Supporting Information (EI)

Evolution of Nickel Sulfide Hollow Spheres through Topotactic Transformation

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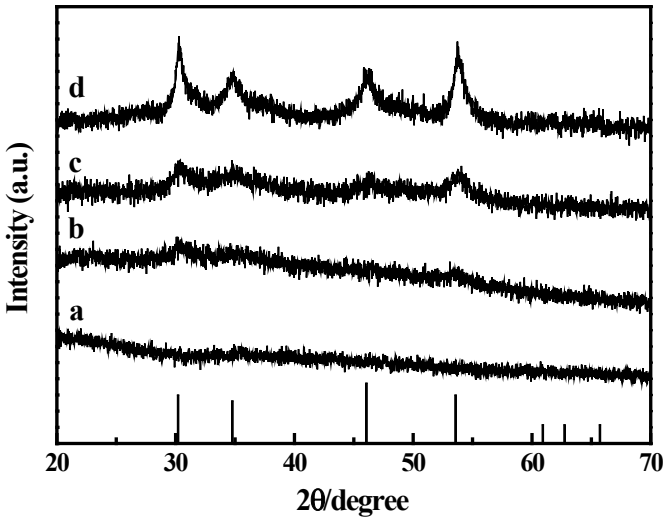


Figure S1 XRD patterns of the samples prepared at 160 °C for different time: (a) 0.5 h; (b) 2 h; (c) 4 h; and (d) 8 h.

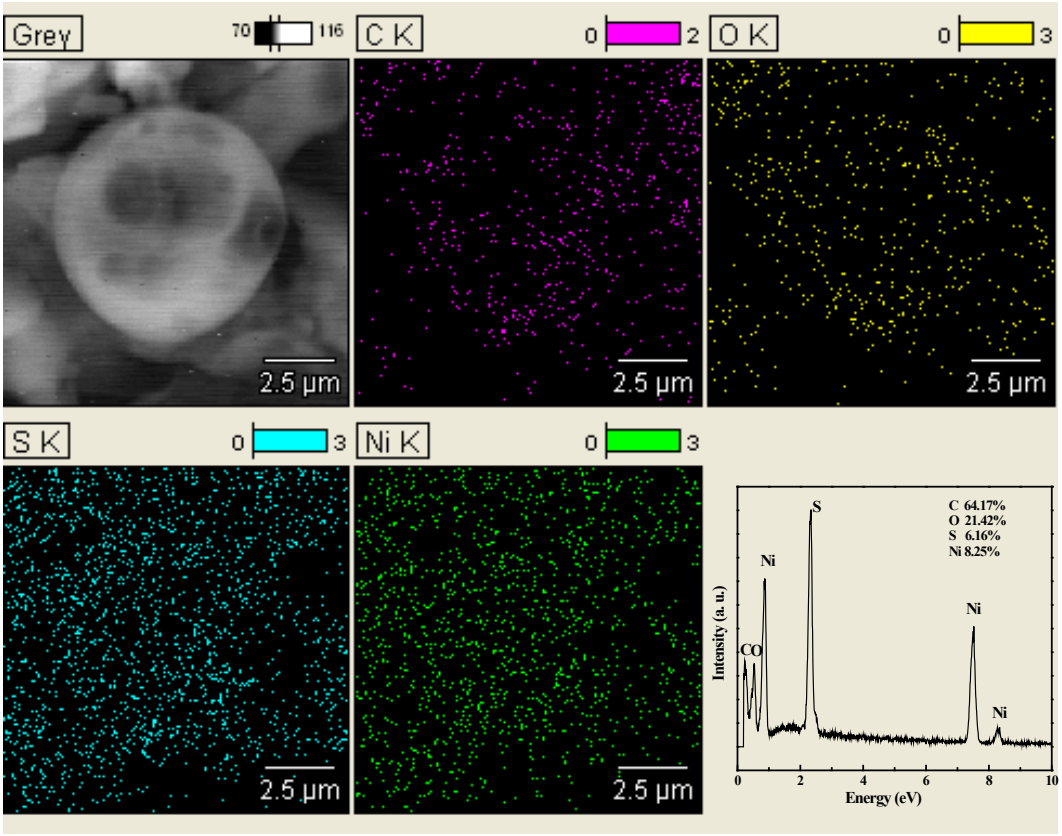


Figure S2 EDX and EDS spectra of the solid spheres obtained at the early stage of reaction (0.5 h)

