

Supporting Information

Polyvinylpyrrolidone-stabilized magnetic nickel nanochains for cancer hyperthermia and catalysis applications

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S1 Characterizations

Attenuated total reflectance-Fourier transform infrared spectroscopy (ATR-FTIR) spectra were recorded by Perkin Elmer Frontier FT-NIR/MIR spectrometers. Spectra were obtained with resolution of 2 cm⁻¹ and 16 scans. Thermal gravimetric analysis (TGA) of the as-synthesized samples were carried out on a Shimadzu TA-50 thermal analyzer at a heating rate of 10 °C/min from room temperature to 800 °C in air. Zeta potential and DLS measurements were performed using a Malvern 4800 Autosizer employing a 7132 digital correlator for the determination of the hydrodynamic diameter. Measurements were taken in water. HCL (0.2 M) and NaOH (0.2 M) are used to tune the pH from 2 to 10. The pH adjustment is achieved by using pH meters. The reported zeta potential values were an average of three measurements.

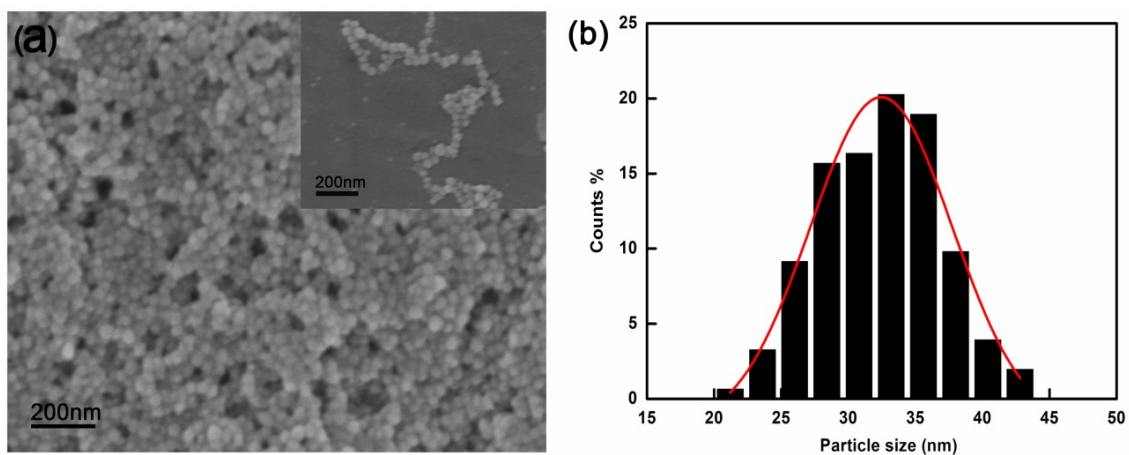


Figure S1 (a) SEM images of Ni-NC@PVP. (b) The histogram of grain size distribution of Ni-NC@PVP from TEM in Figure 1c.

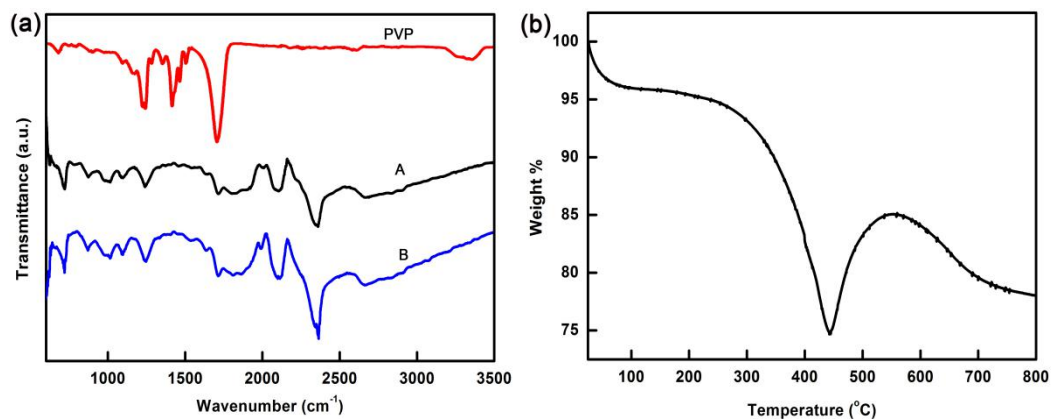


Figure S2 (a) FTIR spectra of Ni-NC@PVP before (A) and after (B) the catalytic test reaction and pure PVP. (b) Thermogravimetric analysis (TGA) under air of Ni-NC@PVP.

