

Influence of transition metals (Cu and Co) on the carbon-coated nickel sulfide used as positive electrode material in hybrid supercapacitor device

Souvik Ghosh, Aparna Paul, Prakas Samanta, Bhau Landge, Sanjib Kumar Mandal, Sangam Sinha, Gour Gopal Dutta, Naresh Chandra Murmu and Tapas Kuila

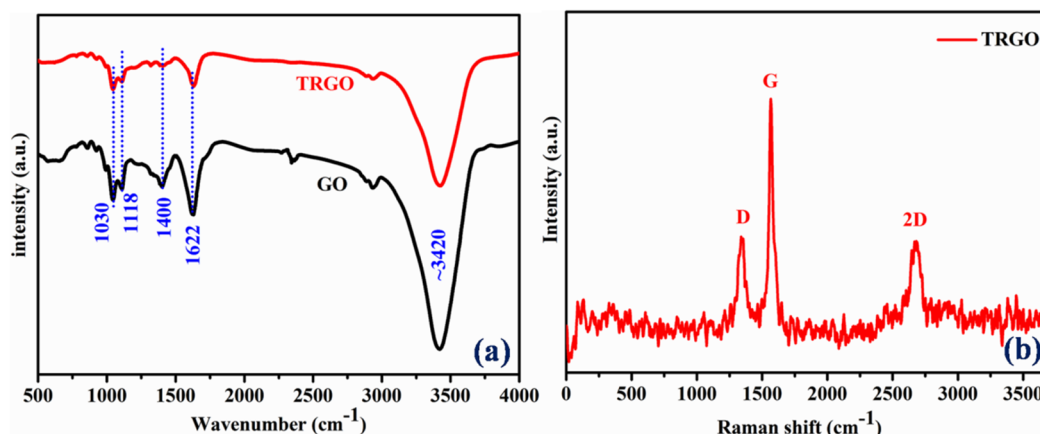


Figure S1. (a) FTIR spectra of GO and TRGO (b) Raman spectra of TRGO.

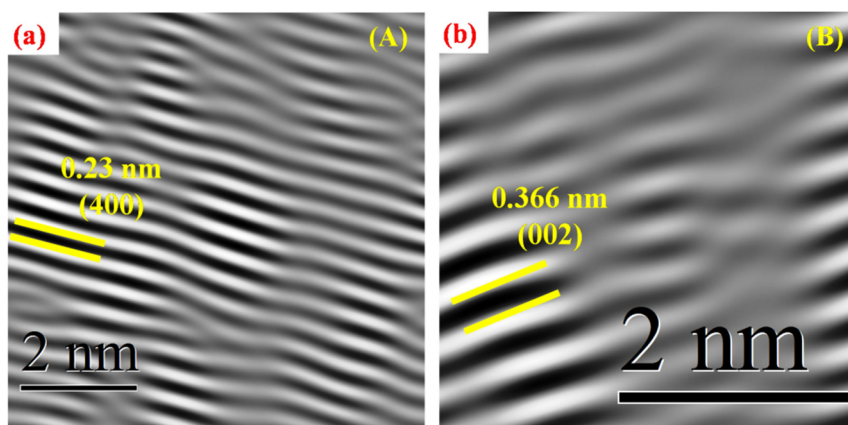


Figure S2. (a,b) IFFT pattern of [A] and [B] regions, respectively of figure 2a.

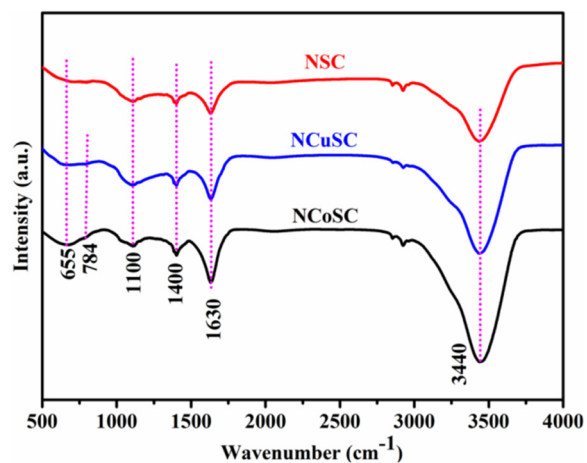


Figure S3. FTIR spectra of NSC, NCuSC and NCoSC electrodes.

