Molecular Interpretation of the Moduli of Elastomeric Polymer Networks of Known Structure

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The most general molecular theory of rubberlike elasticity is reviewed as a preliminary to its use in the interpretation and understanding of the moduli of model elastomeric materials, i.e., polymer networks prepared in such a way that their structure is relatively well known. Applications are made to both perfect and imperfect networks, with critical evaluation of evidence possibly attributable to equilibrium elastic contributions from interchain entanglements. The relevance and importance of branching theory is covered in some detail.

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