Electronic Supplementary Material (ESI) for Dalton Transactions

Supporting Information for

Controlled Synthesis of Magnetic Pd/Fe_3O_4 Spheres via an Ethylenediamine-Assisted Route

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The Fourier transform infrared spectroscopy

The Fourier transform infrared (FTIR) spectrum provides direct proof for the existence of related substances. The peaks located at 1636 cm^{-1} and 1396 cm^{-1} are attributed to N-H bending vibration and C-N stretching vibration, respectively, indicating the existence of en in the obtained magnetic nanoparticles. The absorption bands located at about 2968-2860 cm^{-1} are assigned to the C-H stretching band, whereas the band at 1082 cm^{-1} corresponds to C-O stretching vibration, implying the presence of few residual EG molecules in the nanoparticles. The strong band appearing at 586 cm^{-1} is characteristics of Fe-O vibrations, revealing the existence of Fe_3O_4.

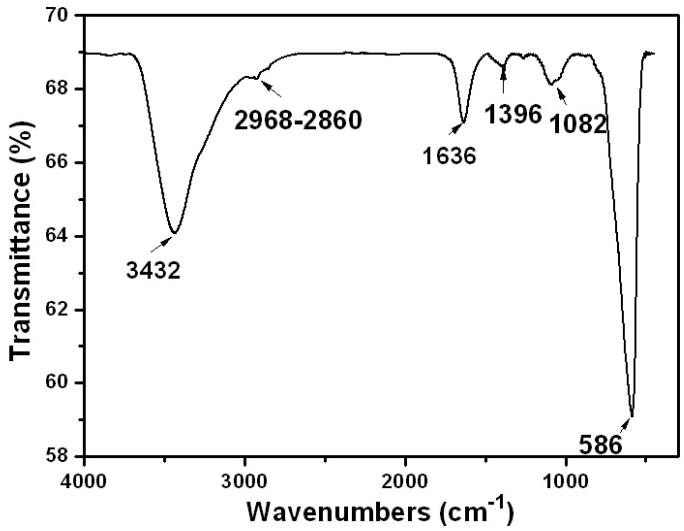

Fig.S1 FTIR spectrum for the Pd/Fe_3O_4 hollow (or solid) spheres.

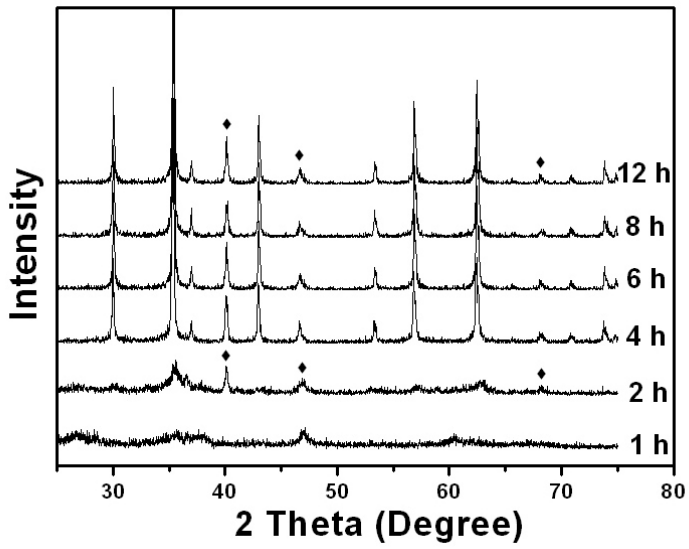

Fig.S2 XRD patterns of the as-synthesized products in different reaction times.

◆: peaks of Pd

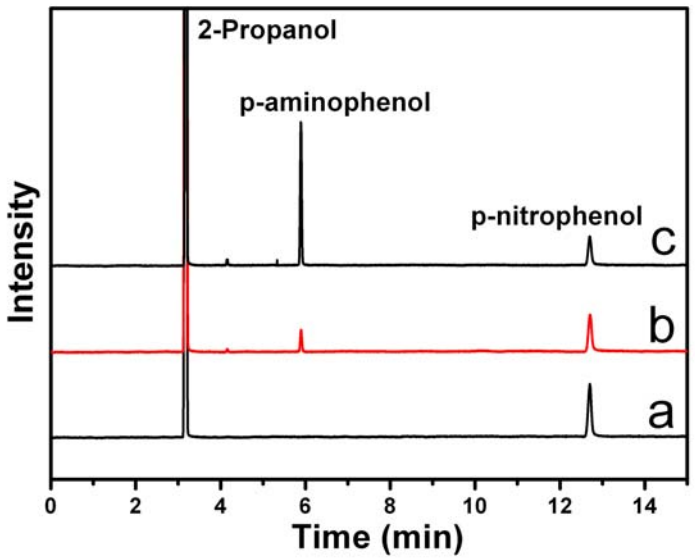

Fig.S3 GC traces for the reaction product obtained at different reaction times: (a) 0 min, (b) 290 min and (c) 470 min (catalyst: hollow Pd/Fe_3O_4 spheres).

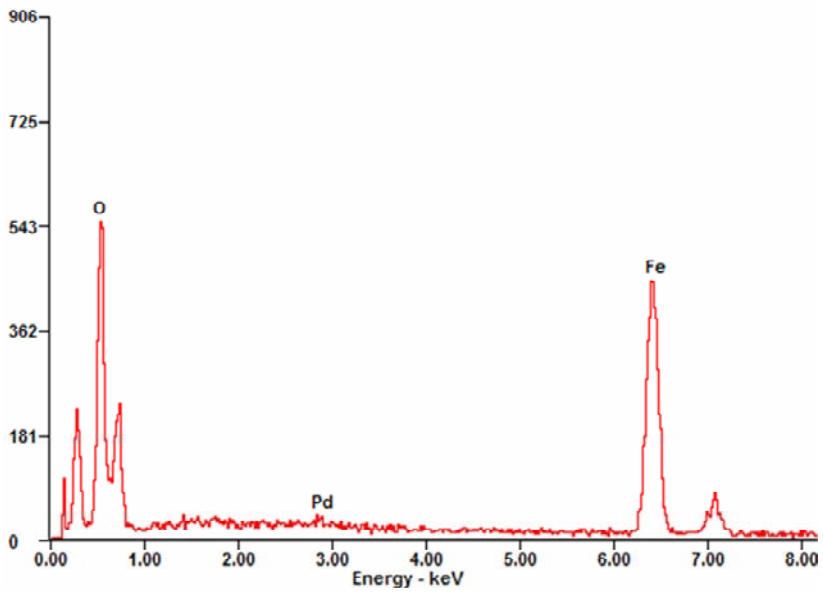

Fig.S4 The EDX spectrum of Pd/Fe_3O_4 solid spheres.