Abstract Submitted
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None-Affine Multiaxial Deformation of Polymer Networks[1] NIKOLAY OSKOLKOV, Department of Chemistry, University of North Carolina, Chapel Hill, North Carolina 27599-3290, USA, SERGEI PANYUKOV, P. N. Lebedev Physics Institute, Russian Academy of Sciences, 117924 Moscow, Russia, MICHAEL RUBINSTEIN, Department of Chemistry, University of North Carolina, Chapel Hill, North Carolina 27599-3290, USA — We develop a theory of multiaxial deformation of polymer network based on the non-affine slip-tube model of rubber elasticity. The effect of entanglements on a network strand is represented through a constraining potential (tube), which changes with network deformation. In addition, the stored length of network chains is allowed to redistribute between different directions along the contour of the tube upon multiaxial deformation. The dependence of stress on strain is calculated and compared with experimental data.

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