Supplementary Material

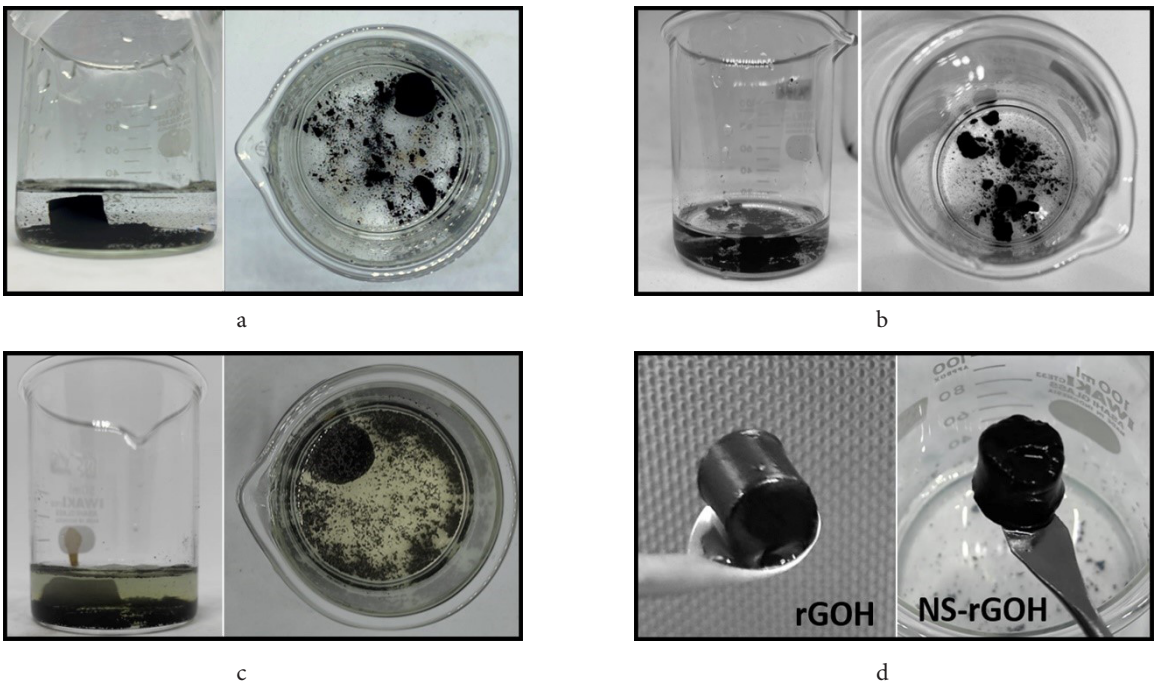


Fig. S1. (Color online) Photograph of rGOH (a), rGO (b), NS-rGOH (c) and the image of hydrogel structure (d).

The photograph of samples in various rGO samples is shown in Fig. S1. As we can see the product difference by different concentrations of GO suspension and addition of thiourea. The rGO sample was synthesized under a concentration of 5 mg/L during hydrothermal reaction result in the agglomeration structure, while a higher concentration of 8 mg/L hydrogel structure was obtained. After thiourea addition, we can see the hydrogel structure was formed. A high concentration of thiourea was needed to keep the hydrogel structure still intact, while further addition of thiourea might destroy the hydrogel structure. This might be related to the optimum thiourea concentration which results in structural bonding with a water molecule to make a stable hydrogel structure.

