Supporting Information:

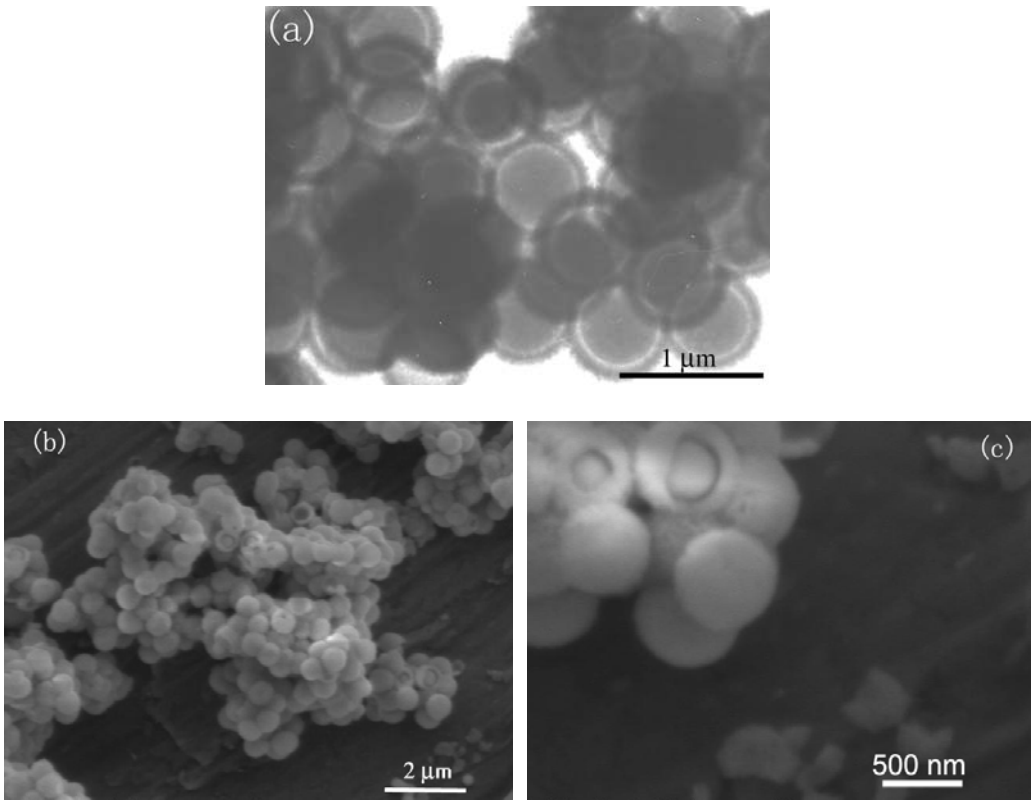

Figure S1. a) TEM and b-c) SEM images of silica-nickel silicate core-shell spheres, the broken silica-nickel silicate core-shell spheres can be seen clearly from c) image.

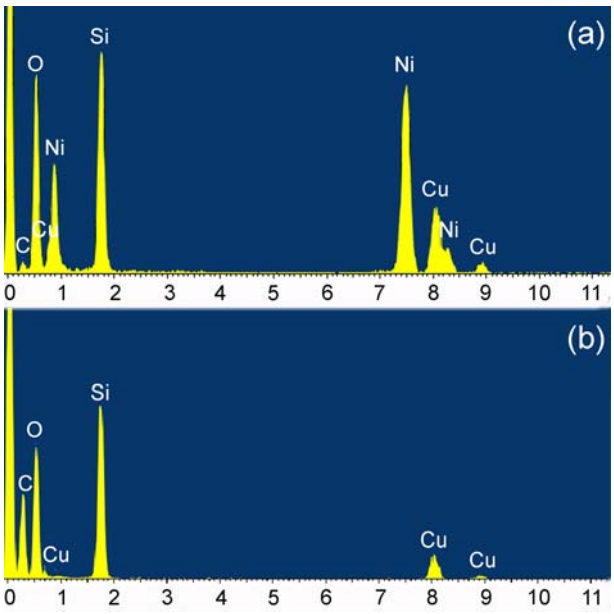

Figure S2. EDX spectra of a) nickel silicate hollow spheres and b) porous silica hollow spheres.

