

ESI

Gold nanoparticles immobilized in the hyperbranched polyethylenimine modified polyacrylonitrile fiber as highly efficient and recyclable heterogeneous catalysts in the reduction of 4-nitrophenol

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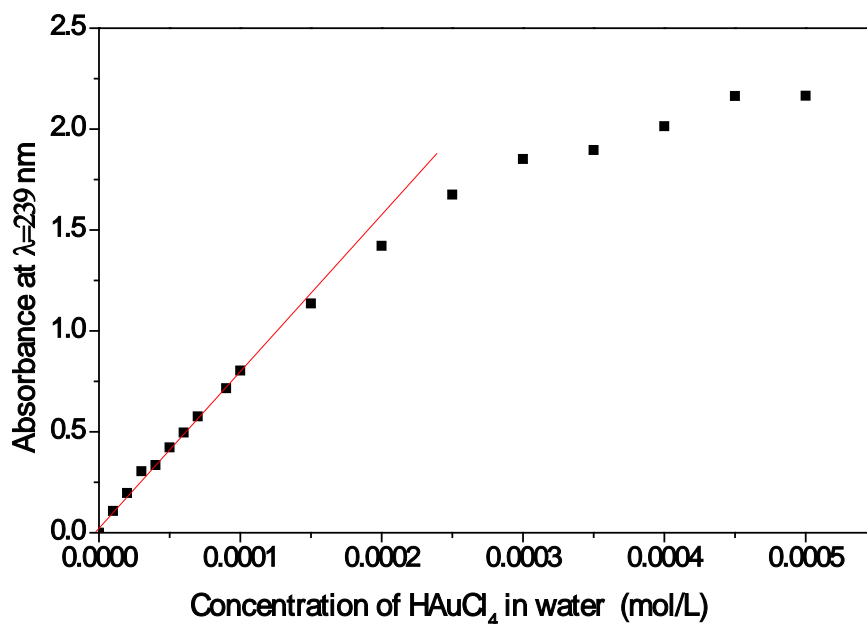


Fig. S1 The relationship of the absorbance intensity at 239 nm with the concentration of HAuCl₄ in water

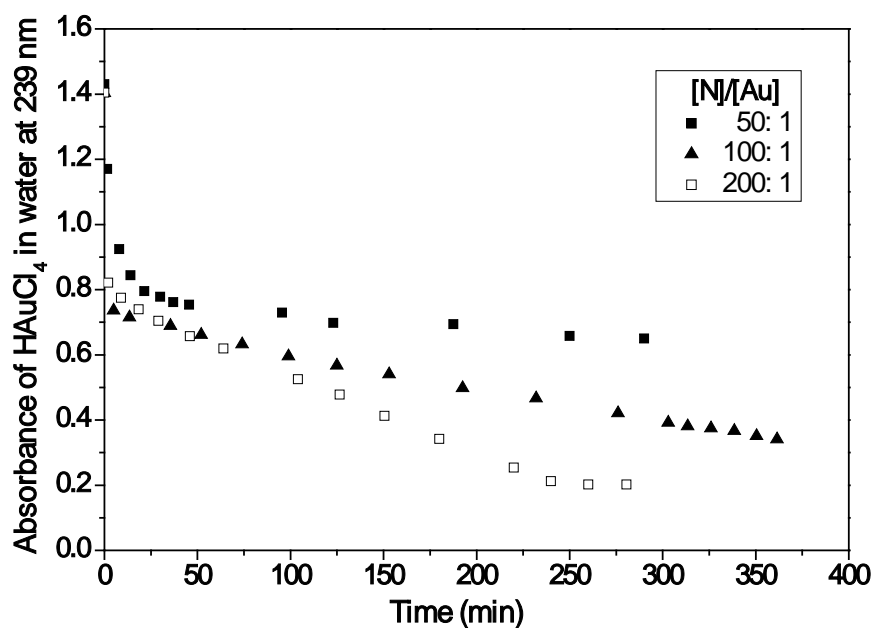


Fig. S2 The typical plots of the variation of UV-vis absorbance of HAuCl₄ in water versus the time in the presence of different amount of PANF-*g*-HPEI, and the ratio of amino groups of PANF-*g*-HPEI to Au atoms was (■) 50, (▲) 100 and (□) 200, respectively. ([HAuCl₄]₀=2.5×10⁻⁴ M, PANF-*g*-HPEI_{0.31})

