

Table S1. Elemental Composition (wt.%)

Sample	C%	H%	O%
C-200 °C	87.05	1.73	11.22
C-240 °C	88.33	1.94	9.73
C-280 °C	84.86	1.93	13.21
RS-240 °C_2	84.98	2.14	12.88
RS-240 °C_3	87.77	1.75	10.48
RS-240 °C_4	88.64	1.49	9.87

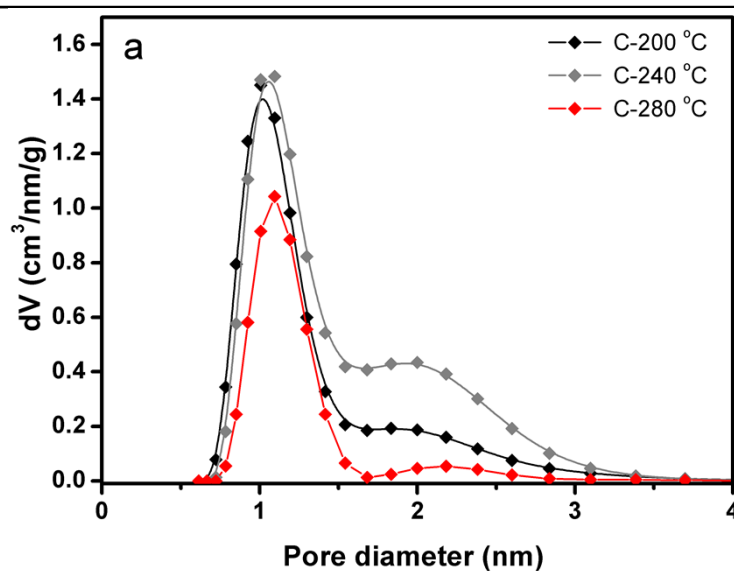


Figure S1. N₂ adsorption QSDFT pore size distribution of C-200 °C, C-240 °C and C-280 °C ACs.

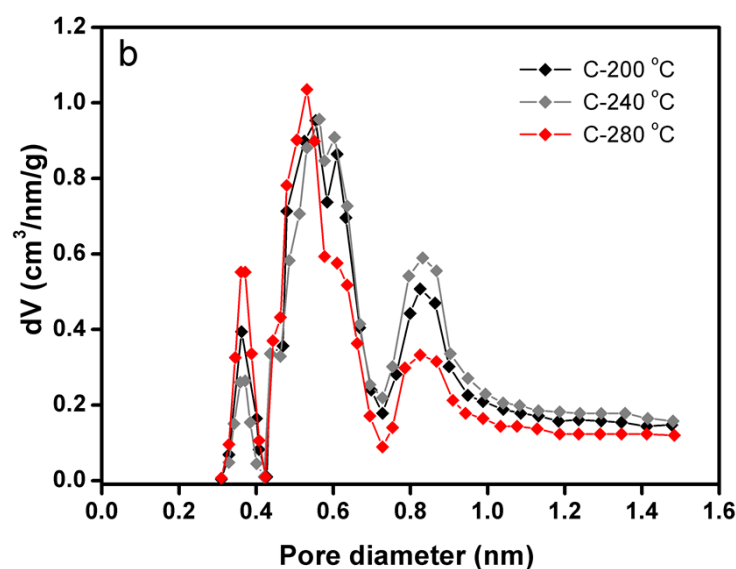


Figure S2. CO₂ NLDFT pore size distribution of C-200 °C, C-240 °C and C-280 °C ACs.

