

PARTIAL GRAPHITIZATION OF ACTIVATED CARBON BY SURFACE ACIDIFICATION

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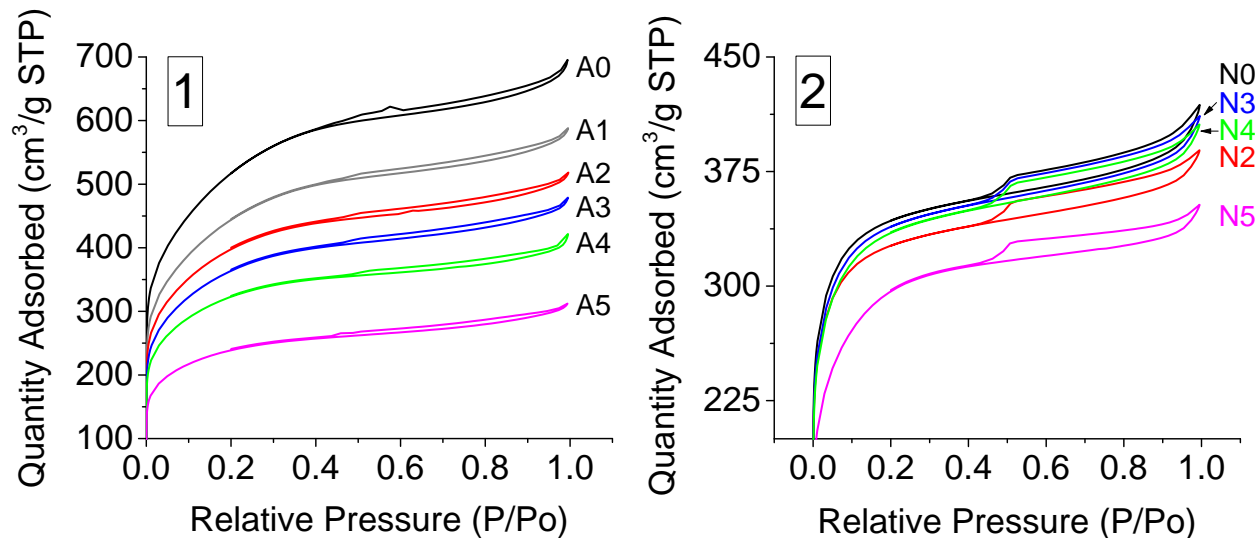


Figure S1. Nitrogen physisorption isotherms of carbon A (1) and N (2) for the 0x-5x oxidation series. N1 treated carbon is omitted for clarity.

Nitrogen physisorption isotherms for the A and N-series are displayed in Figure S1 (1) and Figure S1 (2), respectively. The upward trend of the isotherms at relatively high pressures ($P/P_0 > 0.95$) is indicative of the relative macroporosity magnitude—where the magnitude of upward trending (macroporosity) decreases for both series over the oxidation stage. The hysteresis observed for both series decreases over the course of the 5 oxidation treatments—indicating changes in available pore-volumes, as described with the relevant DFT analysis from Table 1.

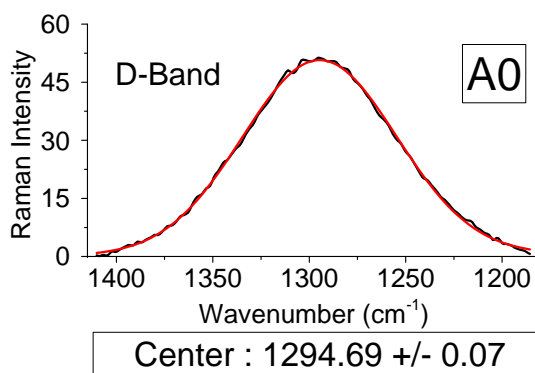
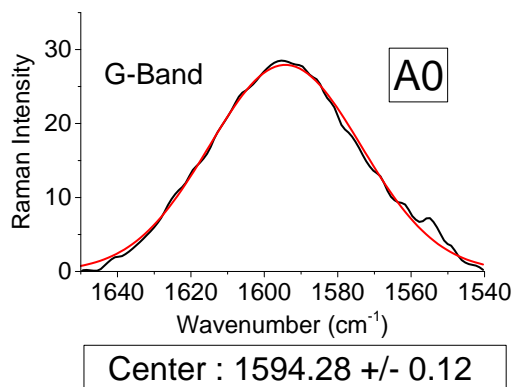
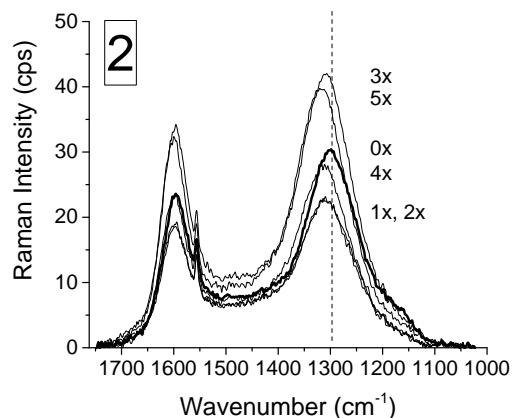
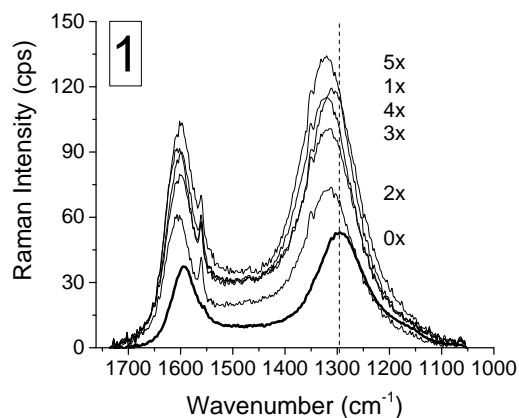


