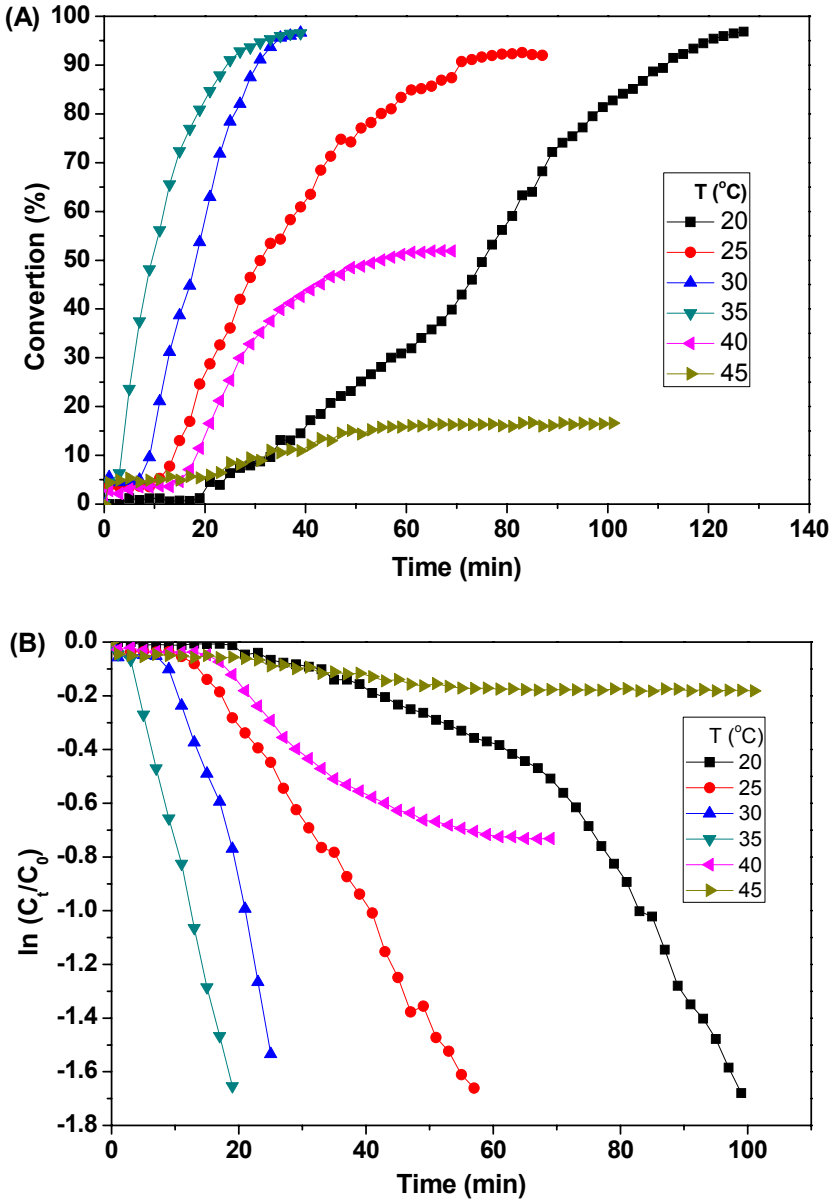

Fig. S7 The kinetics of the reduction reaction of 4-nitrophenol by $NaBH_4$ catalyzed by the composites of AuNPs with HPEI1.2K-IBAm$_{0.95}$ polymers at different temperatures (A) plots of Conversion versus Time; (B) plots of $\ln(C_t/C_0)$ versus Time. ([4-nitrophenol]=1.0×10^{-4}M, [$NaBH_4$]=1.0×10^{-2}M, [Au]=9.48×10^{-6}M, [HPEI1.2K-IBAm$_{0.95}$]=6.84×10^{-6}M)