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Processing Phase Diagram of Polymer Carbon-Nanotube Composites ERIK K. HOBBIE, DAN FRY, NIST, HOWARD WANG, Michigan Tech — The 'phase diagram' of a model polymer/carbon-nanotube melt composite is measured as a function of concentration, shear stress and geometrical confinement. We observe a hierarchy of flow-induced structure, including dispersed (para) nematics, a variety of aggregates, and 'jammed' fractal networks. By applying simple scaling arguments from polymer physics to rigid-rod gels, our data suggest that the portion of the network responsible for the arrest of flow is more diffuse than the full elastic network, akin to 'force chains' in granular media.

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