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Note generali	Includes index.
Nota di contenuto	Part I Classical Phenomenological Formulations -- Time-Dependent, Viscoelastic, Materials -- Review of Classical Linear Phenomenological Models -- Non-Linear Viscoelastic Behavior - First Simplified Models and More Recent Versions -- Part II Advanced Theories of the Dynamics of Amorphous Condensed Matter -- Treatment of Experimental Data-The Problem of the Initial Stress or Strain Ramps -- General Physical Characterization of the Dynamics of Amorphous Condensed Matter -- Physical Discussion of the Effect of Partial Crystallization -- General Overview and Physical Discussion of Most Recent Dynamic Models -- A New Look at the Dynamics of Condensed Matter -- Calculation of the Materials' Response to Forced Mechanical and Other Stimuli -- What do Experiments Say? -- Calculation Ease and Computational Speed.
Sommario/riassunto	The book provides a detailed quantitative study and characterization of the physics of the thermal and viscoelastic behavior of mainly

amorphous materials, and addresses a readership of both undergraduate (Part I and the two first chapters of Part II) and graduate students and junior researchers (Parts II and III). Though the discussion and examples concentrate on polymer materials, Part II illustrates the potential universality of the proposed most recent treatment – a Cooperative Theory of Materials Dynamics (CTMD) – and its ability to portray the 11 major physical characteristics of the materials' behavior by an alternative view of the thermal equilibrium and non-equilibrium dynamics at the "micro-scale", the still challenging problem of the glass transition and glass transition temperature, how partial crosslinking or crystallization limits the response, the expected impact of molecular packing, and of a few other open challenges. Part III discusses three specific domains where new applications and extensions of CTMD might be explored, while three Appendixes collect a few quantitative details and extensions of the treatment.