Electronic Supplementary Material (ESI) for CrystEngComm.

A facile template method to fabricate one-dimensional Fe_3O_4@SiO_2@C/Ni microtubes with efficient catalytic and adsorption performance

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Supporting Information

Preparation of Fe_3O_4@SiO_2@C/Ni (700 ℃)

The synthesis of Fe_3O_4@SiO_2@C/Ni (700 ℃) was similar with that of Fe_3O_4@SiO_2@C/Ni (500 ℃) just changing the carbonization temperature from 500 ℃ to 700 ℃.

Preparation of Fe_3O_4@C/Ni and Fe_3O_4@SiO_2@C/Ni (200 μL)

Fe_3O_4@C/Ni and Fe_3O_4@SiO_2@C/Ni (200 μL) were prepared through annealing their precursor (FeOOH@PDA-Ni^{2+} and FeOOH@SiO_2@PDA-Ni^{2+} (200 μL)) at 500℃ for 5 h in the protection of N_2 gas. The synthesis of FeOOH@PDA-Ni^{2+} and FeOOH@SiO_2@PDA-Ni^{2+} (200 μL) was similar with that of FeOOH@SiO_2@PDA-Ni^{2+} (50 μL) just changing the amount of TEOS from 50 μL to 0 μL and 200 μL.

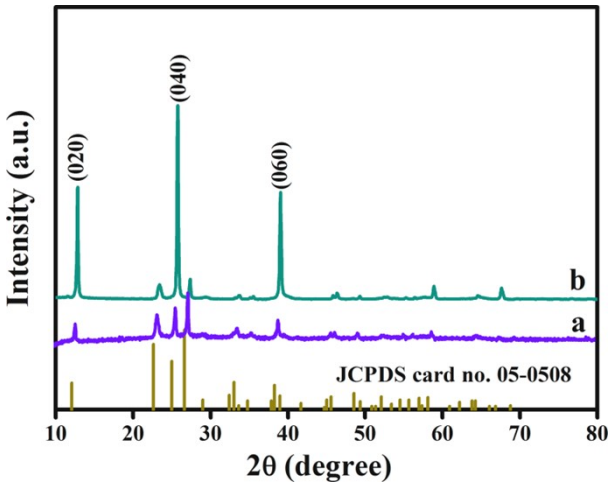

Figure S1. XRD patterns of the as-prepared MoO_3 (b) and MoO_3@FeOOH (a)

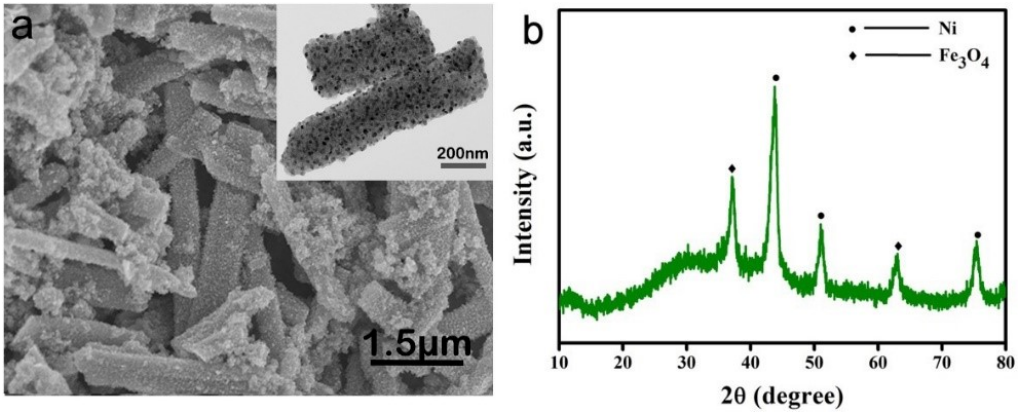

Figure S2. SEM and TEM image (a), XRD pattern of the Fe_3O_4@SiO_2@C/Ni-700 (b)

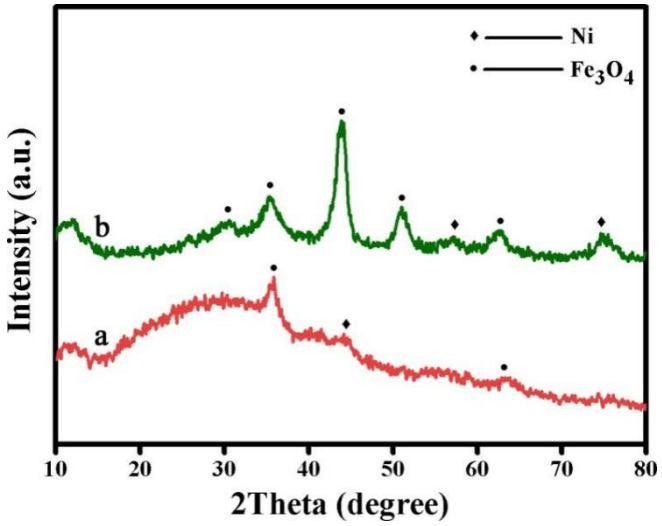

Figure S3. XRD pattern: (a) Fe_3O_4@SiO_2@C/Ni microtubes (200uL TEOS); (b) Fe_3O_4@C/Ni microtubes