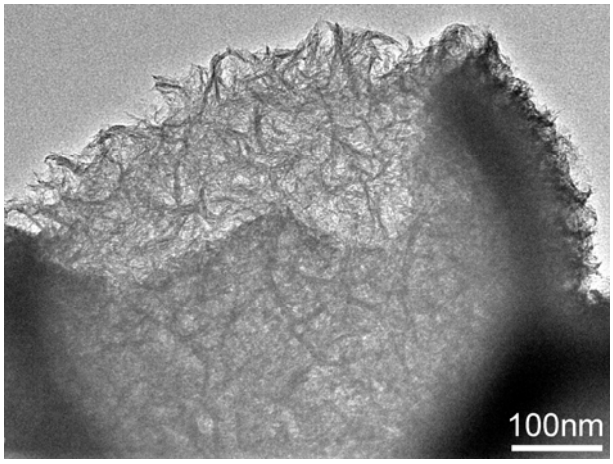

Figure S3. TEM image of a broken porous nickel silicate hollow sphere.

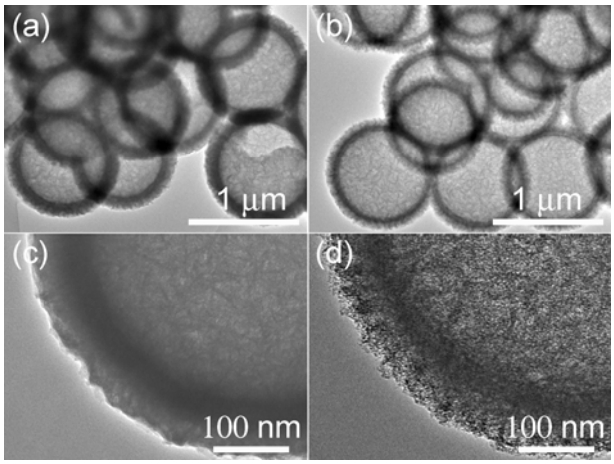

Figure S4. TEM images of (a) and (c) porous nickel silicate hollow spheres prepared from 800 nm silica colloidal spheres as template in nickel and ammonia solution (5 mmol $Ni(SO_4)_2$ and 10 mL $NH_3 \cdot H_2O$); (b) and (d) porous silica hollow spheres prepared by reducing from the above nickel silicate hollow spheres.

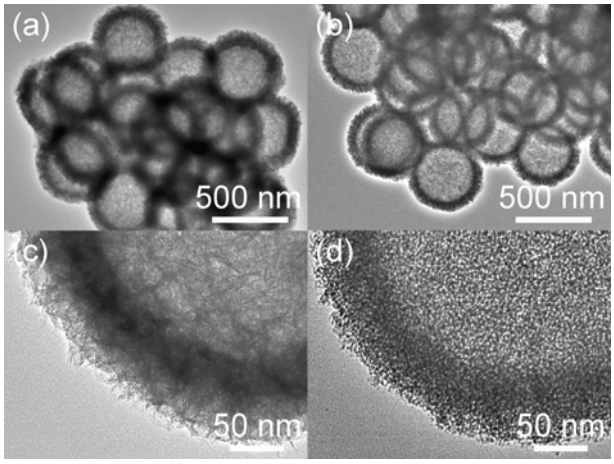

Figure S5. TEM images of (a) and (c) porous nickel silicate hollow spheres prepared from 400 nm silica colloidal spheres as template in nickel ions and ammonia solution (7.5 mmol $Ni(SO_4)_2$ and 10 mL $NH_3 \cdot H_2O$); (b) and (d) porous silica hollow spheres prepared by reducing from the above nickel silicate hollow spheres.

