

Abstract Submitted  
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**Can Stress Relaxation Experiments be Used to Assess Deformation Induced Mobility in Glassy Polymers?** JAMIE KROPKA, KEVIN LONG, Sandia National Laboratories — The observance of an increase in glassy polymer relaxation rates under a mechanical deformation is often referred to as deformation induced mobility (DIM). It has been argued that stress relaxation experiments can provide indirect evidence of this phenomenon. Recently, stress relaxation experiments have been interpreted as demonstrating a mobility decrease with increased deformation when very slow strain rates,  $1.2 \times 10^{-5} \text{ s}^{-1}$ , are used to apply the deformation. This would suggest against generality of DIM and would have significant implications to constitutive models founded on this principle. Here, a mathematical exercise is performed to evaluate the implications of DIM on stress relaxation response. Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energys National Nuclear Security Administration under contract DE-AC04-94AL85000.

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