Electronic Supplementary Material (ESI) for RSC Advances.


**Supporting Information**

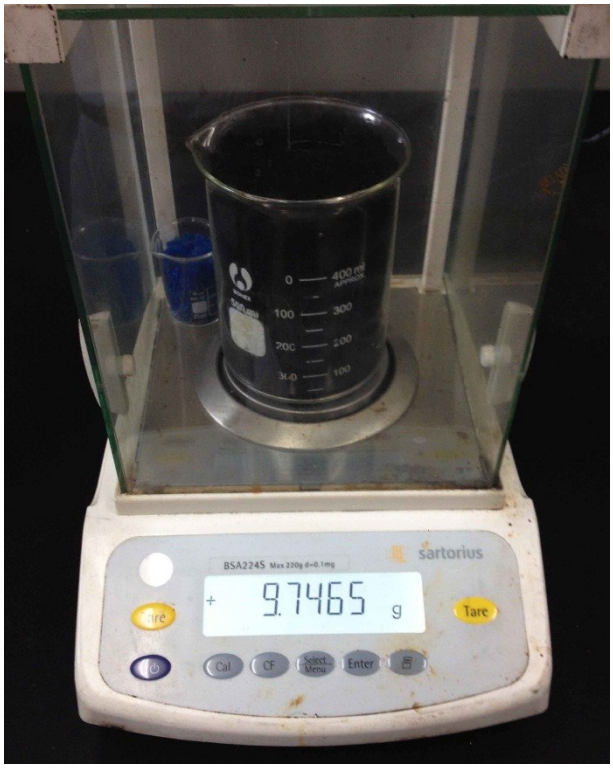


**Figure S1.** One photograph of large-scale reduced graphene oxide materials (9.7465 g, about 500 mL).

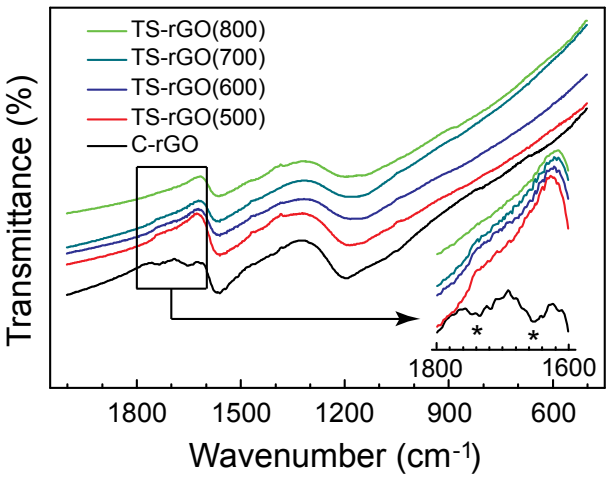


**Figure S2.** FT-IR spectra of C-rGO and TS-rGO prepared at various temperature from 500°C to 800°C.

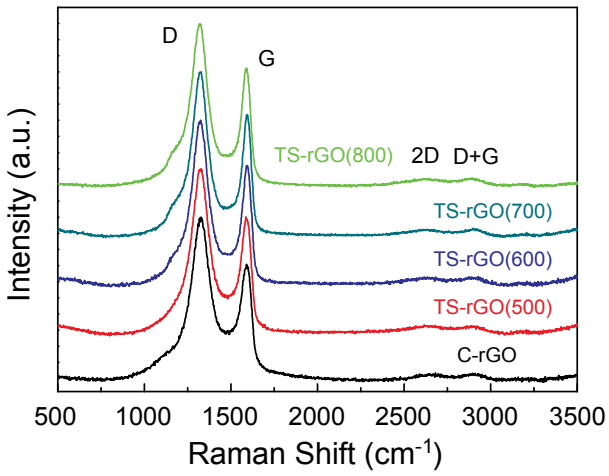


**Figure S3.** Raman spectra of C-rGO and TS-rGO prepared at various temperature from 500°C to 800°C.

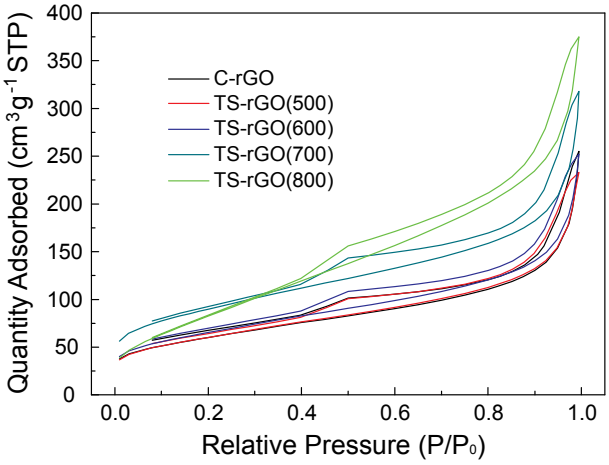


**Figure S4.** $N_2$ adsorption/desorption isotherms of C-rGO and TS-rGO materials prepared at various temperature from 500°C to 800°C.

