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Quantification of crumpling in graphene oxide and other sheet-like nanostructures PETER BEAUCAGE, DURGESH RAI, GREGORY BEAUCAGE, University of Cincinnati, SIDDHARTH PRADHAN, University of Tennessee Knoxville — Two-dimensional sheet-like nanostructures have garnered significant scientific interest in recent decade, particularly due to their inherent high specific surface areas (SSAs). Such large SSAs also result in an intrinsic tendency to crumple or fold based on surface interactions under ambient conditions. An understanding of the topological details of such structures has revealed various qualitative features driven by thermodynamics and interfacial chemistry. A scaling model based methodology will be presented which can be utilized to do quantitative analysis using small angle scattering data. A wide range of materials like graphene oxide, membrane layers as well exfoliated sheets of molybdenum oxide and tungsten oxide have been investigated to understand how such quantification may yield a general classification of such materials based on crumpling behavior.

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