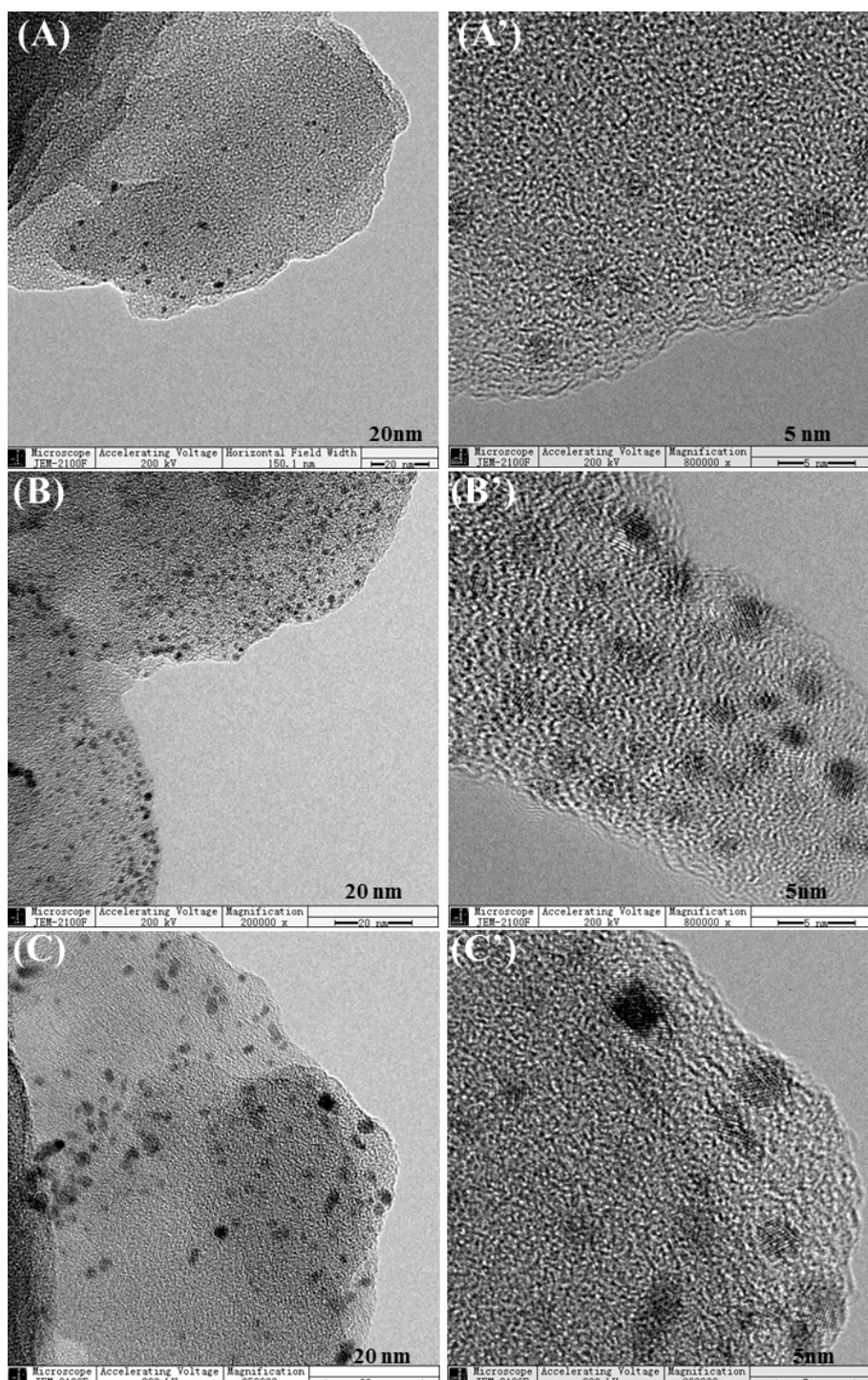


Fig. S3 The typical TEM images of the AuNPs supported by (A, A') PANF-*g*-HPEI_{0.31}; (B, B') PANF-*g*-HPEI_{0.58}; (C, C') PANF-*g*-HPEI_{0.97} (the mixing time of PANF-*g*-HPEIs with the HAuCl₄ aqueous solution is 0.5 h, [N]/[Au]=200)

