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Titolo	A Course on Damage Mechanics [[electronic resource] /] / by Jean Lemaitre
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ISBN	3-642-18255-0
Edizione	[2nd ed. 1996.]
Descrizione fisica	1 online resource (XIX, 228 p. 39 illus.)
Disciplina	620.1/126
Soggetti	Mechanics Mechanics, Applied Acoustics Condensed matter Materials science Theoretical and Applied Mechanics Condensed Matter Physics Characterization and Evaluation of Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"With 118 Figures."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1 Phenomenological Aspects of Damage -- 1.1 Physical Nature of the Solid State and Damage -- 1.2 Mechanical Representation of Damage -- 1.3 Measurement of Damage -- 2 Thermodynamics and Micromechanics of Damage -- 2.1 Three-Dimensional Analysis of Isotropic Damage -- 2.2 Analysis of Anisotropic Damage -- 2.3 Micromechanics of Damage -- 3 Kinetic Laws of Damage Evolution -- 3.1 Unified Formulation of Damage Laws -- 3.2 Brittle Damage of Metals, Ceramics, Composites and Concrete -- 3.3 Ductile and Creep Damage of Metals and Polymers -- 3.4 Fatigue Damage -- 3.5 Damage of Interfaces -- 3.6 Table of Material Parameters -- 4 Analysis of Crack Initiation in Structures -- 4.1 Stress-Strain Analysis -- 4.2 Uncoupled Analysis of Crack Initiation -- 4.3 Locally Coupled Analysis -- 4.4 Fully Coupled Analysis -- 4.5 Statistical Analysis with Microdefects -- History of International Damage Mechanics Conferences -- Authors and Subject Index.

Sommario/riassunto

This well-established textbook teaches macroscopic modeling for design, processing, testing, and control of mechanical components in engineering. The first chapter deals with the phenomenology of damage; the second couples damage to strains and covers the three-dimensional situation; the third is devoted to kinetic laws of damage evolution used by the author to unify many models; the fourth gives several methods for predicting crack initiation. Detailed calculations and many exercises help students to apply the powerful techniques to practical problems in engineering. This second, corrected and enlarged edition also includes the damage of interfaces and statistical damage analysis with microdefects.