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# Changes of Activation Energy during Deformation of Rubber

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## Abstract

Based on a simple molecular model, a mechanism of rubber flow characterized by viscosity increasing with the reversible rubber-like deformation is proposed. It is associated with an activation energy of viscous flow that increases proportionally to an external stress due to the entropy elasticity of macromolecules. This increase of the activation energy for jumping of molecular-kinetic units of a polymer network into vacancies during the rubber deformation process is caused by an increasing resistance of the stretching macromolecular network due to the entropy nature of macromolecule deformation.

Keywords: activation energy, entropic elasticity, Eyring's viscosity theory, polymer network, rubber deformation, standard linear solid