

Abstract Submitted
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The Conformational Elasticity Theory and Its Applications XI-
AOZHEN YANG, Institute of Chemistry, CAS — A theory that physically describes rubber elasticity including large scale behavior, internal energy contribution and different elastic behaviors of chemically different polymers, so called “conformational elasticity theory,” has been recently developed with predicted stress as a function of axial ratio of ellipsoid model. Using short chain rotational isometric state (RIS) model we simulated 2-dimensional chain conformation distribution map (one axes is the end-to-end distance of a polymer chain and the other is the conformational energy). It is very important to propose a microscopic mechanism of the distribution evolution during the polymer deformation. The total tension, the internal energy force and the entropy force can be obtained in any elongation step, and very close to the experimental data. This theory includes interaction energy and distinguishes different chemical structures, thus providing the opportunity to make some efforts in analysis of the physical junction and the entanglement occurring to the system during elongation.

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