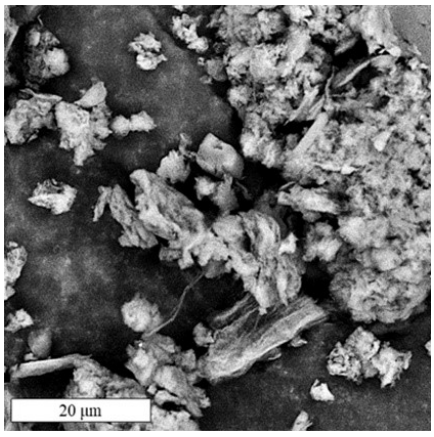
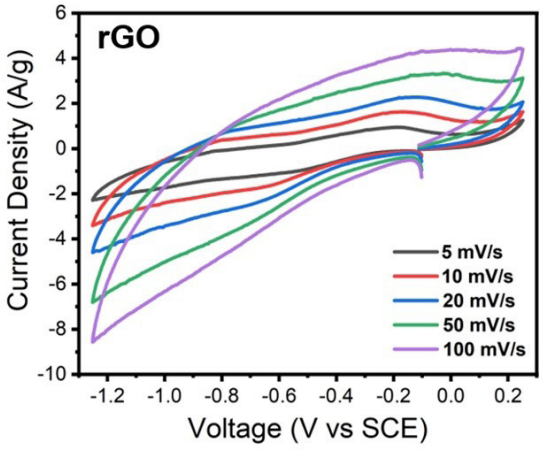


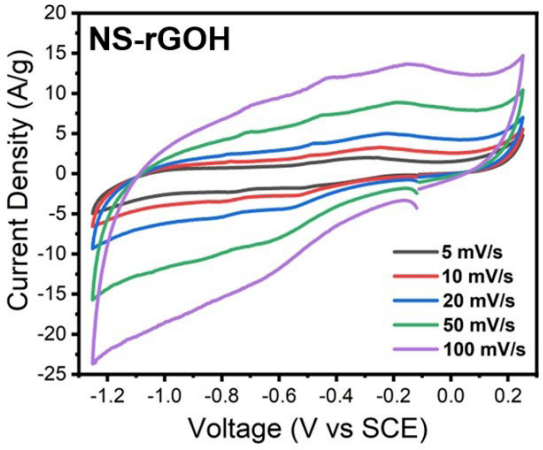
Fig. S2. SEM image of rGO sample.

Table S1. XRD peak position, calculated interlayer spacing, and I_D/I_G ratio of each sample.

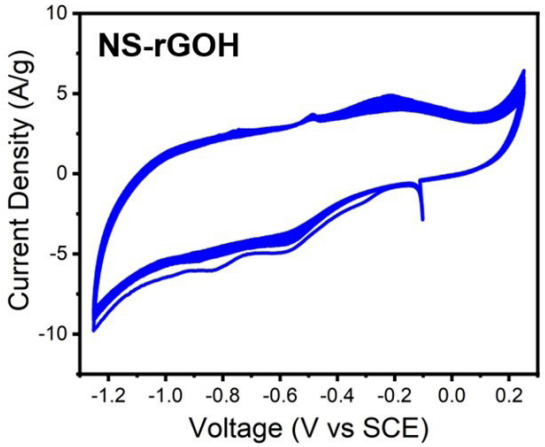
Sample	2θ (°)	$d_{spacing}$ (nm)	I_D/I_G
Graphite	26.58	0.3351	0.152
GO	10.61	0.8331	0.944
rGO	25.17	0.3535	1.006
rGOH	25.78	0.3453	1.019
NS-rGOH	24.36	0.3651	1.012