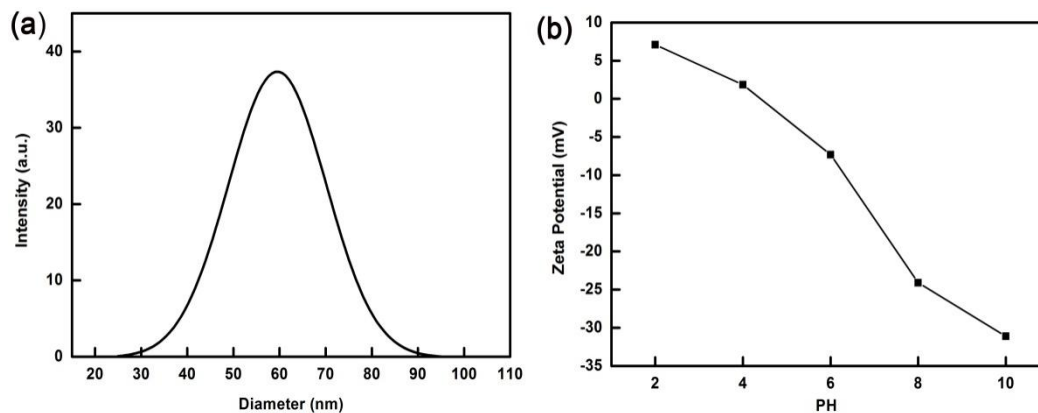


Figure S3 (a) DLS analysis of Ni-NC@PVP. (b) Zeta potential as a function of pH for Ni-NC@PVP dispersed in water.

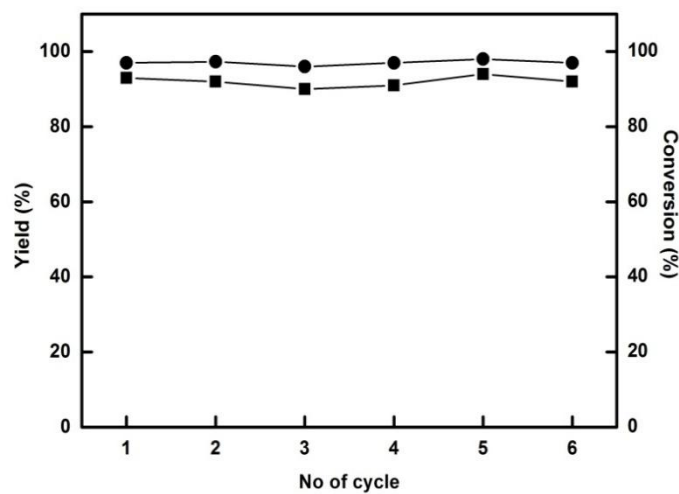


Figure S4 Effect of reaction conditions on the conversion of acetophenone (up) and yield of 1-phenylethanol (below) over Ni-NC@PVP catalyst over six cycles. The yield of 1-phenylethanol and conversion of acetophenone were determined by GC analysis using external standard method.

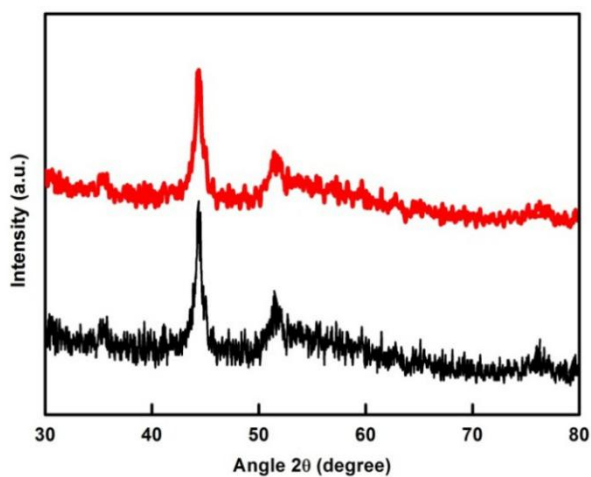


Figure S5 XRD pattern of Ni-NC@PVP before (below) and after (up) the catalytic test reaction.

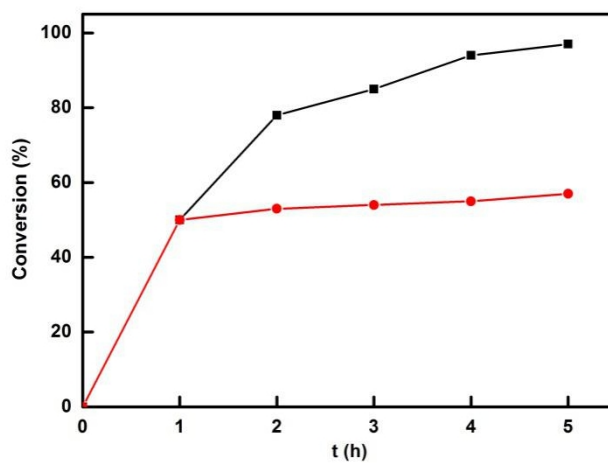


Figure S6 Kinetic profile for the (a) Ni-NC@PVP-catalyzed hydrogenation of acetophenone (square); (b) the reaction mixture at 51 % conversion (cycle) was centrifuged to remove the catalyst.