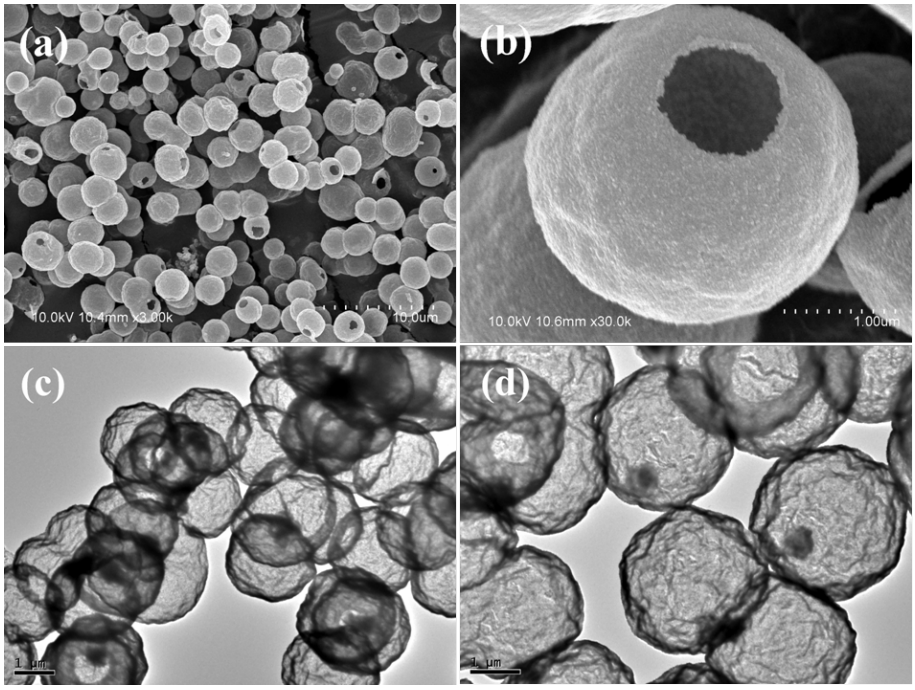


Figure S3 (a, b) SEM and (c, d) TEM images of the sample prepared at 160 °C for 12 h and then 200 °C for 12 h.

