

Electronic Supplementary Information

Mesoporous silica supported bimetallic Pd/Fe for enhanced dechlorination of tetrachloroethylene

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9 pages and 8 figures.

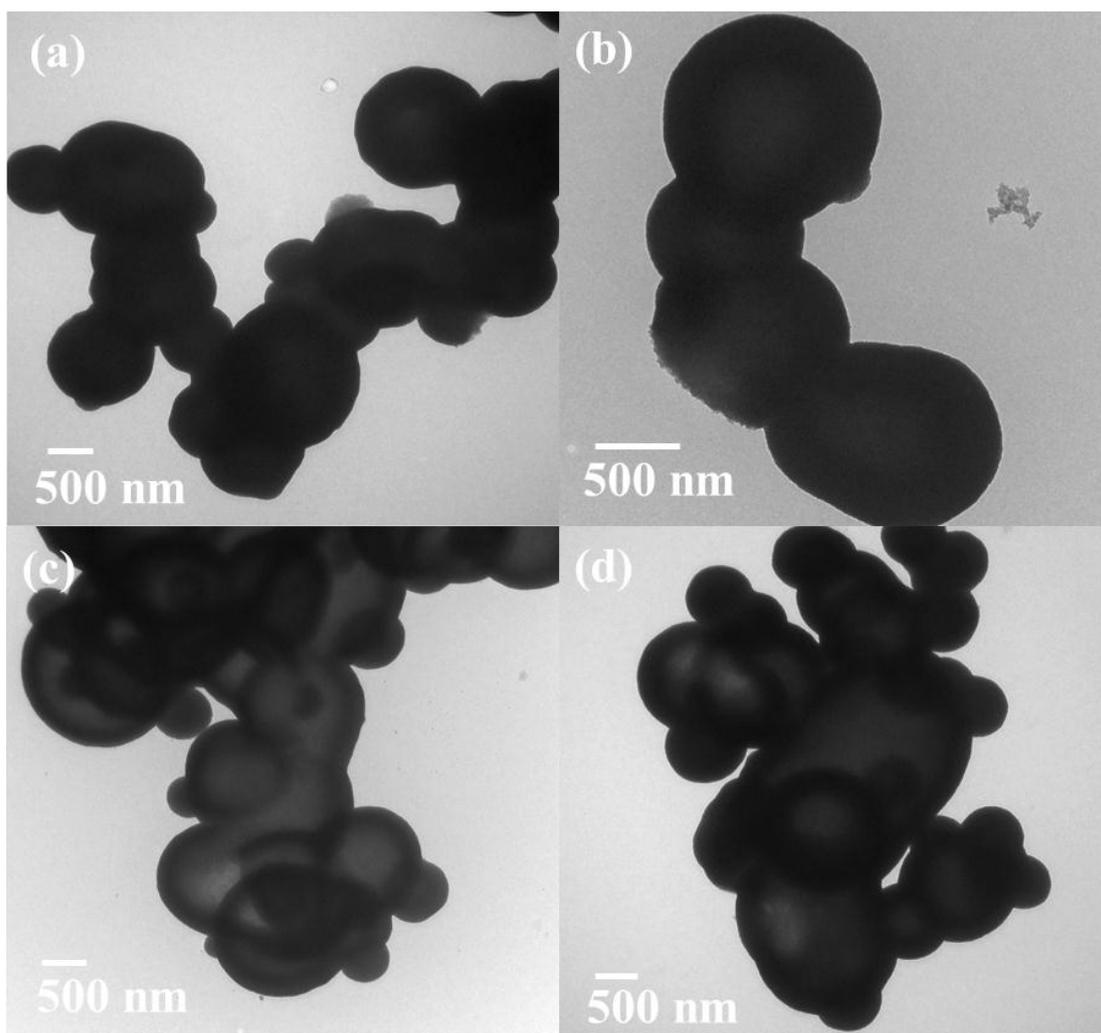


Fig. S1. TEM images of mesoporous silica microspheres fabricated at various hydrothermal durations. (a) 1, (b) 3, (c) 5 and (d) 7 days.