a

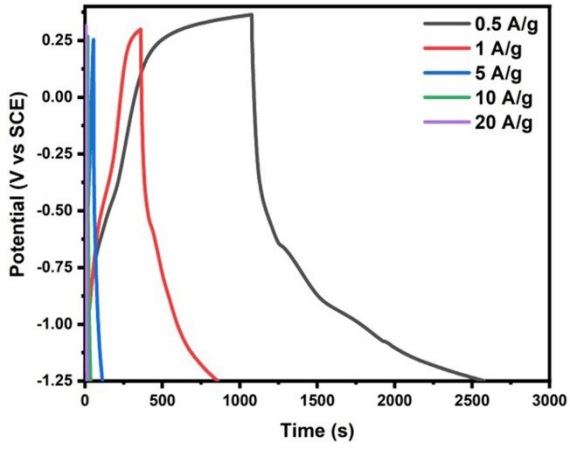


b

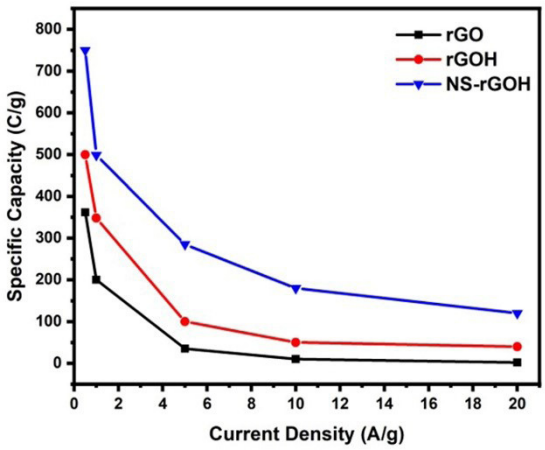


c

Fig. S3. (Color online) Cyclic Voltammetry curve of (a) rGO, (b) NS-rGOH in different scan rate, and (c) NS-rGOH for 10 cycles.

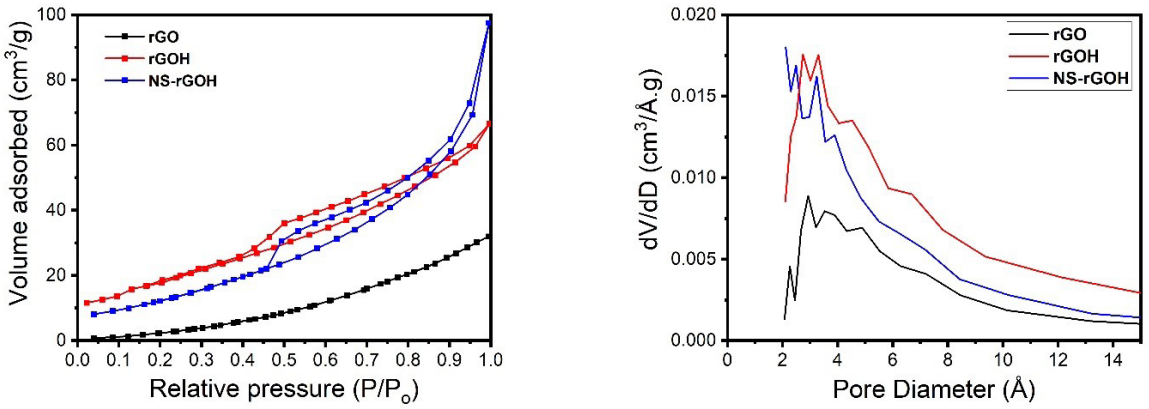


a



b

Fig. S4. (Color online) GCD Curves of NS-rGOH in various current density (a), specific capacity of rGO, rGOH and NS-rGOH in various current density (b).



a b

Fig. S5. (Color online) Nitrogen adsorption-desorption isotherms (a) and BJH pore size distribution of rGO, rGOH, and NS-rGOH.

Table S2. Specific capacitance value comparison with the recent publication.

No.	Materials	Current density (A/g)	Specific capacitance (F/g)	Ref.
1	NS-doped reduce graphene oxide	5	190	Present work
2	Fluorine doped graphene aerogel	0.5	279.8	[22]
3	NS doped graphene	1	212	[26]
		10	162	
4	Graphene nanosheet electrodes by phosphoric acid activation	0.1	244.6	[36]
		10	201.5	
5	Interconnected mesoporous carbon sheets	0.05	242	[37]
		20	194	
6	Nitrogen doped graphene aerogels	0.2	223	[38]
7	Boron doped graphene nanosheet	1	113	[23]
8	Nitrogen doped rGO	5	151	[20]
		0.5	197	
9	N, S doped activated hydrothermal carbons	0.25	264	[39]

References

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