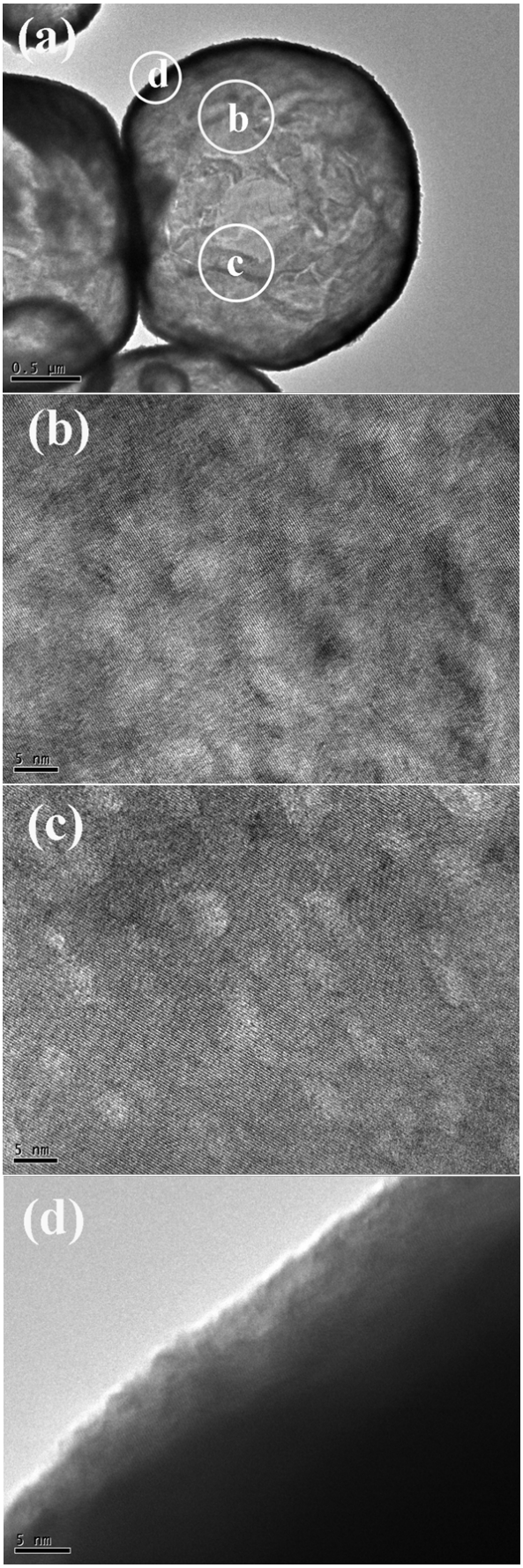
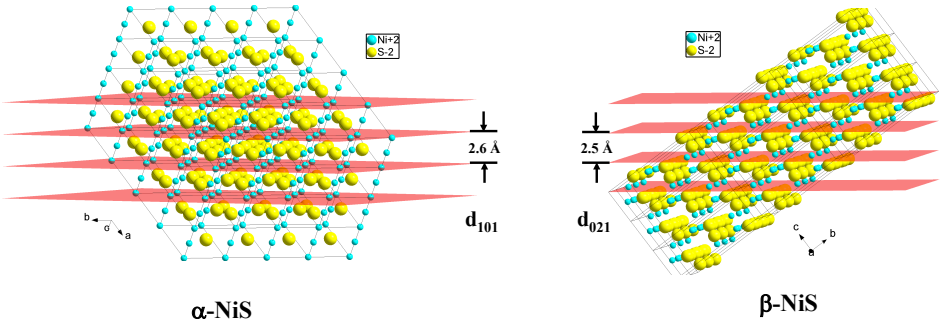


Figure S4 HRTEM images of the different parts of a single β-NiS hollow sphere.



Crystal lattice matching

Figure S5 Schematic illustration of the crystal lattice matching between hexagonal α-NiS and rhombohedral β-NiS.

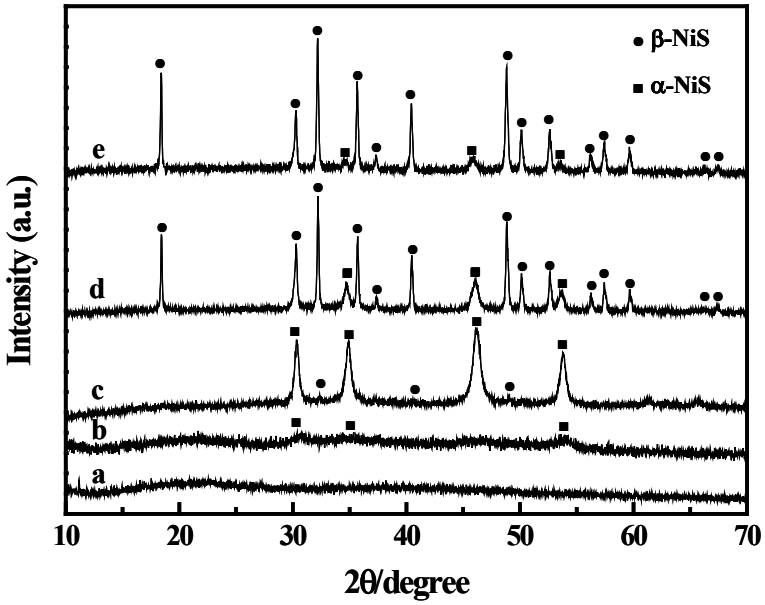


Figure S6 XRD patterns of the samples prepared at 200 °C for different time: (a) 0.5 h; (b) 1 h; (c) 2 h; (d) 4 h and (e) 8 h.