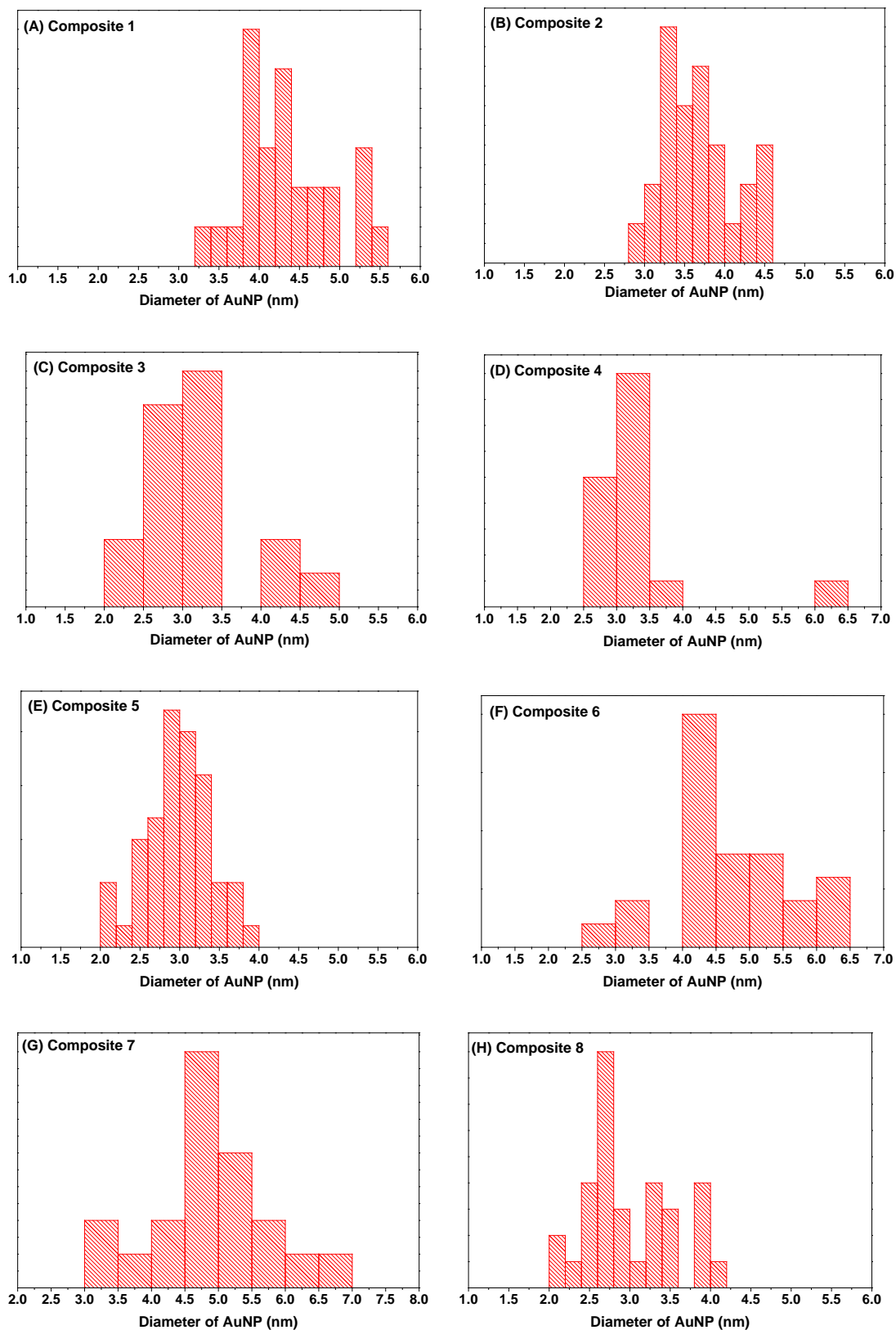


Fig. S4 The histograms of AuNPs prepared according to the condition of Table 2

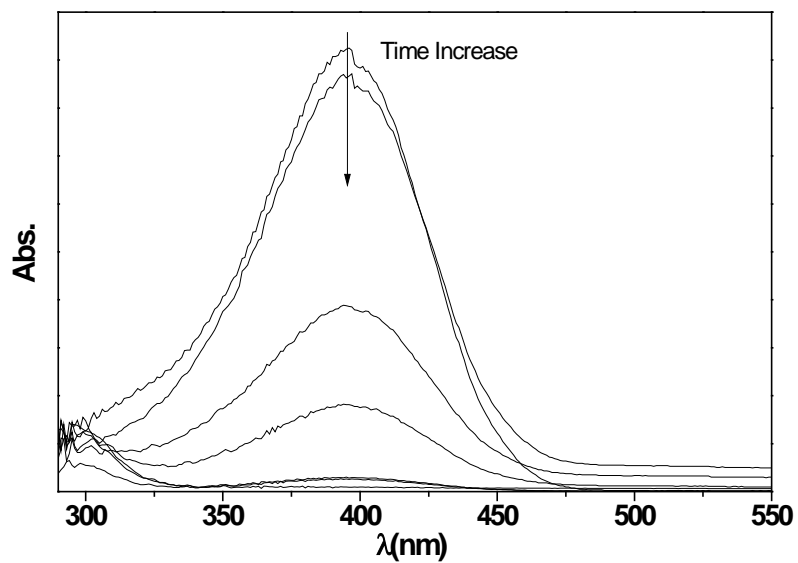


Fig. S5 The typical UV-vis absorbance