Supplementary Information

Tuning Hydrazine Reduction Parameters to Engineer Porous rGO Hydrogel Electrodes for High-Performance Supercapacitors

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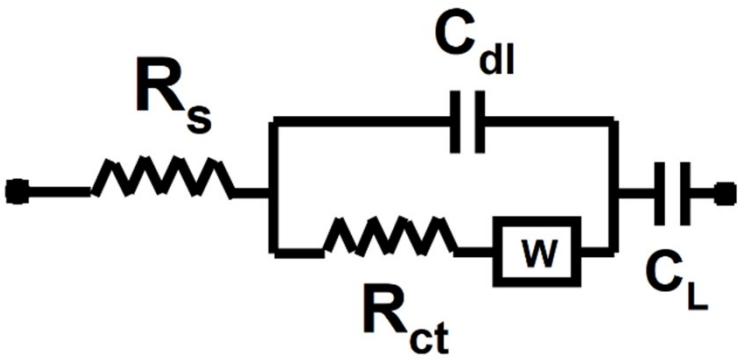

Randles Equivalent circuit= R_s+C_{dl}/(R_{ct}+W)/C_L

Figure S1. Modified Randles circuit used for impedance fitting, incorporating R_s(solution resistance), a parallel combination of $C_{dl}$and R_{ct}(double layer capacitance and charge transfer resistance), Warburg diffusion element (W), and an additional capacitance (C_L) representing interfacial film and low-frequency capacitive behavior.

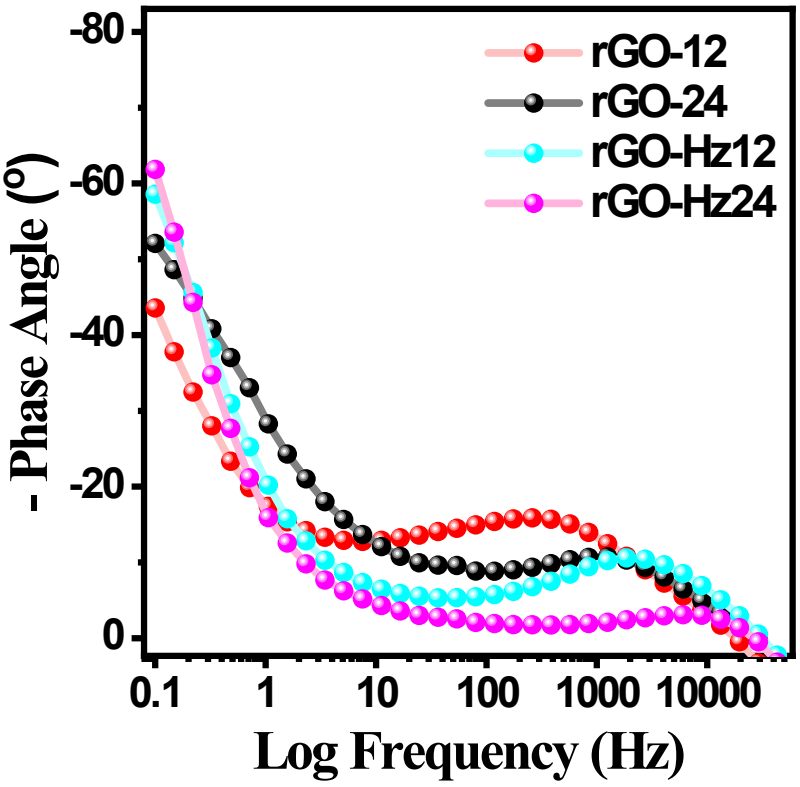

Figure S2. Bode phase angle plots (−phase angle vs. log frequency) of *rGO, rGO-24, rGO-Hz12,* and *rGO-Hz24* electrodes.

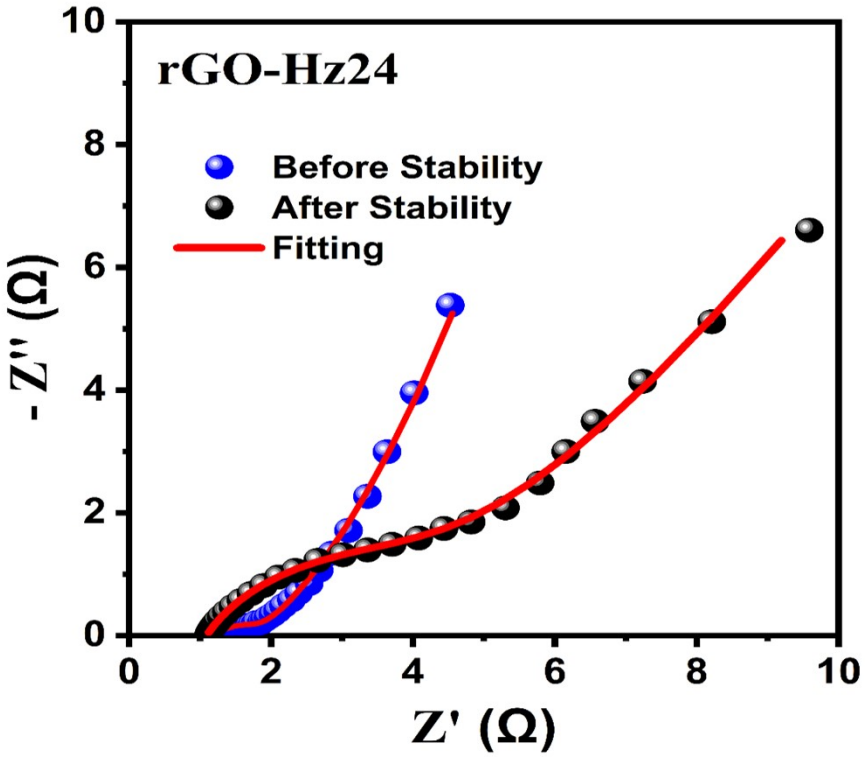

Figure S3. Nyquist plots of electrochemical impedance spectra (EIS) for *rGO-Hz24* electrode measured before and after stability cycling.