Electronic Supplementary Material (ESI) for New Journal of Chemistry
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Electronic Supplementary Information (ESI)

Superior One-pot Synthesis of Doped Graphene Oxide Electrode for High Power Density Supercapacitor

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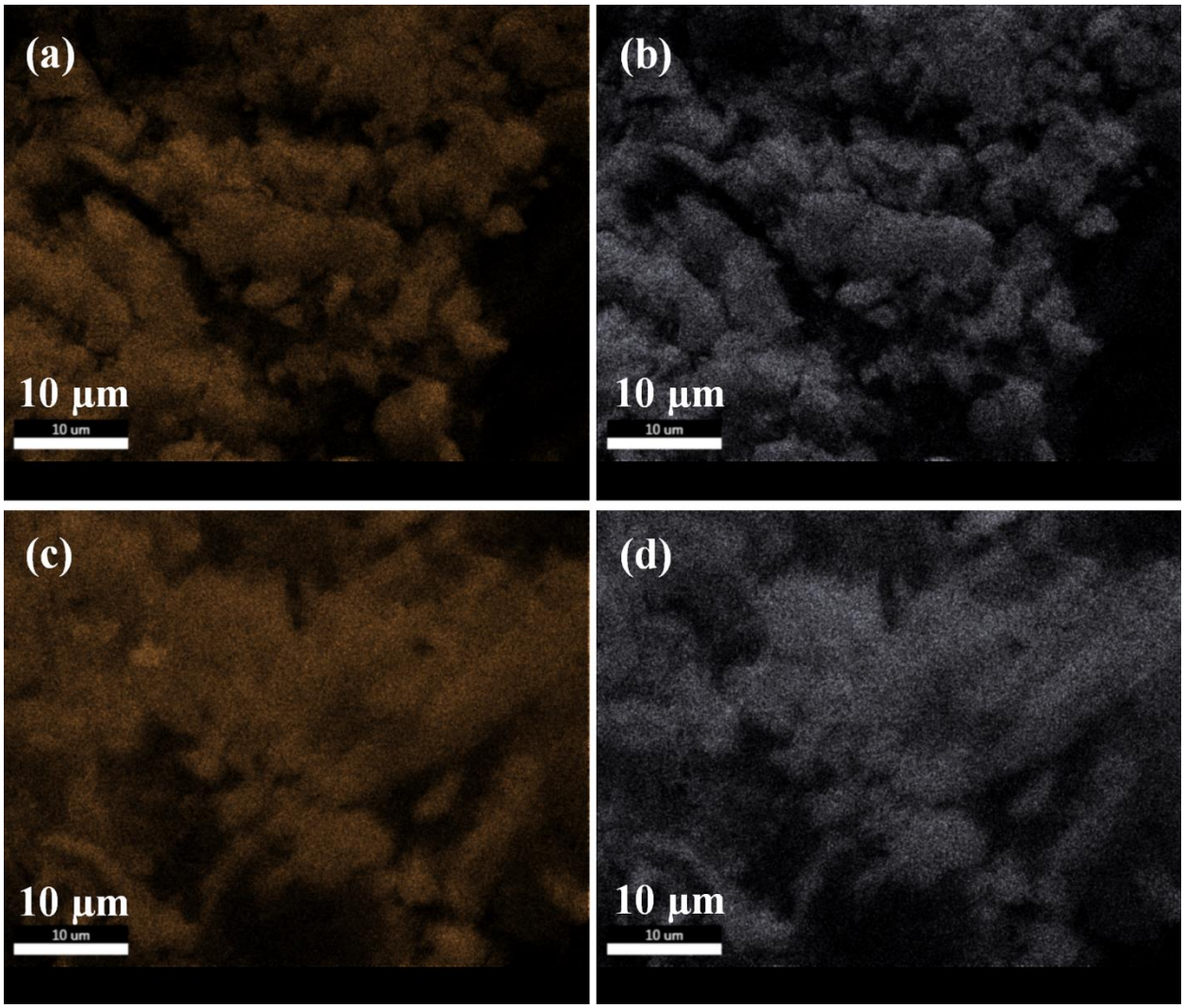

Figure S1. FESEM elemental compositions mapping images of GO and rGO (carbon (a and c) and oxygen (b and d)).