spectra of the AuNP catalyzed reduction of 4-nitrophenol by NaBH_4

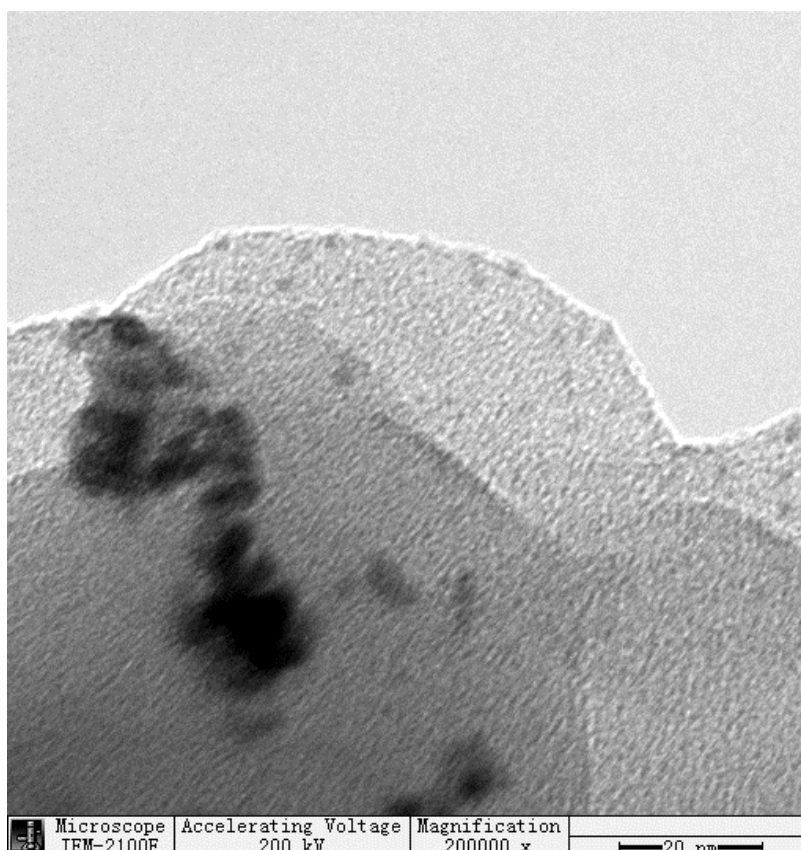


Fig. S6 Typical TEM image of AuNPs showing very less catalytic activity after reusing certain times