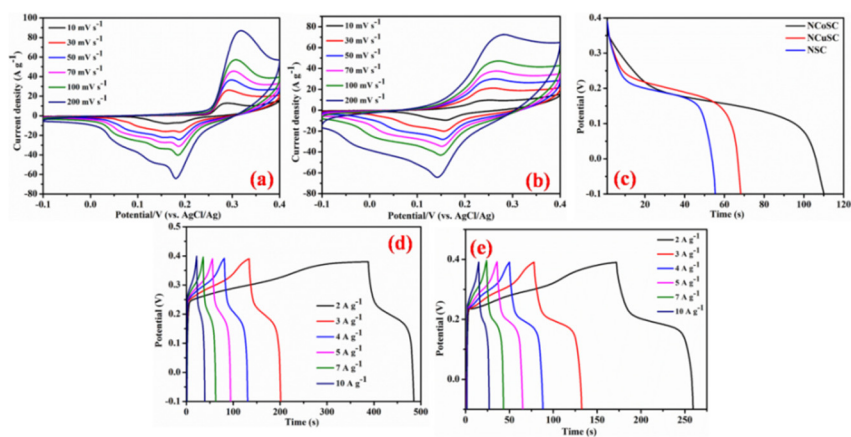


Figure S4. (a,b) CV curves of NSC and NCuSC electrodes at different scan rates, respectively (c) Comparable discharge plots of NSC, NCuSC and NCoSC electrodes at 3 A g⁻¹ current density (d,e) GCD plots of NSC and NCuSC electrodes, respectively at different current density.

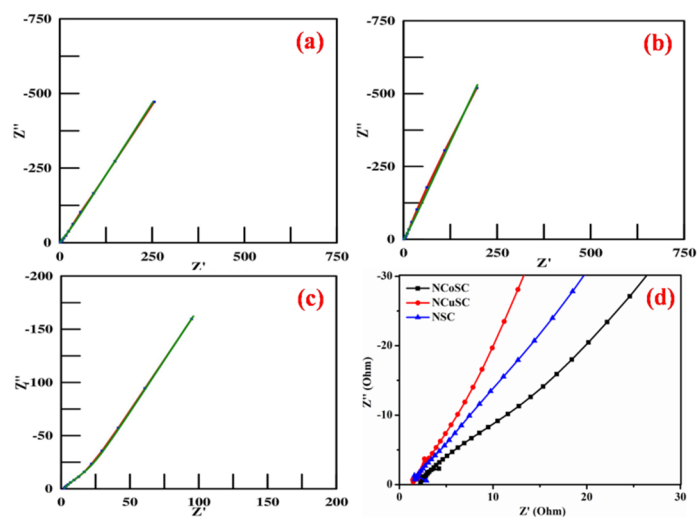


Figure S5. (a-c) Z-View fitted EIS spectra of NSC, NCuSC and NCoSC electrodes and (d) EIS spectra of NSC, NCuSC and NCoSC at high frequency range.

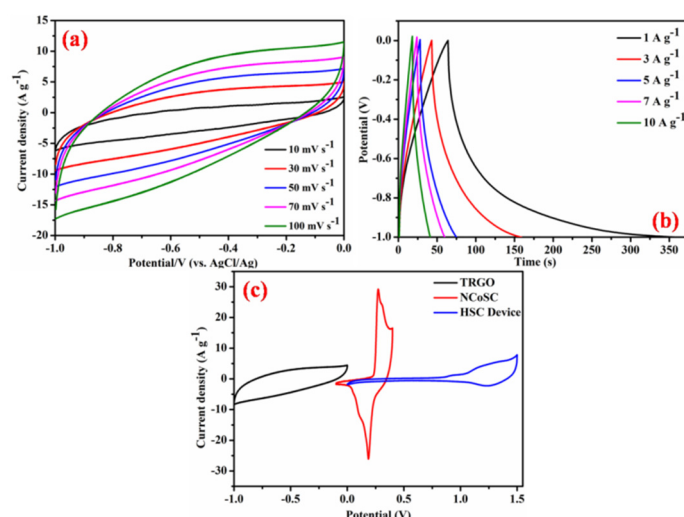


Figure S6. (a,b) CV and GCD plots of TRGO at different scan rate and current density, respectively (c) CV curves of positive, negative and fabricated device in their respective potential window at constant 30 mV s⁻¹ scan rate.

Table S1: Comparison of supercapacitor properties of some nickel based hybrid supercapacitor (HSC).

HSC device	Potential window (V)	Energy density (W h Kg ⁻¹)	Power density (kW Kg ⁻¹)	Reference
AC// Sn-doped Ni ₃ S ₂	1.4	29.13	0.7	1
RGO//Mo-doped nickel sulfide	1.5	38	0.45	2
porous carbon nanosheets// CoNi ₂ S ₄ @CC	1.5	37.2	0.75	3
Carbon aerogels//NiS	1.4	21.5	0.7	4
d-Ti ₃ C ₂ // Ni-S/1d-Ti ₃ C ₂	1.6	20	0.4	5
AC//NiCo ₂ Se ₄	1.6	24.03	1.055	6
RGO// NiCo ₂ S ₄ @NiCo ₂ O ₄	1.5	32	0.375	7
RGO@CFC// Ni _{0.1} Co _{0.9}) ₉ Se ₈ @CFC	1.5	17	3.1	8
AC//((Ni _{0.33} Co _{0.67})Se ₂	1.6	29.1	0.8	9
TRGO//NiCo ₂ S ₄ @C	1.5	38.8	1.3	This Work

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