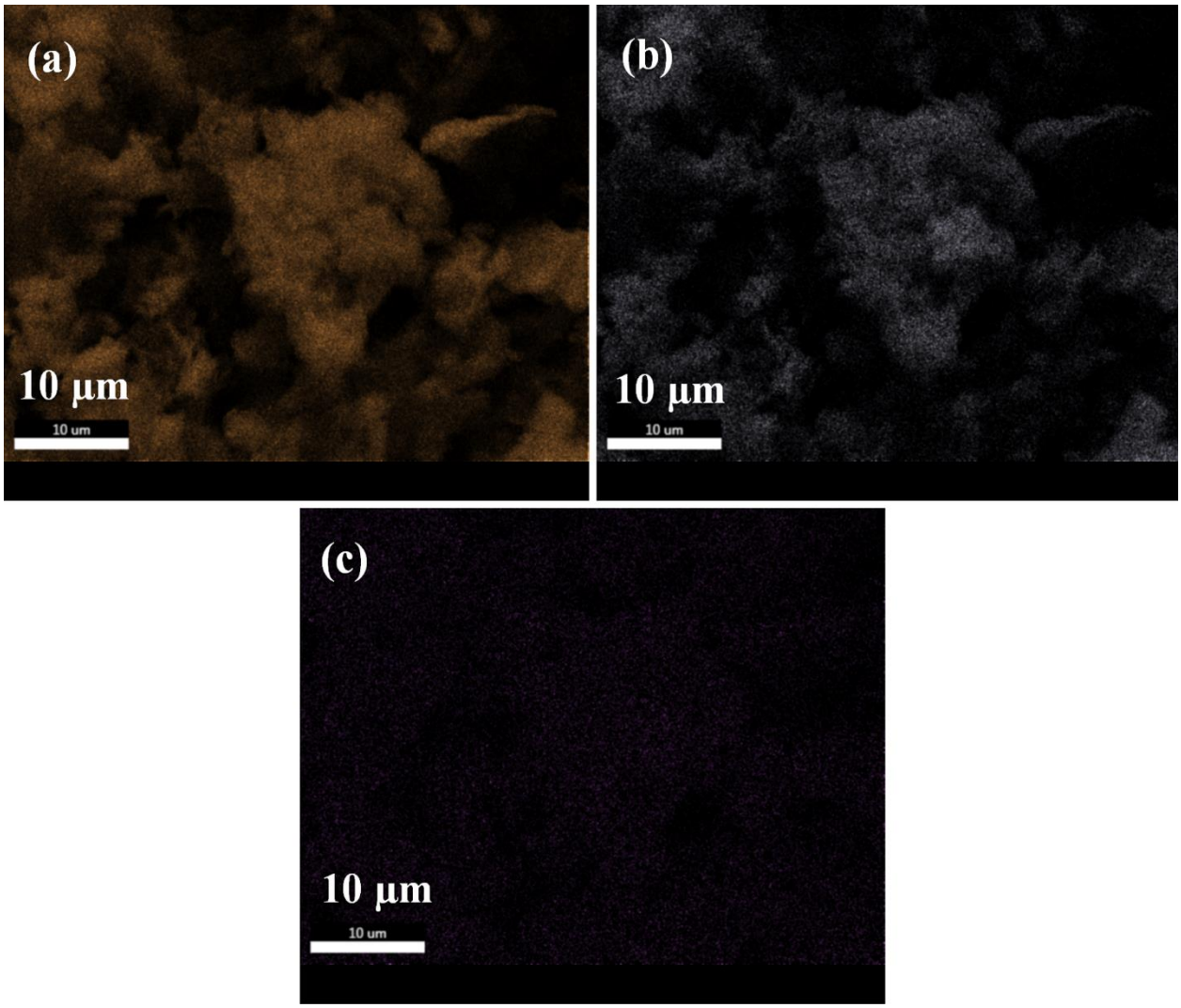

Figure S2. FESEM elemental compositions mapping images of S-rGO (carbon (a), oxygen (b), and sulfur (c)).

