

Friday, March 24 2017

4:10 – 5:00 PM

Barnard/EPS 103

**Energy Storage on Carbon-Based Surfaces:
in Pores and within the Bulk**

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Abstract:

Carbon is a solid-state chemical building block that enables wide flexibility in structural design of materials. Beyond its well-known zero-, one-, and two-dimensional allotropes (bucky-balls, buckytubes, and graphene), a myriad of three-connected allotropes are also understood to be accessible, but fine control of structure in these architectures has been elusive in the laboratory. Two practical work-arounds have been adopted by our group: namely, (1) a template-based approach toward ordered, three-dimensionally porous carbon networks that are locally amorphous, and (2) a chemical substitution approach via heteroatom dopants (especially boron) to directly tune the properties of layered graphite. We will motivate the effort toward homogeneity in materials surface design, and demonstrate the exploitation of this strategy for gaseous fuel storage and capacitive ion storage on zeolite-templated carbon (ZTC). Lastly, new routes to highly-doped heteroatom containing carbons (up to 25 at%) will be presented, toward bulk carbon-based materials with widely tunable properties for ion storage and beyond.

Host: Rufus Cone

***** Refreshments served in the Barnard/EPS second floor atrium at 3:45 *****