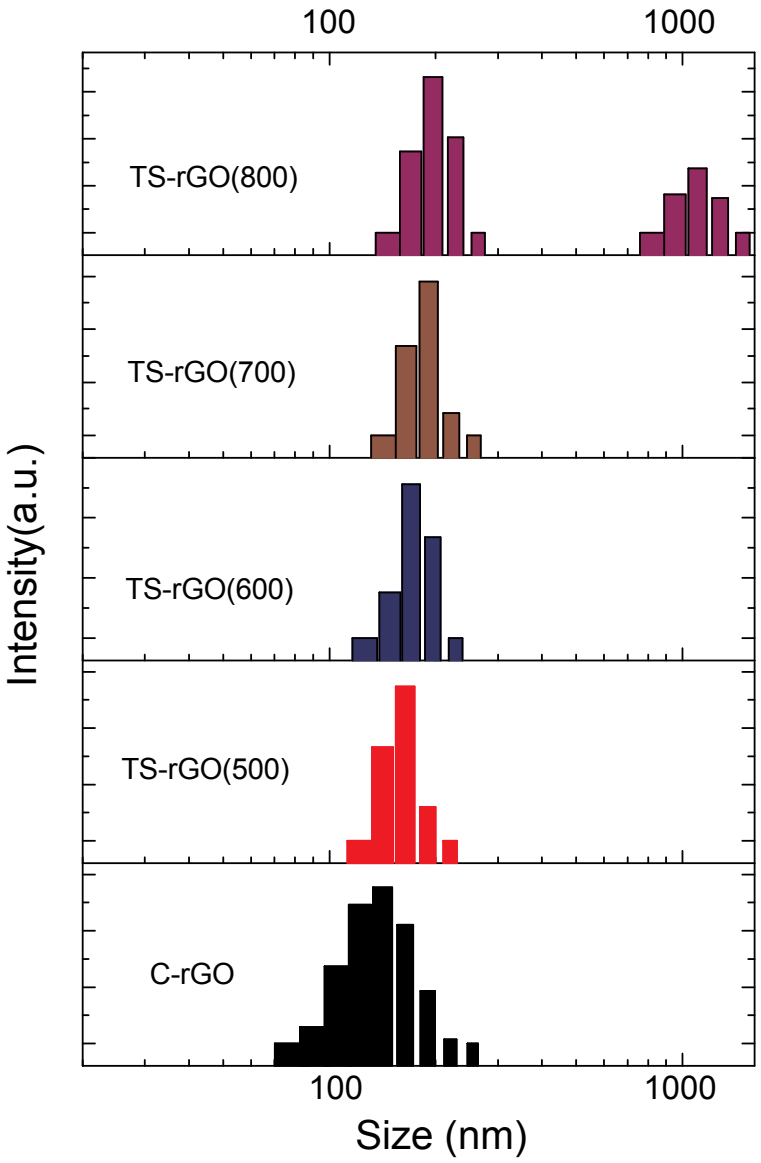


**Figure S5.** Particle size distribution of C-rGO and TS-rGO materials prepared at various temperature from 500°C to 800°C.