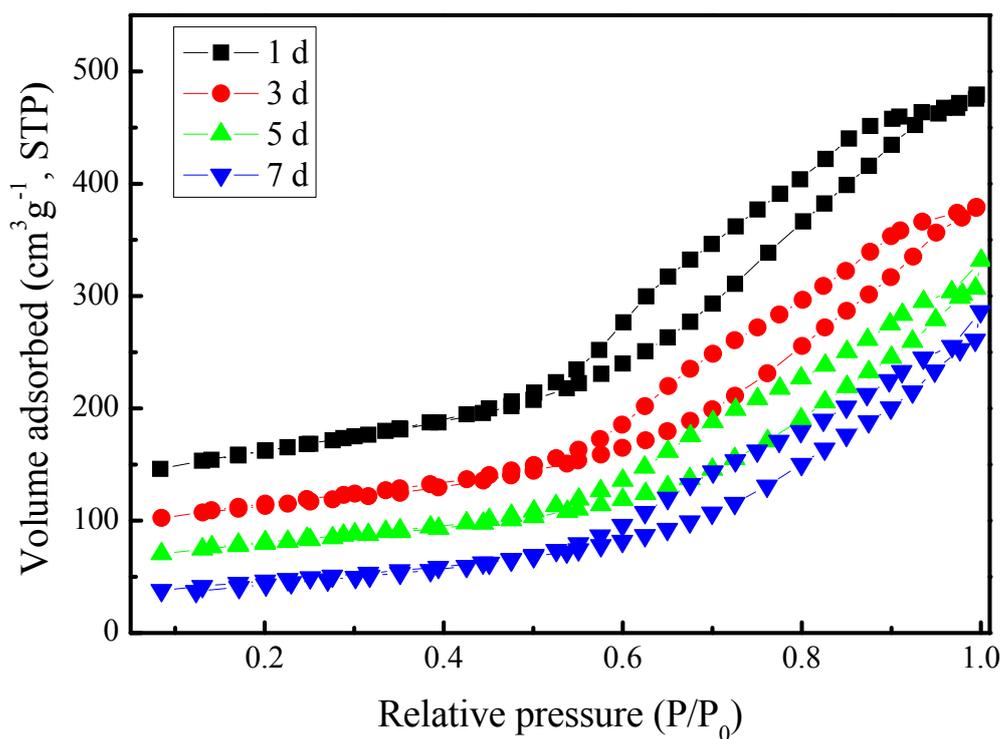


Fig. S2. The N₂ adsorption-desorption isotherms of mesoporous SiO₂ at different hydrothermal treatment times. The y-axis was vertically shifted for 75, 50 and 25 m²/g for 1, 3 and 5 days, respectively, for clarity.

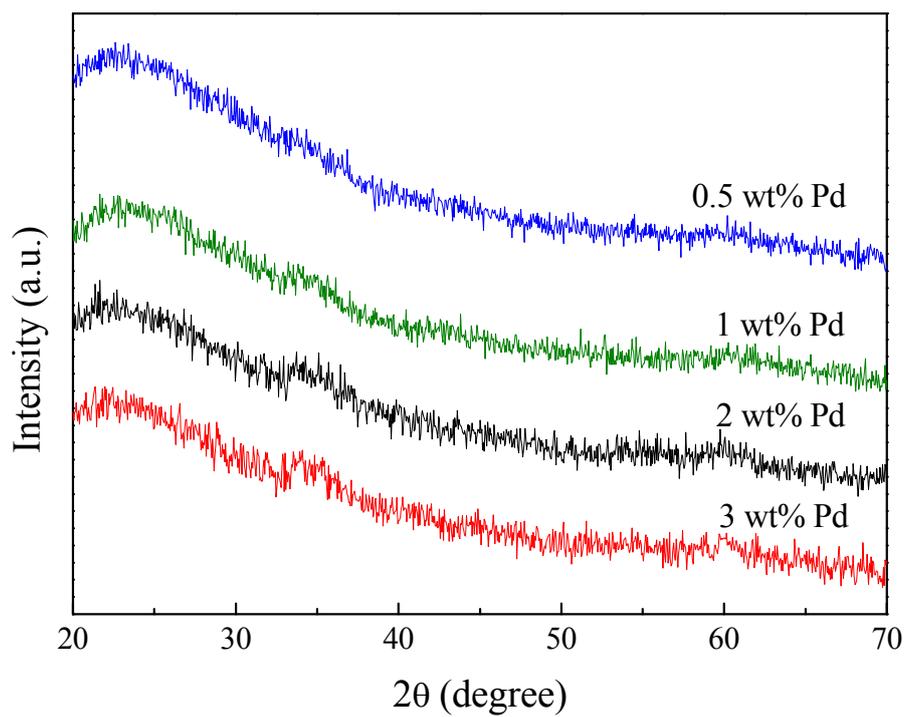


Fig. S3. The XRD patterns of mesoporous Pd-Fe/SiO₂ microspheres. The Pd loadings were in the range 0.5–3 wt%.