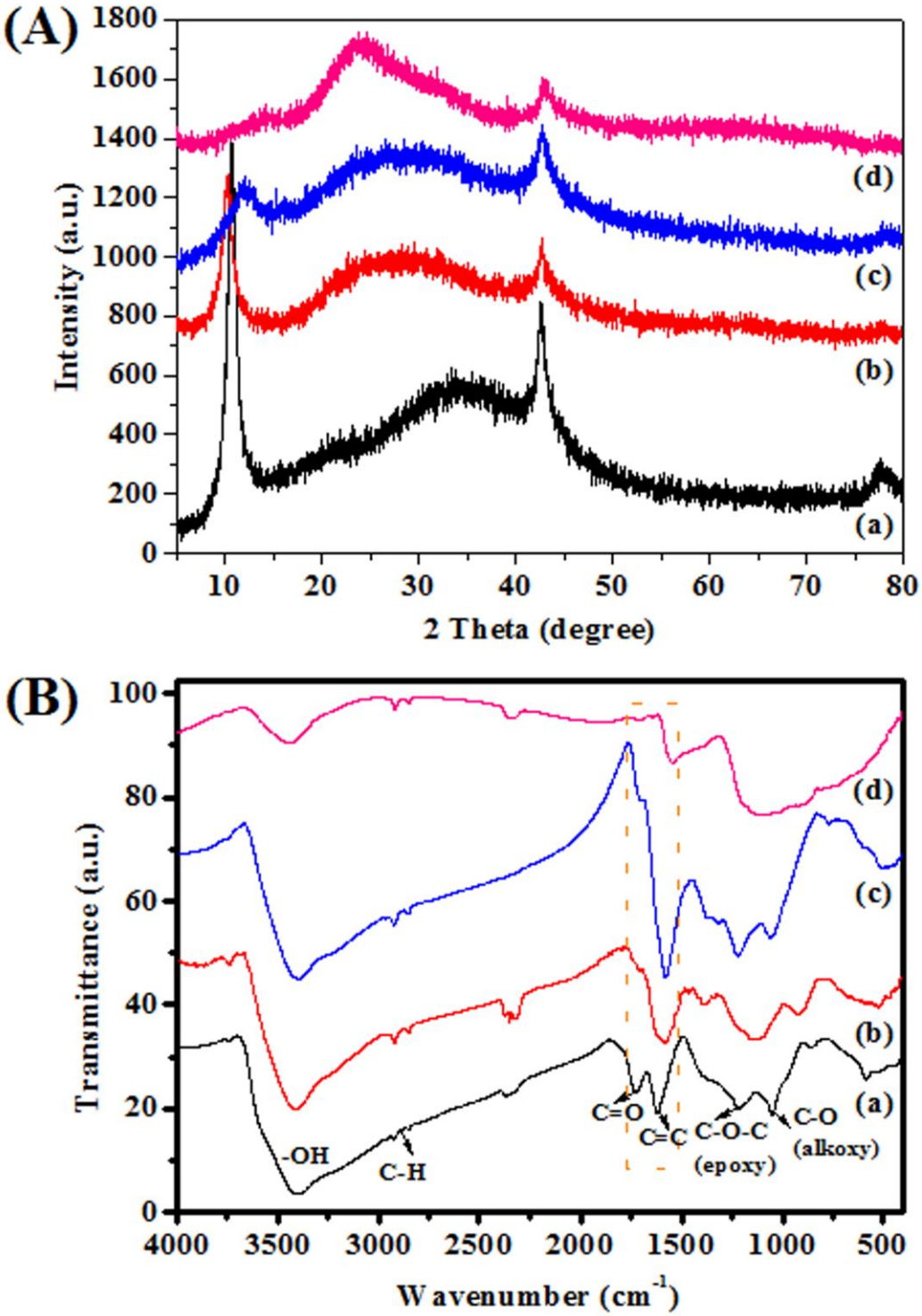

Figure S3. (A) XRD patterns and (B) FTIR spectra of GO (a), rGO (b), S-rGO (Na_2S) (C), and S-rGO (Na_2S+$NaBH_4$) (d), respectively.