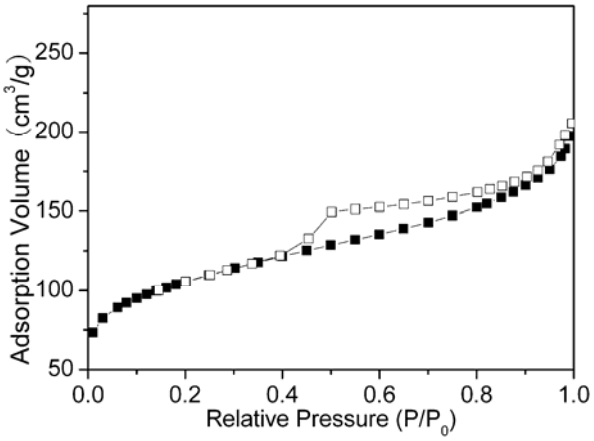

Figure S6. Nitrogen adsorption/desorption isotherm of the porous nickel silicate hollow spheres

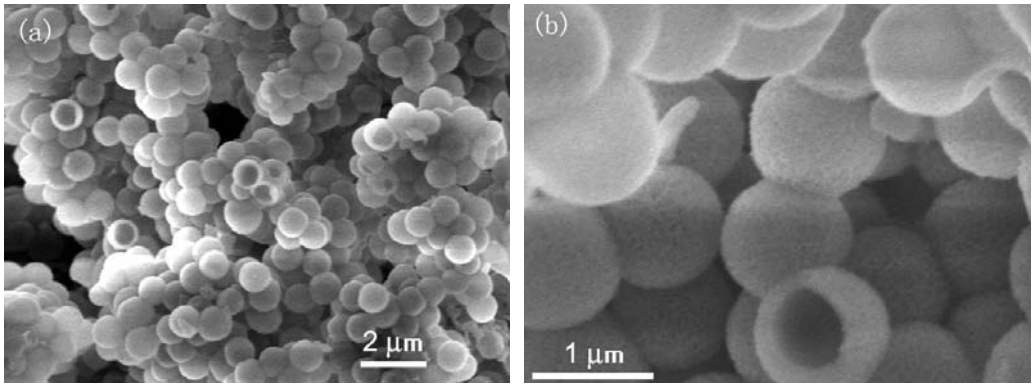

Figure S7. a) and b) SEM images of silica hollow spheres, the broken silica hollow spheres can be seen clearly from b) image.

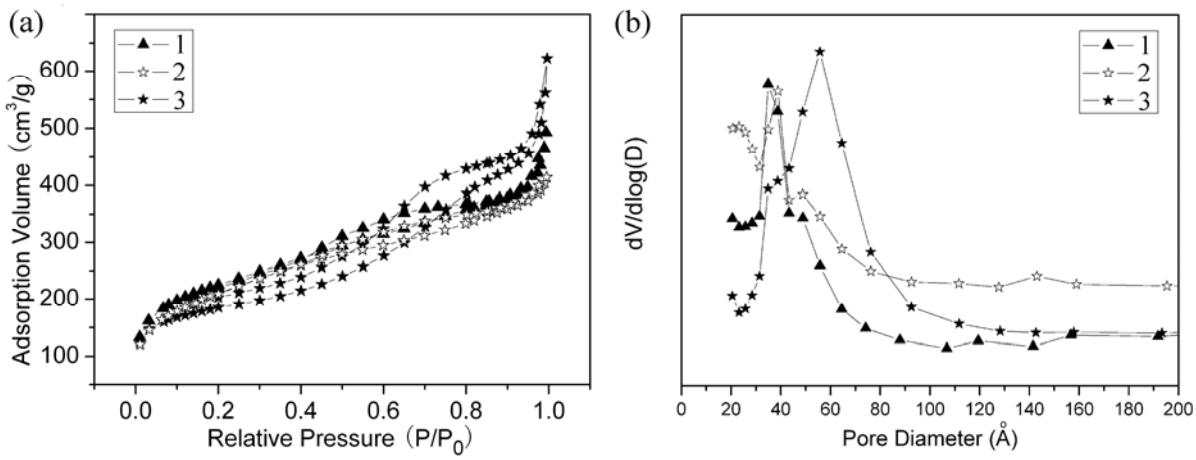

Figure S8. Porous silica hollow spheres obtained after treated in hydrochloric solution with different concentrations: (1) 4 M; (2) 2 M; (3) 1 M; a) Nitrogen adsorption/desorption isotherm and b) pore-size distribution curves obtained from the corresponding desorption data.