Abstract Submitted
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Dynamics of Cutting Viscoelastic Materials STEPHAN KOEHLER, W. R. MATSON, Emory — Mechanical cutting of visco-elastic polymers is experimentally investigated using sharp knives. The knife is aligned orthogonally to the substrate's surface, and is plunged directly into the substrate. As the knife moves into the sample, the sample deforms viscoelastically and is cut (i.e. new surface is created). The rates of viscoelastic deformation & cutting depend on the plunging rate, geometry of the knife and substrate, as well as the material properties of the substrate. A simple model based upon viscoelastic rheology that includes cutting & surface friction is discussed.

Stephan Koehler
Emory

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