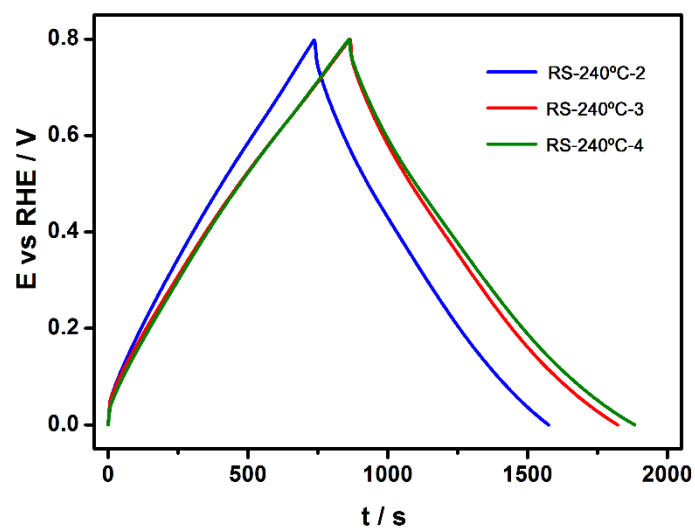


Figure S3. Galvanostatic charge/discharge curves for the activated carbons derived from rye straw at a current density of 250 mA g^{-1} in $0.5 \text{ M H}_2\text{SO}_4$. Three-electrode cell.

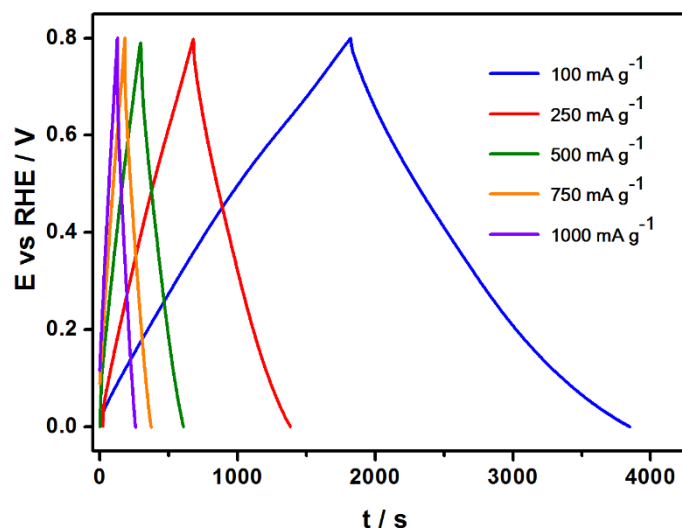


Figure S4. Galvanostatic charge/discharge curves for the RS-240°C-3 sample at different current densities in $0.5 \text{ M H}_2\text{SO}_4$. Three-electrode cell.

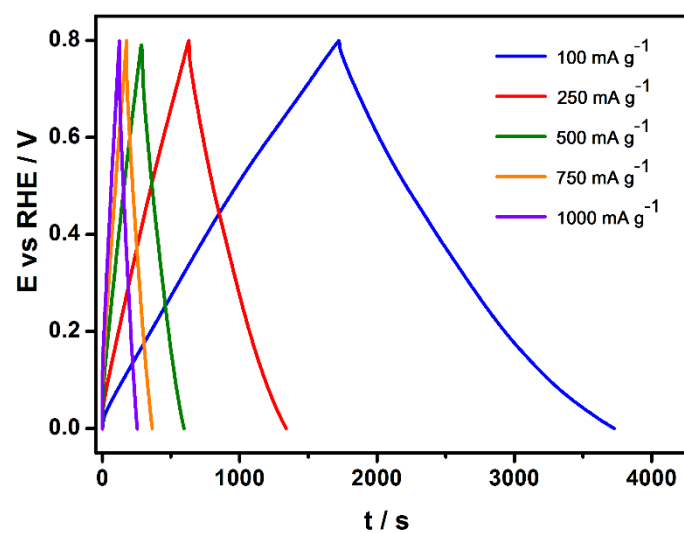


Figure S5. Galvanostatic charge/discharge curves for the C-240°C-3 sample at different current densities in 0.5 M H₂SO₄. Three-electrode cell.