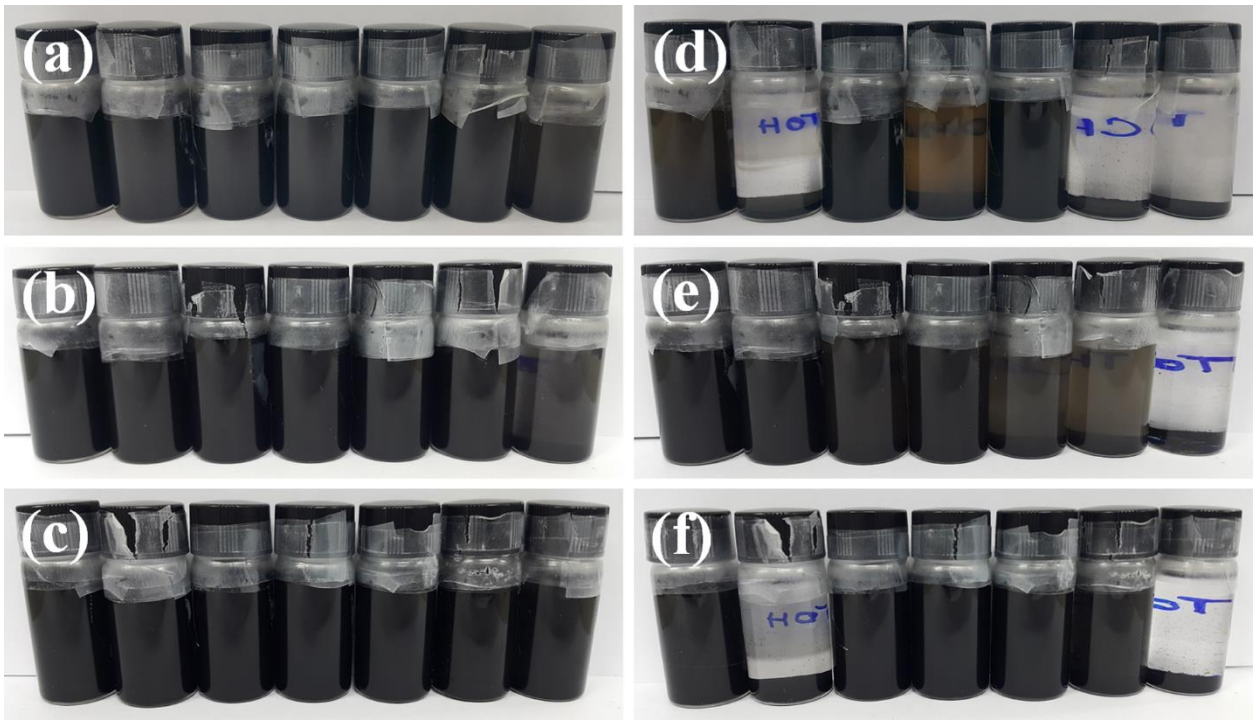

Figure S4. The stability of (a) GO, (b) rGO, and (c) S-rGO suspensions after sonication in various solvents (from left to right (deionised water, ethanol, dimethylacetamide, dimethylformamide, tetrahydrofuran, chloroform, and toluene). (d-f) The stability of the suspensions after stored at dark condition for 1 day.

