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Do thermally activated transitions influence the deformation of polymer glasses? MARK EDIGER, University of Wisconsin-Madison, HAU-NAN LEE, DuPont, BENJAMIN BENDING, University of Wisconsin-Madison — The availability of large scale computer simulations and new experiments allows fundamental questions about the influence of temperature on polymer glass deformation to be addressed from a microscopic perspective. Some recent simulations indicate that the total mobility induced during polymer glass deformation is a function of strain but independent of the strain rate. This result suggests that thermally activated transitions are not important during deformation which would be inconsistent with many models. We find that the integrated molecular mobility in polystyrene and PMMA glasses during deformation is roughly independent of strain rate. However, the relaxation time distribution narrows with increasing strain rate, indicating that thermally activated processes do play a role.

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