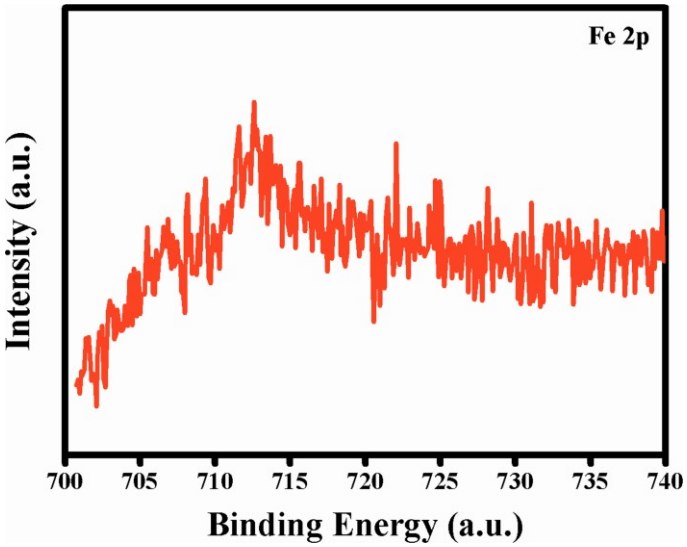

Figure S4. High-resolution of Fe 2p

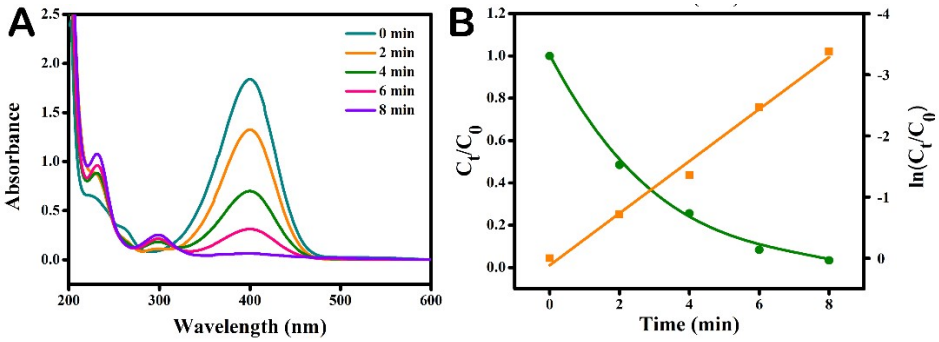

Figure S5. (A): successive reduction of 4-NP using Fe_3O_4@C/Ni as catalyst; (B): C_t/C_0 and $\ln(C_t/C_0)$ versus reaction time for the reduction of 4-NP over Fe_3O_4@C/Ni.

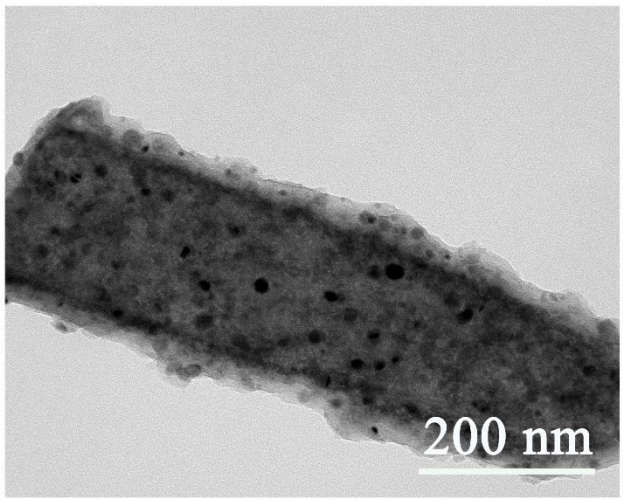

Figure S6. TEM image of Fe_3O_4@SiO_2@C/Ni after five cycle

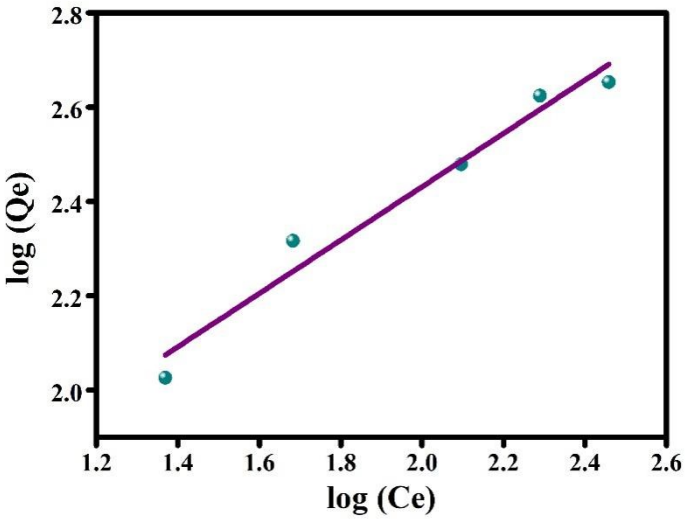

Figure S7. Linear fitting of adsorption isotherms plots based on Freundlich model