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**Effects of Hierarchical Architecture on Electronic and Mechanical Properties
of Nanocast Monolithic Porous Carbons and Carbon-carbon Nanocomposites**

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Supporting Information

Figure S1. Scanning electron microscopy (SEM) image of the 3DOM RFC monolith.

Sample	D position (cm ⁻¹)	G position (cm ⁻¹)	Intensity ratio (D/G)
3DOM/m C/C	1365	1602	0.86
3DOM/m C	1346	1603	0.78
3DOM/m RFC	1352	1598	0.88
Graphite	1356	1583	0.21

Figure S2. Raman spectra of: (A) graphite (B) 3DOM RFC (C) 3DOM/m C (D) 3DOM/m C/C-2h. See text for details. The peak at 1556 cm⁻¹ was not observed for 3DOM RFC on a different Raman spectrometer and is believed to be an instrumental artifact for all four samples. The table lists peak positions of D and G bands and the D/G intensity ratios.

Figure S3. Schematic diagram of the nano-indenter. The Berkovich indentation tip consists of a diamond cut into a trigonal pyramidal shape. When a load P is applied, the tip penetrates into the sample. The travel distance into the sample is denoted as displacement h .

Figure S4. Indentation load-displacement (P - h) responses (A) and a plot of indentation contact response in pressure-volume (p - V) space for indentations made with a maximum load of 15–16 mN. Samples tested were: (1) 3DOM/m SiO₂, (2) 3DOM/m C, (3) 3DOM/m C/C, (4) 3DOM RFC. For each sample, multiple runs were conducted, shown as the same color for different data traces. The variations between multiple measurements for 3DOM/m SiO₂ were likely due to internal cracks, created during drying and calcination of the monoliths. These cracks produced microstructural inhomogeneities on the length scale of the indentations. After gas-phase polymerization inside 3DOM/m SiO₂, many of these cracks would have been filled with phenolic resin, leading to greater reproducibility for the carbonized samples. Variations for 3DOM/m C/C may have been caused by different degrees of mesopore filling with carbon.