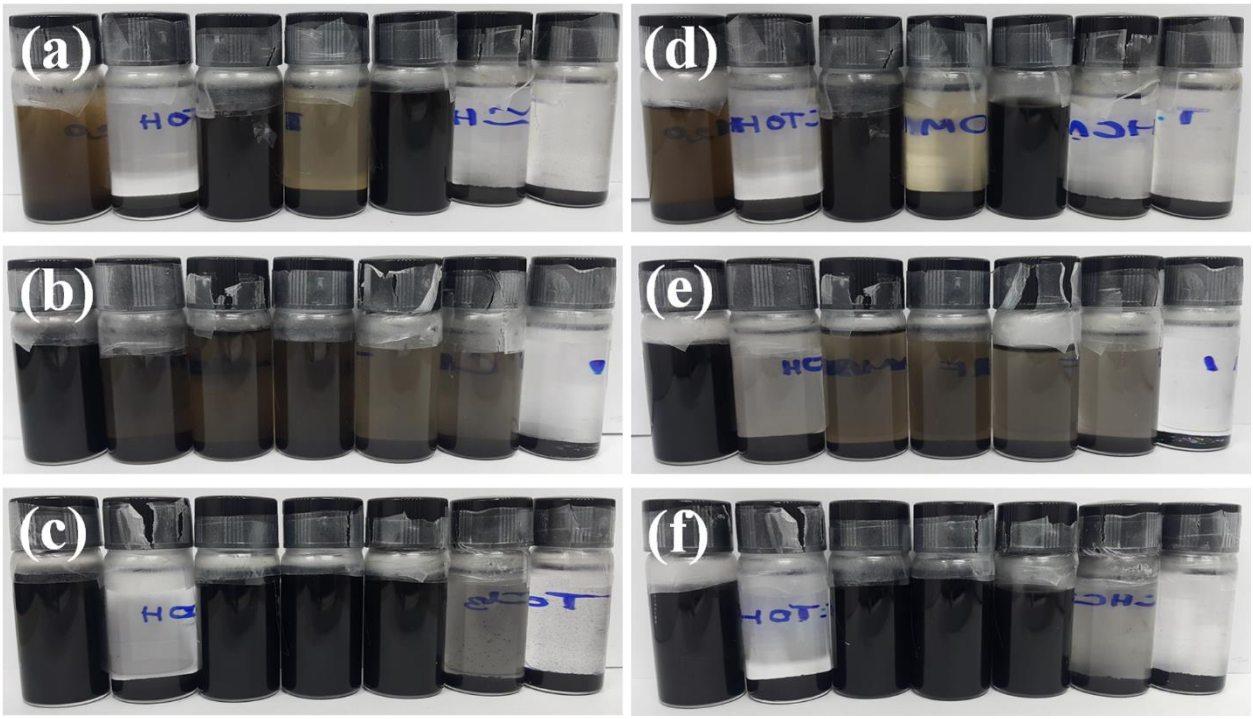

Figure S5. The stability of the suspensions GO, rGO, and S-rGO after stored at dark condition for 5 days (a-c) and 10 days (d-f).

Figure S6. The stability of the suspensions S-rGO after stored at dark condition for around 1 year in water, DMAC and DMF.

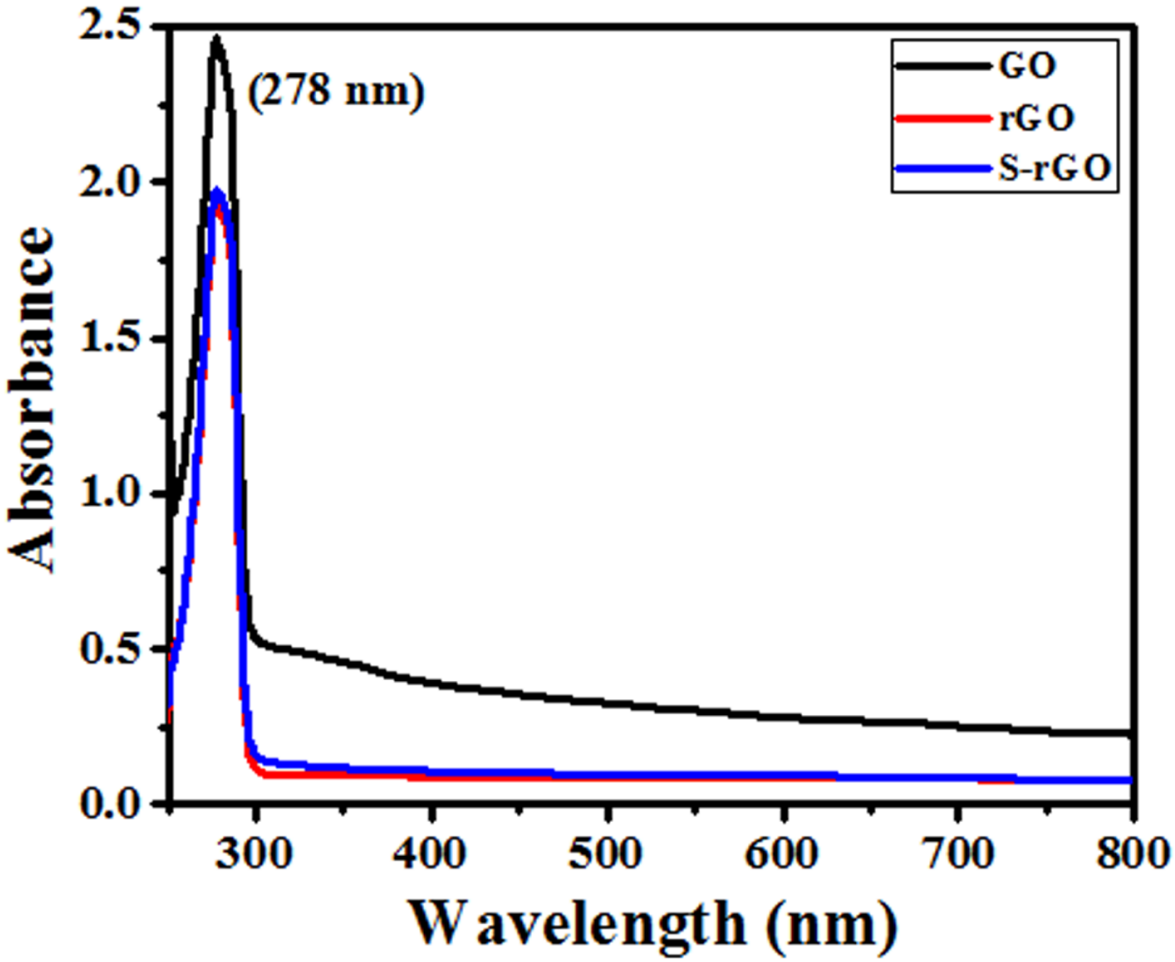

Figure S7. UV-visible spectra of the synthesised GO, rGO, and S-rGO suspensions in THF.

