

Supporting Information

For

Biochar supported sulfide-modified nanoscale zero-valent iron for the reduction of nitrobenzene

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Table S1 Fitting of pseudo first-order and second-order kinetics models for NB removal by S-nZVI@BC.

Initial concentration of NB (mg L ⁻¹)		100	300	500	600	700
q_e (mg g ⁻¹)		252.85	484.40	511.05	535.35	547.30
Pseudo first-order	k_1 (min ⁻¹)	0.0076	0.0092	0.0122	0.0189	0.0333
reaction kinetics	R ²	0.7816	0.8763	0.8118	0.8505	0.8497
Pseudo second-order	k_2 (g/mg/min)	0.0001	0.0001	0.0003	0.0013	0.0258
reaction kinetics	R ²	0.9767	0.9563	0.9533	0.9601	0.9542

Table S2 Fitting of Langmuir, Freundlich and Redlich-Peterson models for NB removal by S-nZVI@BC.

Model	R^2	Parameter
Langmuir	0.9985	$q_m = 588.23 \text{ mg/g}$ $K_L = 0.02 \text{ mg/L}$
Freundlich	0.9279	$K_F = 6.72 \text{ (mg/g)/(mg/L)}$ $n = 3.23$
Redlich-Peterson	0.8797	$K_{RP} = 3.82$ $\alpha_{RP} = 0.07$ $\beta = 0.15$

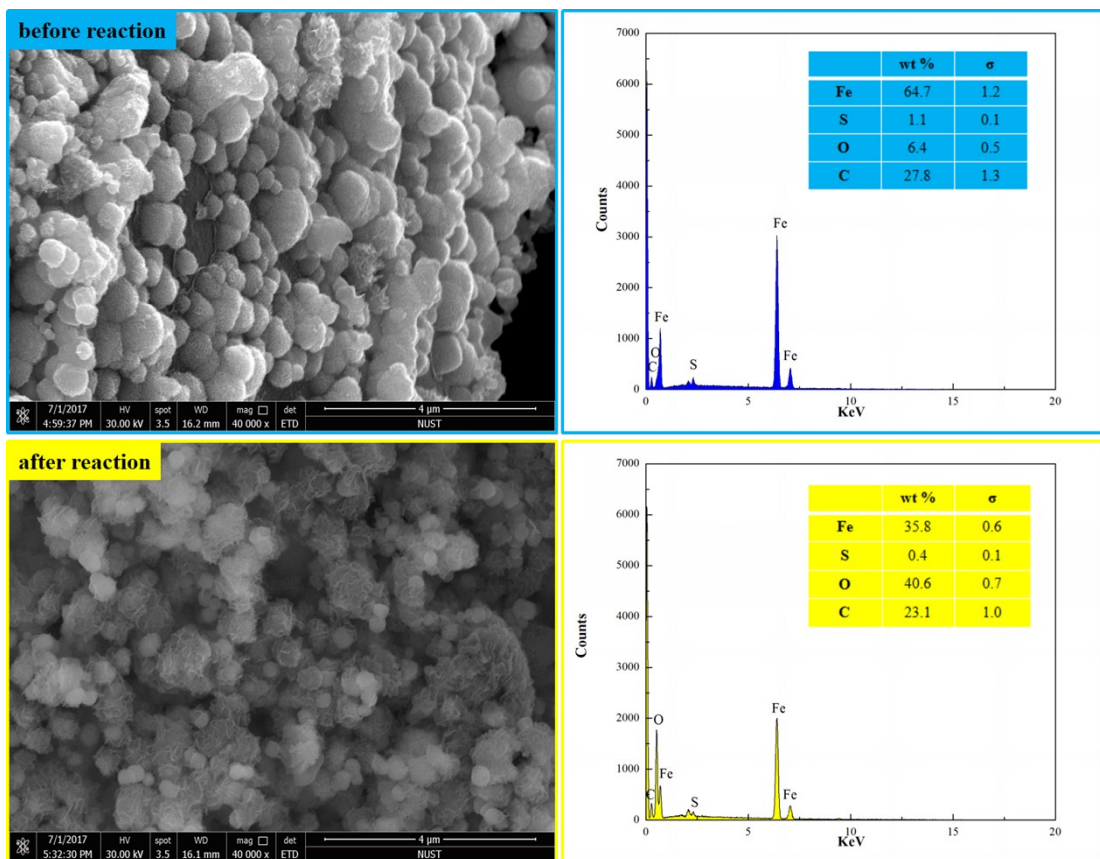


Fig. S1 SEM images and EDS spectrum of S-nZVI@BC before and after reaction.

