

Abstract Submitted  
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**Large-deformation and long-time behavior of entangled melts in complex geometries** XIANGYANG ZHU, SHI-QING WANG, University of Akron — Recent particle-tracking velocimetric (PTV) observations have revealed strain localization either during startup shear beyond the stress overshoot or after a large step shear of entangled polymers [e.g., *Macromolecules*, **42**, 6261 (2009)]. The physical pictures leading to these decohesion events have been put forward [*J. Chem. Phys.* **127**, 064903(2007); *J. Rheol.* **53**, 1389 (2009)]. In this presentation we apply the particle-tracking velocimetric method [*Macromol. Mater. Engr.* **292**, 15 (2007)] to study similar strain localization phenomena originating from yielding of the entanglement network in other forms of deformation including uniaxial extension, “squeeze flow” and extrusion of polymers from a wide open space into a narrow opening. The striking discontinuities in the velocity profile can all be understood in terms of a shear yielding criterion. The research is funded, in part, by a grant from the National Science Foundation (CMMI-0926522)

Xiangyang Zhu  
University of Akron

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