

Abstract Submitted
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Ordering in a crumpled elastic sheet ANNE DOMINIQUE CAMBOU, NARAYANAN MENON, Physics Dept UMass, Amherst — We experimentally study the conformations of polydimethylsiloxane (PDMS) sheets crumpled in a cylinder at volume fractions ranging from 3% to 40%. The PDMS sheets show no plasticity, and slide with low friction as they are immersed in an index-matching fluid to allow imaging in the interior. We crumple the sheet either axially with a piston, or radially by shrinking the radius of the cylinder. We focus on the development of local nematic order created by facets stacking together. Either the flat piston or the curved cylindrical wall promotes global alignment of these stacks. We compare our results to previous experiments on aluminum foil confined in a sphere to understand the role of plasticity and friction on the ordering in crumpled sheets.

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