

Mechanical Behavior of Graphene Oxide

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Graphene oxide (GO) is a 2D nanostructure used as a building block for a class of materials with hierarchical features that possess vastly differing characteristic dimensions and properties. GO has been applied as a good candidate for paper-like materials, robust fibers, membranes, and reinforcement elements in composites. The use of GO in these materials has been motivated in large part by the exceptional mechanical properties of individual graphene and GO monolayers. Macroscopic papers and fibers synthesized using GO, however, typically exhibit strengths on the order of 10-100's of MPa's. This talk will explore recent studies on the mechanical behavior of GO based materials across multiple length scales that yield insights into the size-scale mechanical phenomenon exhibited by GO materials. This will include the strength and fracture of behavior of GO monolayer building blocks [1] and intermediate multiple layered GO nanosheets [2], as well as the interfacial shear properties of GO multilayers [3].

References:

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3. M. Daly, C.H. Cao, H. Sun, Y. Sun, T. Filleter, and C.V. Singh, *Interfacial Shear Strength of Multilayer Graphene Oxide Films*. Acs Nano, 2016. **10**(2): p. 1939-1947.