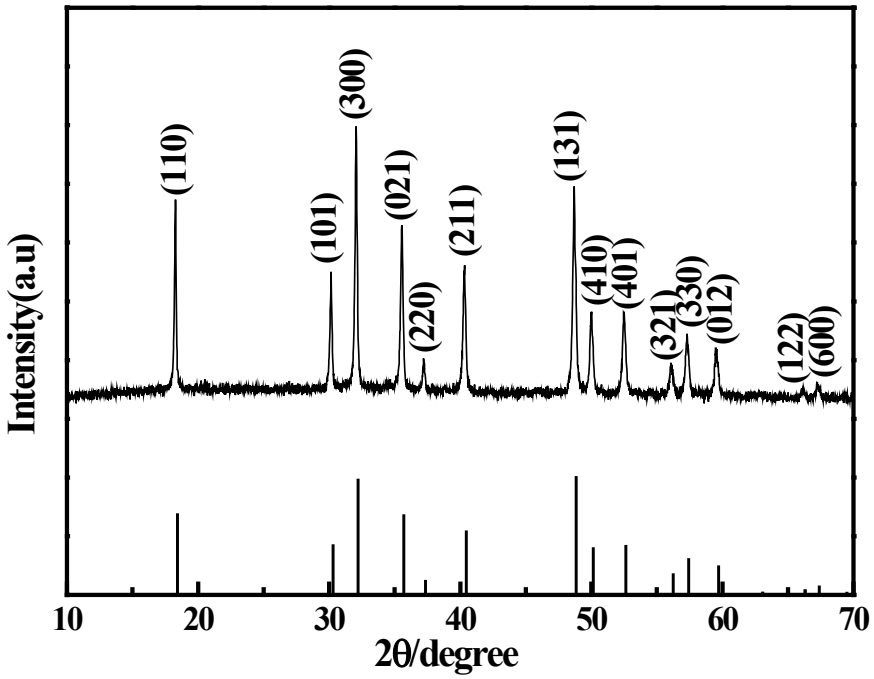


Figure S7 XRD pattern of the sample prepared at 200 °C for 12 h.

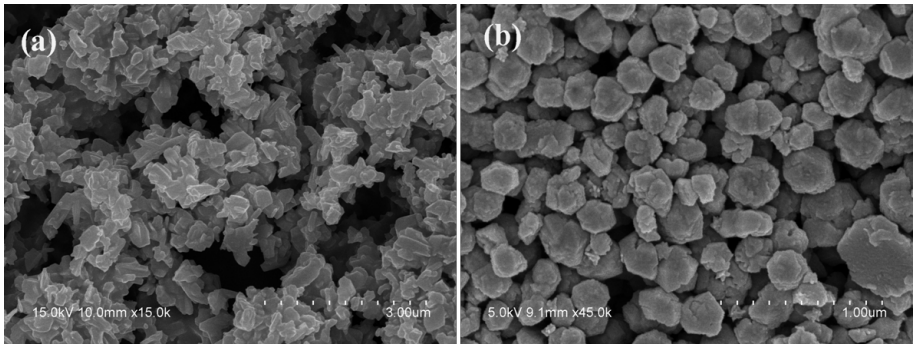


Figure S8 SEM images of the samples prepared with 0.1 g of thiourea and without the addition of glutathione under hydrothermal conditions at (a) 200 °C and (b) 160 °C.