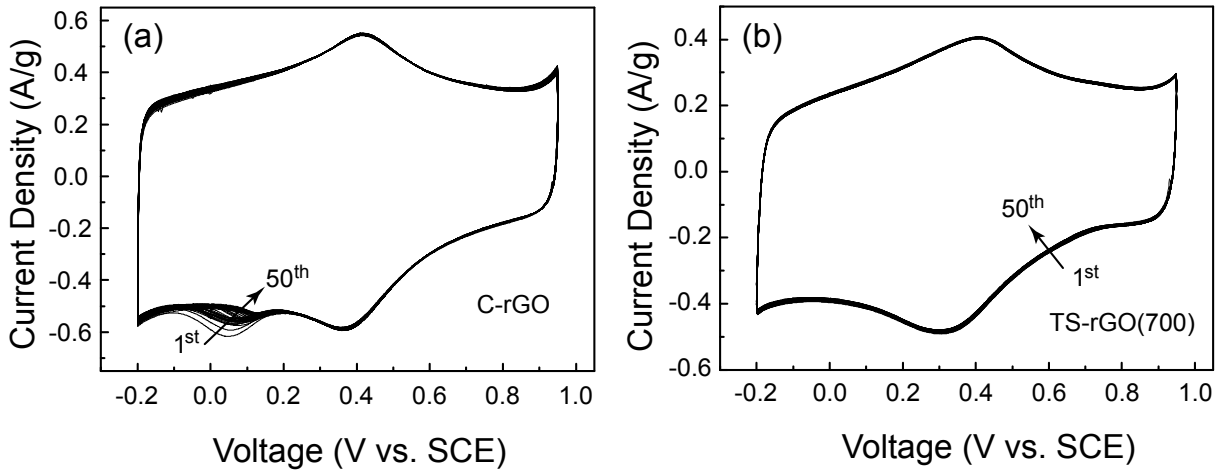


**Figure S6.** Comparison of CV curves for C-rGO and TS-rGO(700) at a scan rate of 2 mV/s.

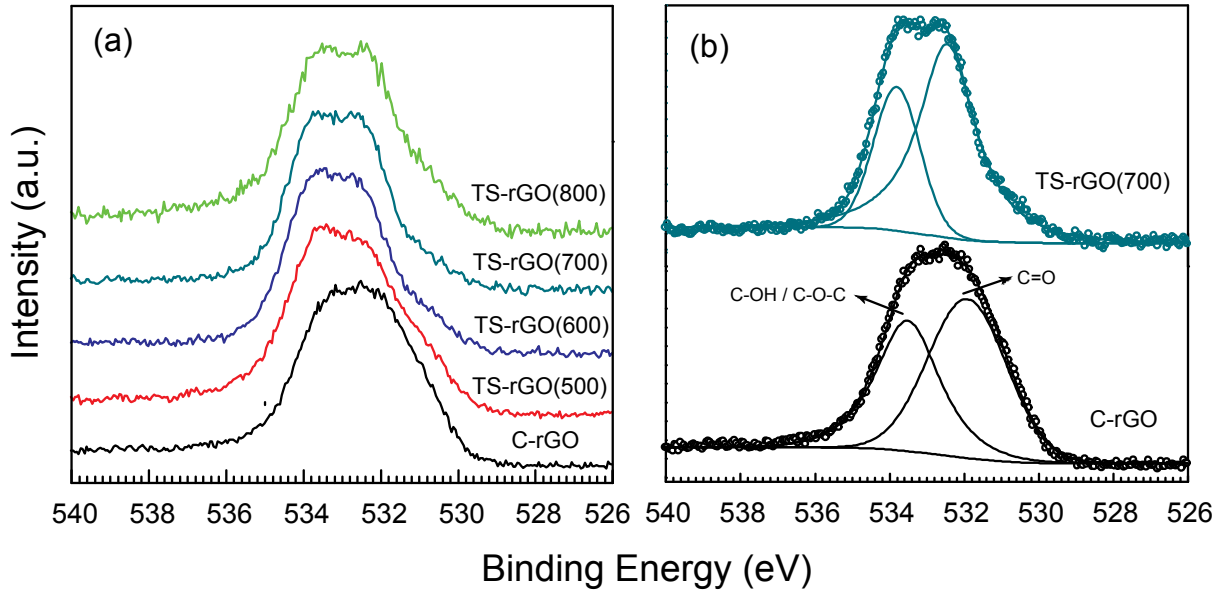


**Figure S7.** (a) Comparisons of O1s XPS profiles of C-rGO and TS-rGO materials prepared at various temperature from 500°C to 800°C. (b) The experimental and fitted O1s XPS profiles of C-rGO and TS-rGO(700).

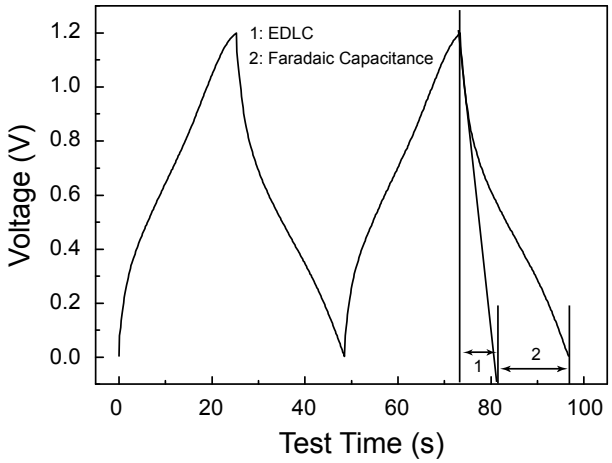


**Figure S8.** Galvanostatic charge/discharge curves of TS-rGO(700) material at a current density of 4A/g in 1 mol/L $H_2SO_4$ aqueous solution containing 0.1 mol/L $VO^{2+}/VO_3^-$ ions.

**Table S1** Intensity ratios of D-band to G-band in Raman spectra of C-rGO and TS-rGO materials.

| Samples | C-rGO | TS-rGO(500) | TS-rGO(600) | TS-rGO(700) | TS-rGO(800) |
|---|---|---|---|---|---|
| $I_D/I_G$ | 1.41 | 1.42 | 1.39 | 1.36 | 1.38 |