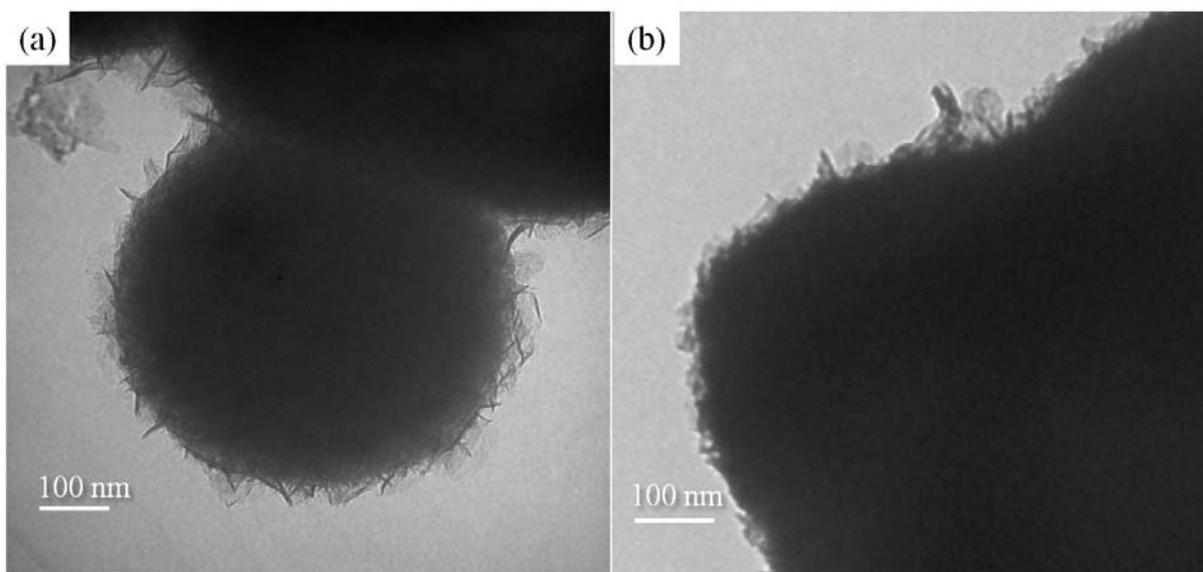


Fig. S4. The TEM images of Pd-Fe/SiO₂ microspheres after the addition of (a) 1 and (b) 3 wt% Pd ions into Fe/SiO₂ microsphere solutions under anoxic conditions.

