

## Electronic Supplementary Information (ESI):

# A facile template-free approach for the solid-phase synthesis of CoS<sub>2</sub> nanocrystals and their enhanced storage energy in supercapacitor

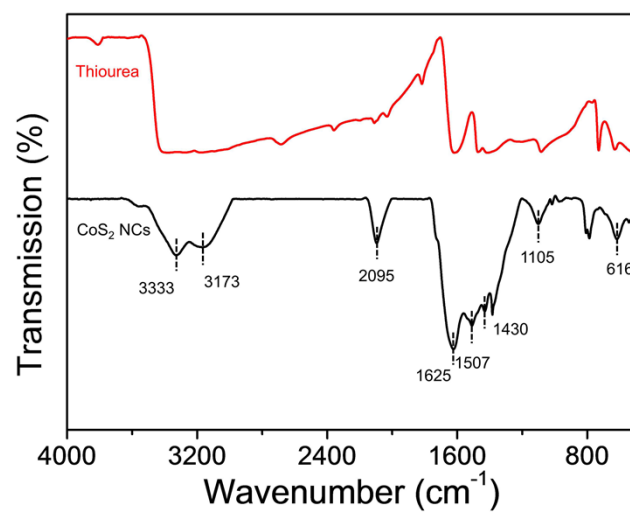
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**Electrochemical Tests.** For the electrochemistry tests, a three-electrode system was used. Hg/HgO electrode was employed as the reference electrode. A Pt plate was used as the counter electrode. The working electrode was fabricated by mixing the as-synthesized CoS<sub>2</sub> NCs (70 wt %), acetylene black (25 wt %) and poly (tetrafluorene ethylene) binder (5 wt %). The mixture was pressed on to nickel foam current-collectors to produce the electrode. The electric capacity properties of CoS<sub>2</sub> NCs were evaluated using cyclic voltammogram and galvanostatic charge-discharge methods (CHI 660C electrochemical analyzer, CH Instruments).



**Figure S1.** FT-IR spectrum of thiourea (up) and the CoS<sub>2</sub> at 4 h (down).

**Figure S2.** TGA curve of the CoS<sub>2</sub> in N<sub>2</sub> with a temperature ramp of 5 °C min<sup>-1</sup>.

**Figure S3.** Charge-discharge behavior of a CoS<sub>2</sub> prepared at 4 h and 24 h.

**Figure S4.** The CV curves of electrodes fabricated from CoS<sub>2</sub> at 24 h (electrolyte: 2 M KOH) at various scan rates: 5, 10, and 50 mV s<sup>-1</sup>.