1. Record Nr. UNINA9910454526003321

Autore	Lakes Roderic S.
Titolo	Viscoelastic materials / / Roderic Lakes [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2009
ISBN	1-107-20056-3 1-5231-1334-0 9786612390869 0-511-64643-7 1-282-39086-4 0-511-65052-3 0-511-57921-7 0-511-57847-4 0-511-62672-X 0-511-57995-0
Descrizione fisica	1 online resource (xviii, 461 pages) : digital, PDF file(s)
Disciplina	620.1/1232
Soggetti	Viscoelastic materials Viscoelasticity
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 and index.
Nota di contenuto	Cover; Half-title; Title; Copyright; Contents; Preface; 1 Introduction: Phenomena; 2 Constitutive Relations; 3 Dynamic Behavior; 4 Conceptual Structure of Linear Viscoelasticity; 5 Viscoelastic Stress and Deformation Analysis; 6 Experimental Methods; 7 Viscoelastic Properties of Materials; 8 Causal Mechanisms; 9 Viscoelastic Composite Materials; 10 Applications and Case Studies; Appendix A: Appendix; Appendix B: Symbols; Index
Sommario/riassunto	Understanding viscoelasticity is pertinent to design applications as diverse as earplugs, gaskets, computer disks, satellite stability, medical diagnosis, injury prevention, vibration abatement, tire performance, sports, spacecraft explosions, and music. This book fits a one-semester graduate course on the properties, analysis, and uses of viscoelastic materials. Those familiar with the author's precursor book,

Viscoelastic Solids, will see that this book contains many updates and expanded coverage of the materials science, causes of viscoelastic behavior, properties of materials of biological origin, and applications of viscoelastic materials. The theoretical presentation includes both transient and dynamic aspects, with emphasis on linear viscoelasticity to develop physical insight. Methods for the solution of stress analysis problems are developed and illustrated. Experimental methods for characterization of viscoelastic materials are explored in detail. Viscoelastic phenomena are described for a wide variety of materials, including viscoelastic composite materials. Applications of viscoelasticity and viscoelastic materials are illustrated with case studies.