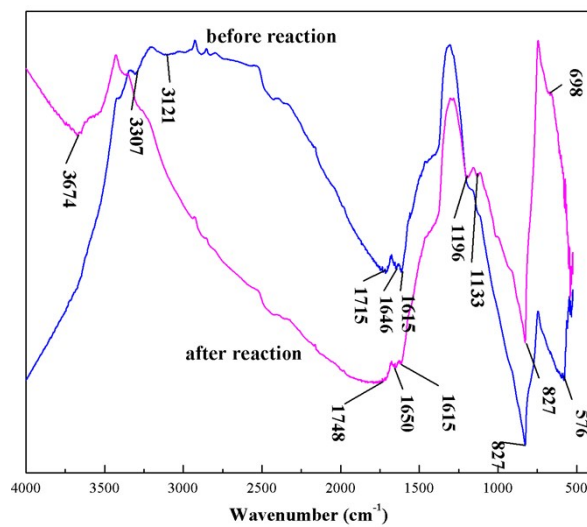


Fig. S2 FTIR spectra of S-nZVI@BC before and after reaction with NB.

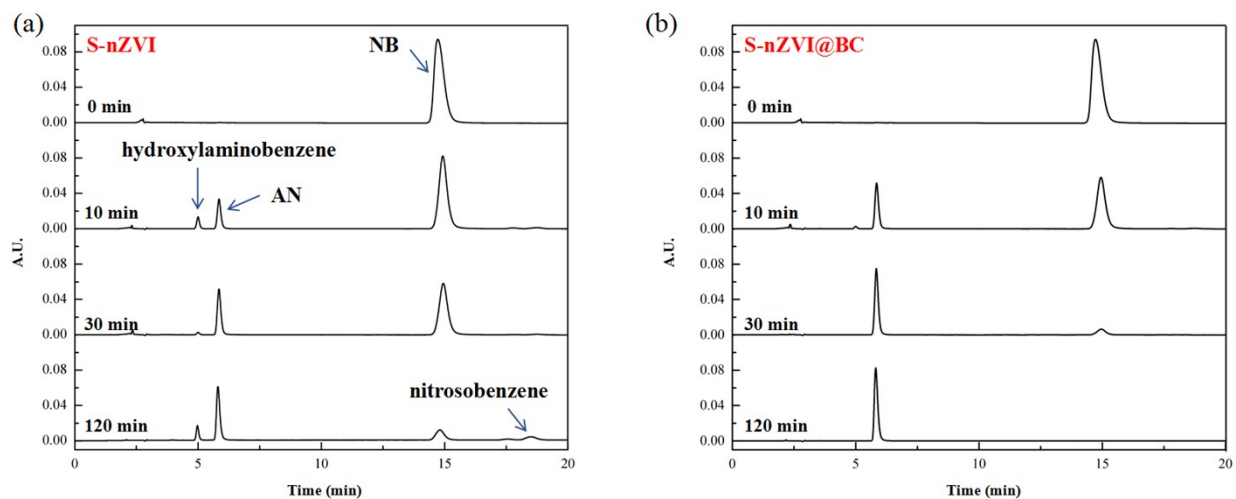


Fig. S3 HPLC profiles for NB reduction by S-nZVI (a) and S-nZVI@BC (b).

