

1. Record Nr.	UNINA9910811552503321
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Titolo	Rubberlike elasticity : a molecular primer / / James E. Mark, Burak Erman [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2007
ISBN	1-107-15911-3 1-280-75030-8 9786610750306 0-511-26937-4 0-511-26993-5 0-511-26858-0 0-511-54132-5 0-511-32070-1 0-511-26925-0
Edizione	[Second edition.]
Descrizione fisica	1 online resource (ix, 260 pages) : digital, PDF file(s)
Disciplina	547.7
Soggetti	Polymers Elastomers Elasticity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references (p. 237-255) and index.
Nota di contenuto	; Preface to the first edition -- ; Preface to the first edition -- ; Introduction -- Some rubberlike materials -- The single molecule: theory and experiment -- Preparation and structure of networks -- Elementary statistical theory for idealized networks -- Statistical theory for real networks -- Elastic equations of state and force-deformation relations -- Swelling of networks and volume phase transitions -- Force as a function of temperature -- Model elastomers -- Networks prepared under unusual conditions -- Strain-induced crystallization and ultimate properties -- Multimodal networks -- Birefringence and segmental orientation -- Neutron scattering from networks -- Liquid-crystalline elastomers -- Bioelastomers -- Filled elastomers -- Current problems and new directions -- ; Appendices.

Elastomers and rubberlike materials form a critical component in diverse applications that range from tyres to biomimetics and are used in chemical, biomedical, mechanical and electrical engineering. This updated and expanded edition provides an elementary introduction to the physical and molecular concepts governing elastic behaviour, with a particular focus on elastomers. The coverage of fundamental principles has been greatly extended and fully revised, with analogies to more familiar systems such as gases, producing an engaging approach to these phenomena. Dedicated chapters on novel uses of elastomers, covering bioelastomers, filled elastomers and liquid crystalline elastomers, illustrate the established and emerging applications at the forefront of physical science. With a list of experiments and demonstrations, problem sets and solutions, this is a self-contained introduction to the topic for graduate students, researchers and industrialists working in the applied fields of physics and chemistry, polymer science and engineering.

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