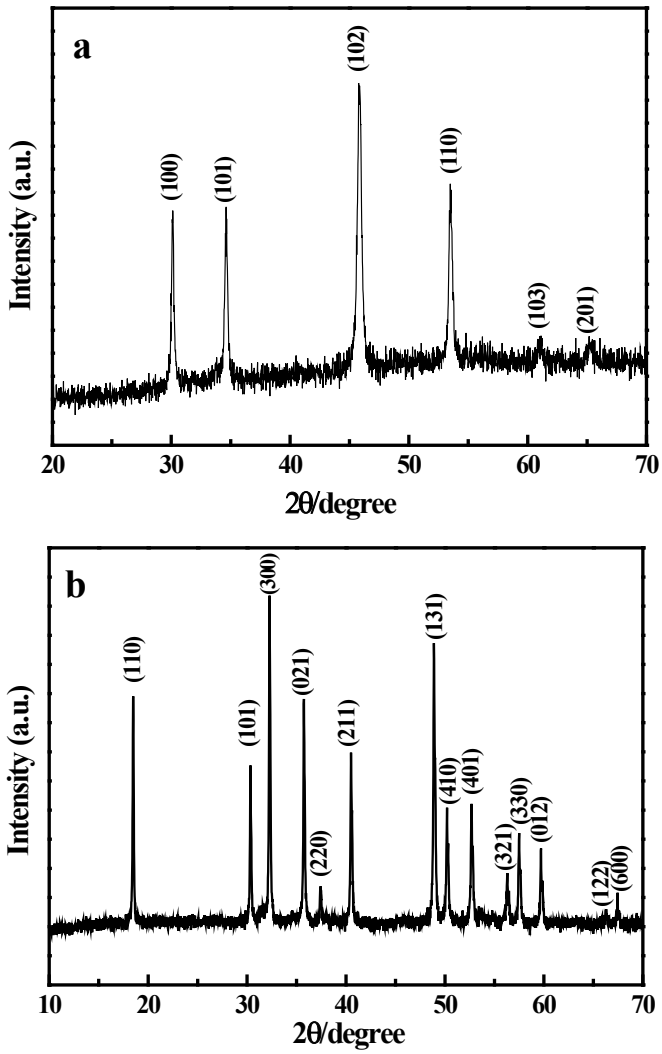


Figure S9 XRD patterns of the samples prepared with thiourea as the only sulfur source (a) at 160 °C for 12 h and (b) at 160 °C for 12 h and then 200 °C for 16 h.

