Electronic Supplementary Information (ESI)

One-step synthesis of $CoNi_2S_4$ nanoparticles for supercapacitor electrodes

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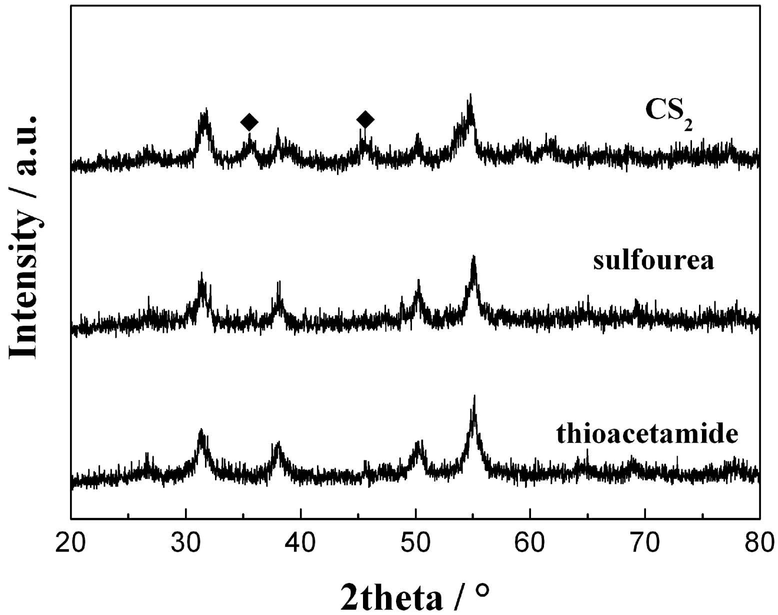

Fig. S1 XRD patterns of the as-prepared samples with different sulfur sources (◆: Impurity phase)

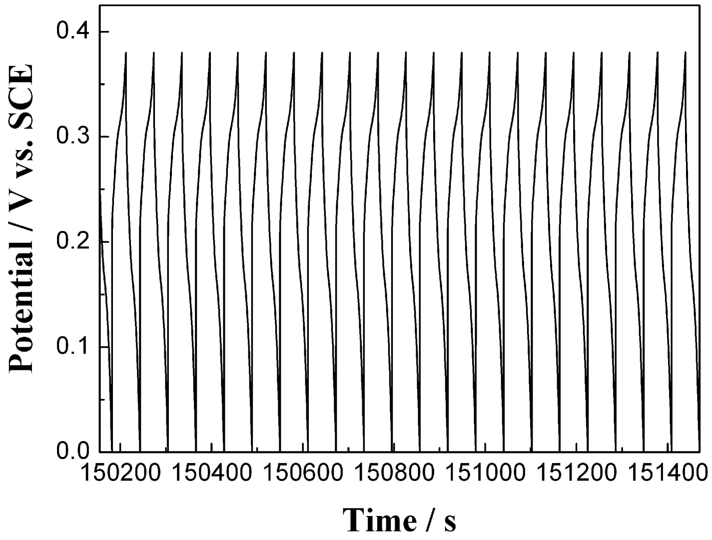

Fig. S2 The last 20 cycles of 2000 charge-discharge runs at 4 $A \cdot g^{-1}$ of the $CoNi_2S_4$ nanoparticle electrode

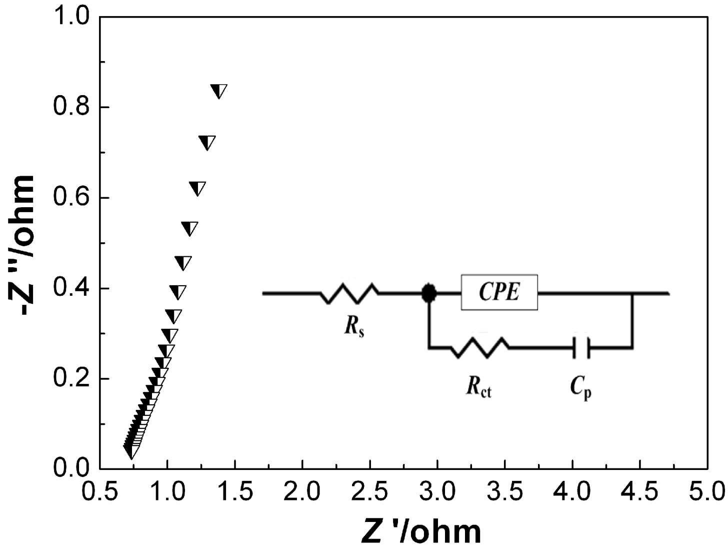

Fig. S3 Nyquist plots of experimental impedance data of the $CoNi_2S_4$ nanoparticle electrode (the insete is an equivalent circuit used to fit the impedance curve: a bulk system resistance *R*s, a charge-transfer *R*ct and a pseudocapacitive element *C*p from redox process of electrode materials, and a constant phase element (*CPE*) to account for the double-layer capacitance)

Table S1 Compared electrochemical performance between $CoNi_2S_4$ nanoparticles and other nanomaterials

Samples	Maximum specific capacitance	Energy density	References
$CoNi_2S_4$ nanoparticles	1169 $F \cdot g^{-1}$ at current densities of 1 $A \cdot g^{-1}$	28.2 $Wh \cdot kg^{-1}$ at a power density of 2358.4 $W \cdot kg^{-1}$	Present work
hierarchical carbon materials	327 $F \cdot g^{-1}$ at current densities of 1 $A \cdot g^{-1}$	22.22 $Wh \cdot kg^{-1}$ at a power density of 2500 $W \cdot kg^{-1}$	1
graphene paper	212 $F \cdot g^{-1}$ at current densities of 1 $A \cdot g^{-1}$	4.86$Wh \cdot kg^{-1}$ at a power density of 4998.9 $W \cdot kg^{-1}$	2
Co_3O_4 thin films	235 $F \cdot g^{-1}$ at a scan rate of 20 $mV \cdot s^{-1}$	4.0 $Wh \cdot kg^{-1}$ at a power density of 1330 $W \cdot kg^{-1}$	3
NiO nanoparticles	243 $F \cdot g^{-1}$ at current densities of 1 $A \cdot g^{-1}$	No provided	4

References:

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