

Abstract Submitted
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An emerging theoretical picture of yielding for entangled polymeric liquids undergoing sudden deformation and flow SHI-QING WANG, University of Akron, P.E. BOUKANY, S. RAVINDRANATH, Y.Y. WANG, X. LI, University of Akron — Recent particle-tracking velocimetric observations coupled with conventional rheological measurements have offered us a window to peek into processes responsible for a whole family of phenomena in entangled polymeric liquids. At a high rate of deformation imposed suddenly, entangled liquids can only respond like a solid and must undergo yielding before eventual flow is to take place. Until recently, how such a yielding process produces the observed scaling characteristics of the stress overshoot has remained elusive. More surprising and perplexing to many is that an elastic yielding process can also occur after cessation of any further external deformation. These experimental observations have provided the essential ingredients in the emerging theoretical picture of polymer deformation and flow.

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