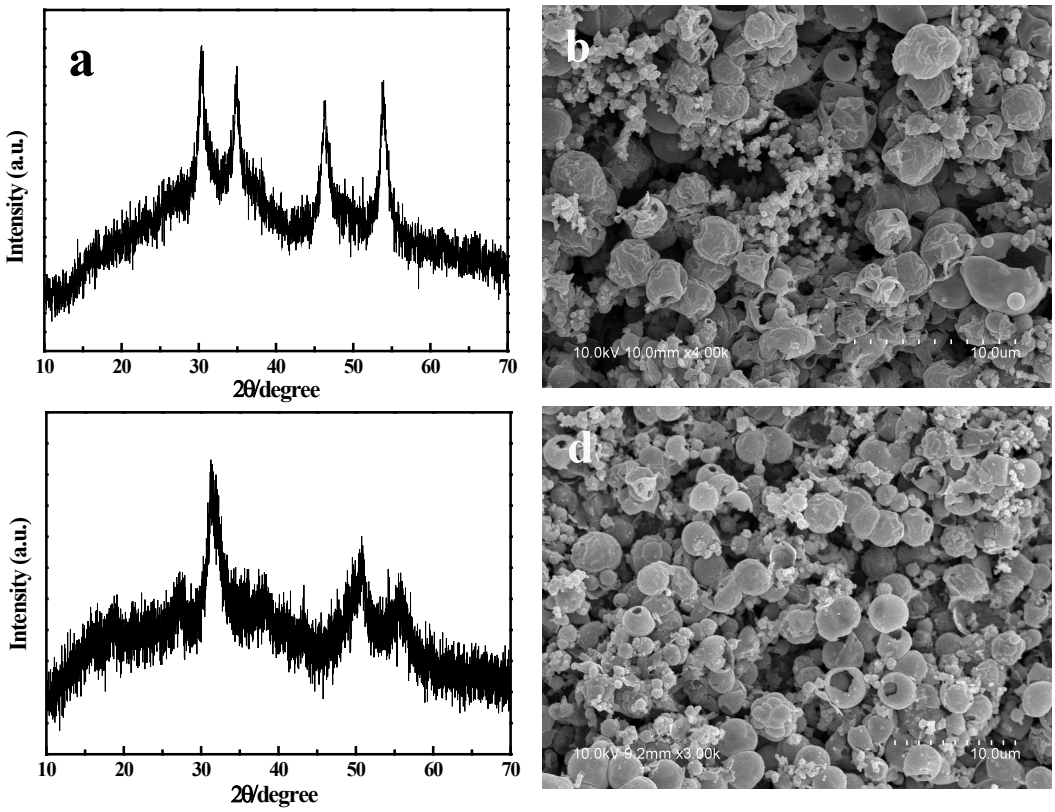


Figure S10 (a) XRD pattern and (b) SEM image of the sample prepared with glutathione as the only sulfur source under hydrothermal conditions at 160 °C for 12 h; (c) XRD pattern and (d) SEM image of the sample prepared with glutathione as the only sulfur source under hydrothermal conditions at 200 °C for 12 h.

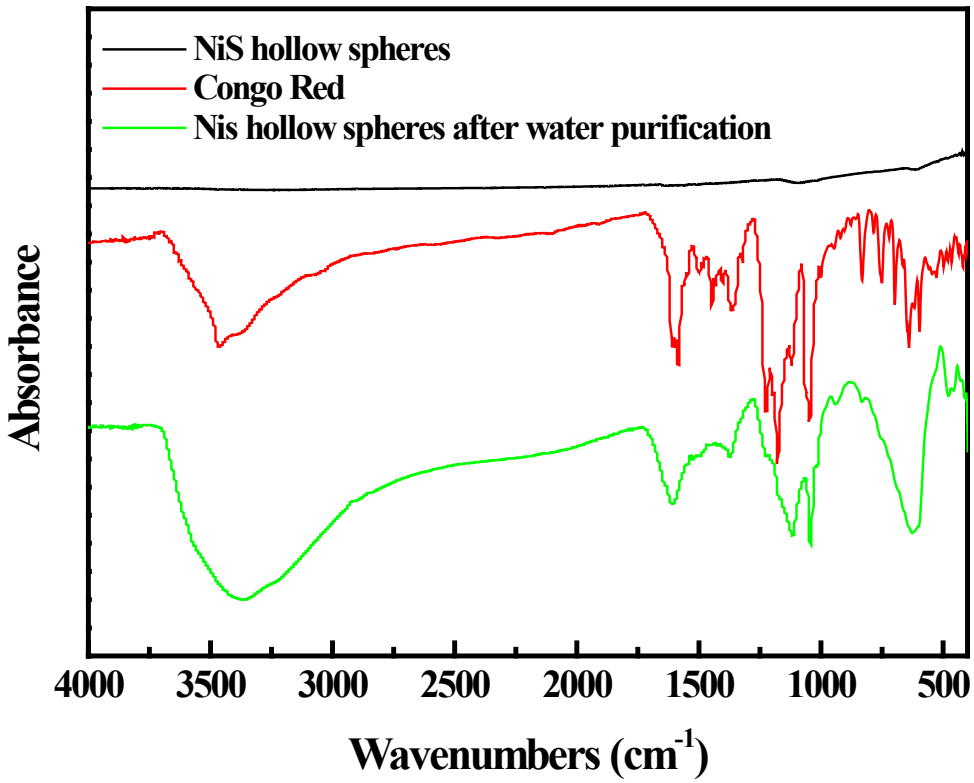


Figure S11 IR spectra of Congo red and the NiS hollow spheres before and after adsorption.