

Abstract Submitted
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Shear banding in a simulated telechelic polymeric gel¹ JORIS BILLEN, San Diego State University, JORIS STEGEN, Eindhoven University of Technology, The Netherlands, MARK WILSON, San Diego State University, AVI-NOAM RABINOVITCH, Ben-Gurion University of the Negev, Beer-Sheva, Israel, ARLETTE R.C. BALJON, San Diego State University — We report on the rheological properties of telechelic polymers through computer simulations.² Such polymers show Newtonian behavior at low shear rate, followed by a non-Newtonian shear thinning regime. In this non-Newtonian regime, experiments as well as simulations show shear banding; two bands with different shear rate exist. The stress versus shear rate shows a plateau. When looking at the stress versus time, rheochaotical fluctuations are observed. These fluctuations are believed to be caused by microscopic shear-induced structural changes.³ We report on these microstructural changes and on how they correlate with stress fluctuations.

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²Baljon et al., J. Chem. Phys. 126, 044907 (2007).

³Sprakel et al., Phys. Rev. E. 79, 056306 (2009).

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