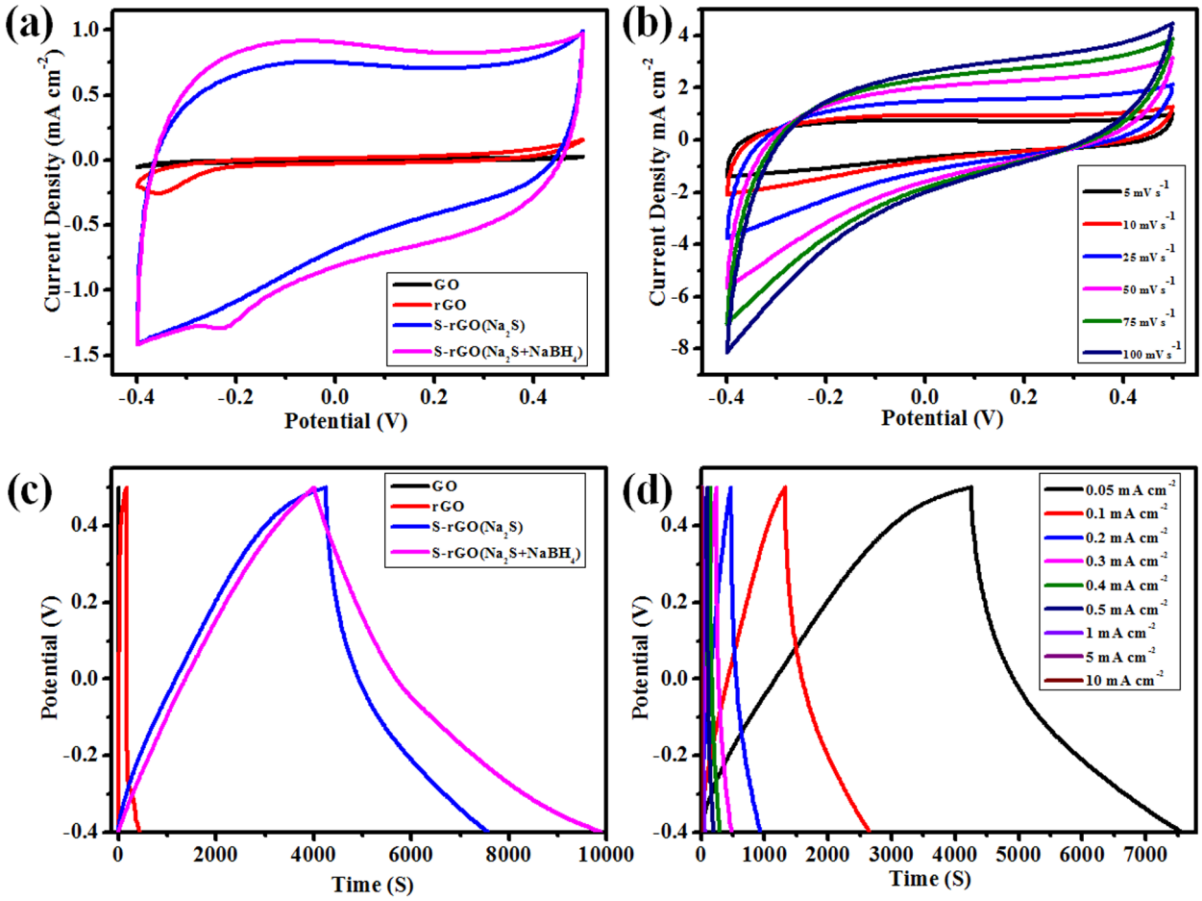

Figure S8. (a) CV graphs of GO, rGO, S-rGO (Na_2S), and S-rGO (Na_2S+$NaBH_4$) at 5 mV s-1 scan rate. (b) CV graph of S-rGO (Na_2S) at different scan rates. (c) Galvanostatic charge-discharge analysis of the four samples at the current density of 0.05 $mAcm^{-2}$, (d) CD analysis of S-rGO (Na_2S) sample at different current densities.

Table S1. XPS chemical composition values of GO, rGO, and S-rGO.

Name	GO (At. %)	rGO (At. %)	S-rGO (At. %)
C1s	65.67	75.75	84.75
O1s	34.33	24.25	14.85
S2p	-	-	0.4