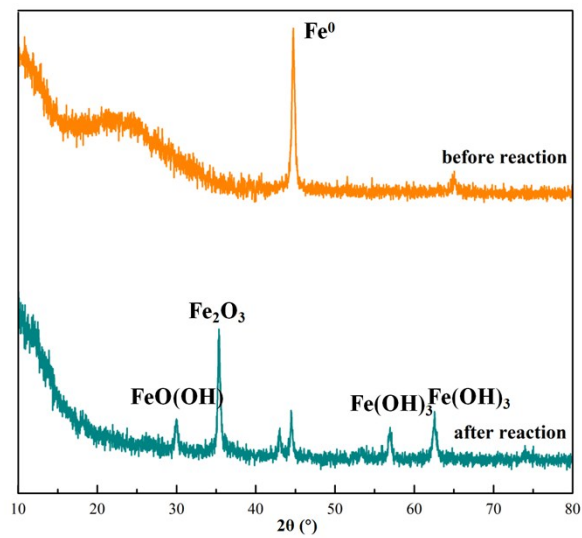


Fig. S4 XRD patterns of S-nZVI@BC before and after reaction with NB.

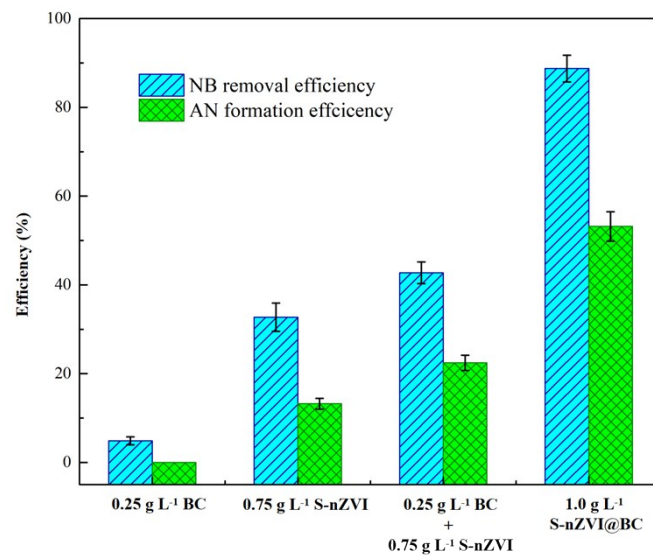


Fig. S5 NB removal by BC, S-nZVI, S-nZVI+BC and S-nZVI@BC at initial NB concentration of 200 mg L⁻¹.

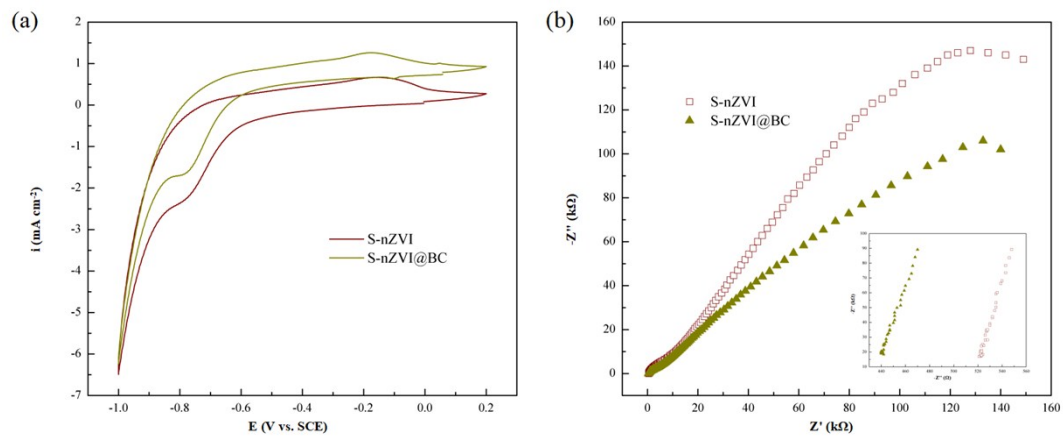


Fig. S6 The CV cycle profiles (a) and typical Nyquist plots (b) of the GCEs modified with S-nZVI and S-nZVI@BC. The inset in (b) showed details on results at low frequency.