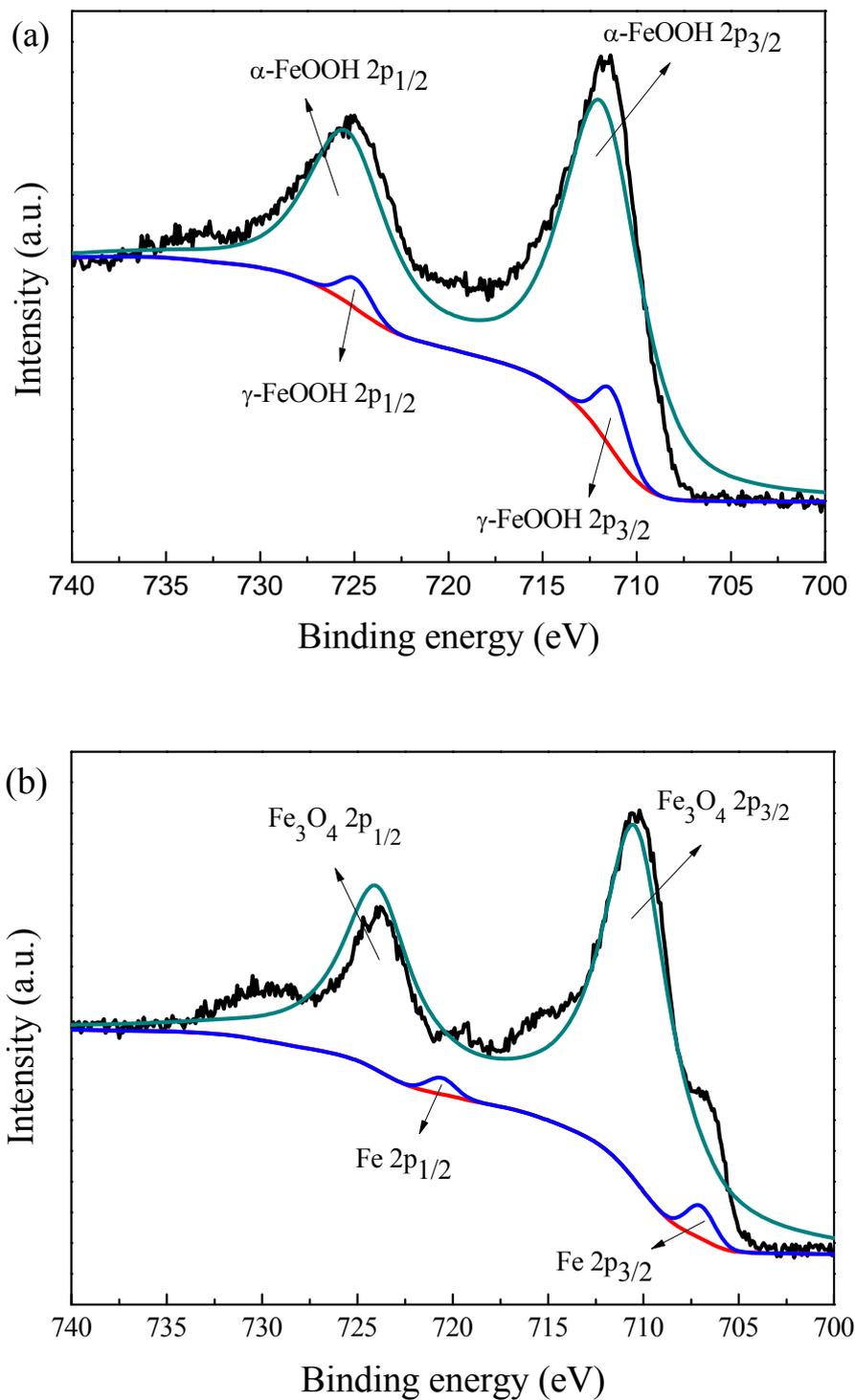


Fig. S5. The peak deconvolution of Fe 2p spectra of 3 wt% Pd-Fe/SiO₂ microspheres (a) before and (b) after Ar sputtering for 1 min.

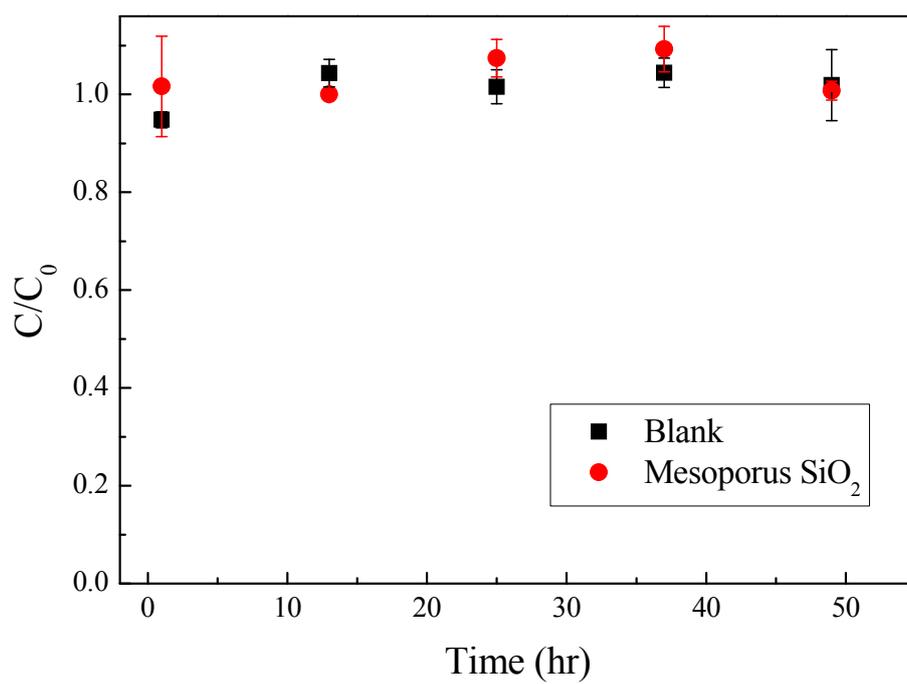


Fig. S6. The adsorption of 5 mg/L PCE by pure mesoporous SiO_2 microspheres under anoxic conditions.