Figure S2. Top: Baseline corrected Raman spectra of carbon A (1) and N (2) for 0x-5x oxidation series. Vertical line displays peak position of D-bands for 0x of both carbons. Bottom: Example of method for peak frequency determination using Gaussian best fit for both individually baseline corrected G-band and D-bands.

I(D):I(G) ratio measurements utilized for Figure 7 were measured directly from the baseline corrected spectra presented in the top portion of Figure S2. Peak frequency centers were obtained using Gaussian best fits for both individually baseline corrected D-(~1325 cm^{-1}) and G-bands (~1600 cm^{-1}).

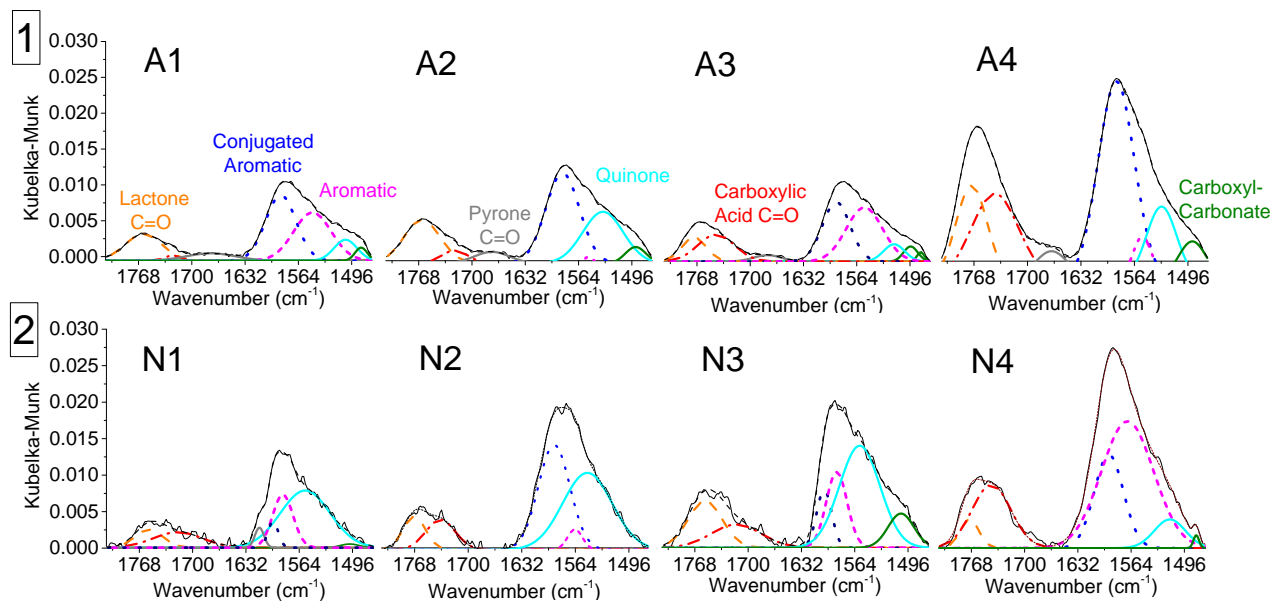


Figure S3. Baseline corrected and deconvolution peak comparisons for oxidation stages 1 to 4 of (1) A and (2) N-series carbons. Unoxidized and 5th oxidation samples are not shown for clarity.

The baseline corrected Gaussian-peak deconvolution for oxidation stages 1 to 4 are displayed in Figure S3 for series A and N. The peak identification (displayed in the A-series) is the same used by the authors for the E-series (15) and is applied here for the entire A and N-series. Frequency ranges for all Gaussian best-fit peaks displayed in Figure S3 are very similar to the ranges found for the E-series.