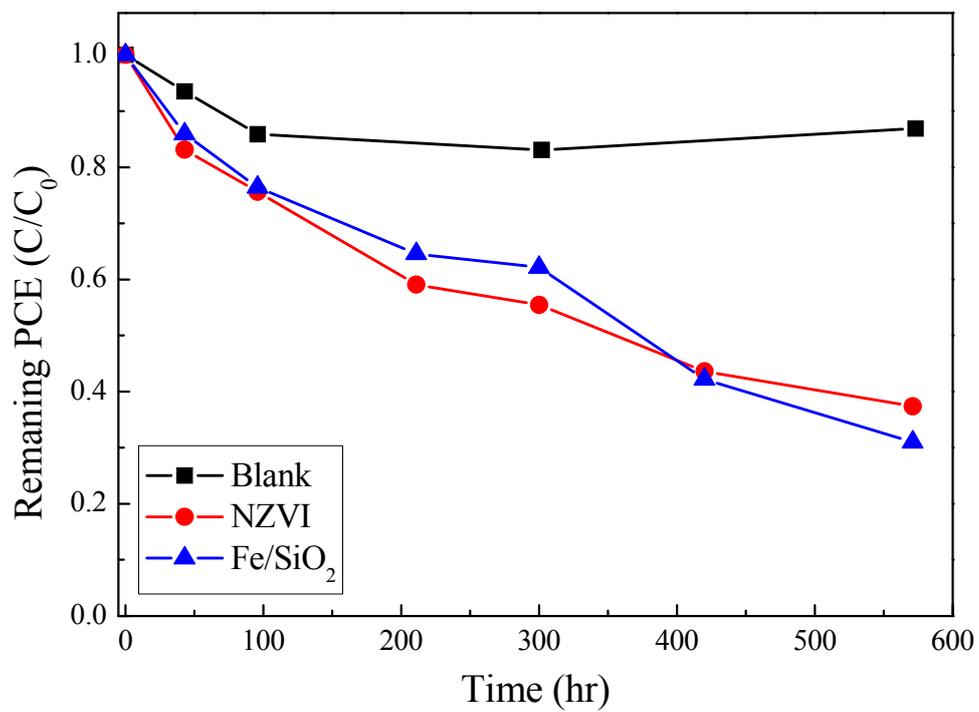


Fig. S7. Dechlorination of PCE by 2 g/L NZVI and mesoporous Fe/SiO₂ at pH 5.5 under anoxic conditions.

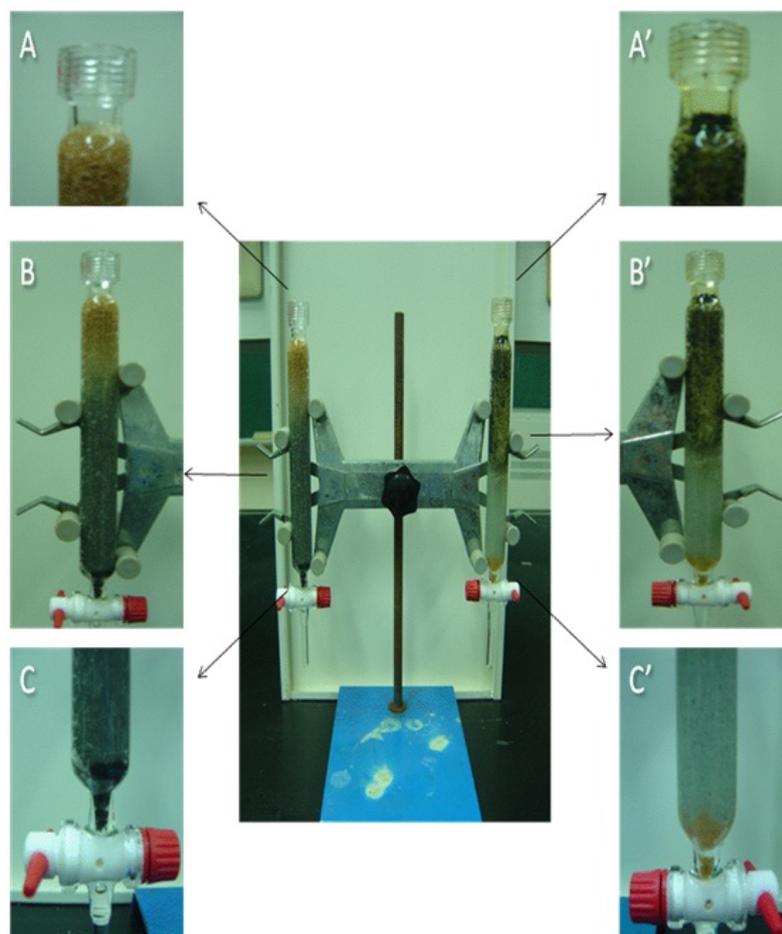


Fig. S8. Column experiments of the mobility and water permeability of NZVI and mesoporous Pd-Fe/SiO₂ microspheres. The materials in left and right columns were Pd-Fe/SiO₂ and pure NZVI, respectively. Panels (A), (B) and (C) indicate the accumulation of iron-based nanocomposites on the top, in the middle and on the bottom of the glass beads columns, respectively.