

1. Record Nr.	UNINA9910458132503321
Titolo	Handbook of materials behavior models . Volume 1 Deformations of materials [[electronic resource] /] / editor Jean Lemaitre
Pubbl/distr/stampa	San Diego, CA, : Academic, c2001
ISBN	1-281-04671-X 9786611046712 0-08-053363-9
Descrizione fisica	1 online resource (1231 p.)
Altri autori (Persone)	LemaitreJ <1934-> (Jean)
Disciplina	620.1/1/015118 21 620.11015118 620.112
Soggetti	Materials Materials - Simulation methods Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Handbook of Materials Behavior Models; Copyright Page; Contents; Chapter 1. Background on mechanics of materials; 1.1 Background on modeling; 1.2 Materials and process selection; 1.3 Size effect on structural strength; Chapter 2. Elasticity, viscoelasticity; 2.1 Introduction to elasticity and viscoelasticity; 2.2 Background on nonlinear elasticity; 2.3 Elasticity of porous materials; 2.4 Elastomer models; 2.5 Background on viscoelasticity; 2.6 A nonlinear viscoelastic model based on fluctuating modes; 2.7 Linear viscoelasticity with damage; Chapter 3. Yield limit 3.1 Introduction to yield limits 3.2 Background on isotropic criteria; 3.3 Yield loci based on crystallographic texture; 3.4 Anisotropic yield conditions; 3.5 Distortional model of plastic hardening; 3.6 A generalized limit criterion with application to strength, yielding, and damage of isotropic materials; 3.7 Yield conditions in beams, plates, and shells; Chapter 4. Plasticity; 4.1 Introduction to plasticity; 4.2 Elastoplasticity of metallic polycrystals by the self-consistent model; 4.3 Anisotropic elastoplastic model based on crystallographic texture

4.4 Cyclic plasticity model with nonlinear isotropic and kinematic hardening; No LIKH model  
4.5 Multisurface hardening model for monotonic and cyclic response of metals; 4.6 Kinematic hardening rule with critical state of dynamic recovery; 4.7 Kinematic hardening rule for biaxial ratcheting; 4.8 Plasticity in large deformations; 4.9 Plasticity of polymers; 4.10 Rational phenomenology in dynamic plasticity; 4.11 Conditions for localization in plasticity and rate-independent materials; 4.12 An introduction to gradient plasticity; Chapter 5. Viscoplasticity; 5.1 Introduction to viscoplasticity  
5.2 A phenomenological anisotropic creep model for cubic single crystals  
5.3 Crystalline viscoplasticity applied to single crystals; 5.4 Averaging of viscoplastic polycrystalline materials with the tangent self-consistent model; 5.5 Fraction models for inelastic deformation; 5.6 Inelastic compressible and incompressible, isotropic, small-strain viscoplasticity theory based on overstress (VBO); 5.7 An outline of the Bodner-Partom (BP) unified constitutive equations for elastic-viscoplastic behavior; 5.8 Unified model of cyclic viscoplasticity based on the nonlinear kinematic hardening rule  
5.9 A model of nonproportional cyclic viscoplasticity  
5.10 Rate-dependent elastoplastic constitutive relations; 5.11 Physically based rate- and temperature-dependent constitutive models for metals; 5.12 Elastic-viscoplastic deformation of polymers; Chapter 6. Continuous damage; 6.1 Introduction to continuous damage; 6.2 Damage-equivalent stress-fracture criterion; 6.3 Micromechanically inspired continuous models of brittle damage; 6.4 Anisotropic damage; 6.5 Modified Gurson model; 6.6 The Rousselier model for porous metal plasticity and ductile fracture; 6.7 Model of anisotropic creep damage  
6.8 Multiaxial fatigue damage criteria

---

### Sommario/riassunto

This first of a kind reference/handbook deals with nonlinear models and properties of material. In the study the behavior of materials' phenomena no unique laws exist. Therefore, researchers often turn to models to determine the properties of materials. This will be the first book to bring together such a comprehensive collection of these models. The Handbook deals with all solid materials, and is organized first by phenomena. Most of the materials models presented in an applications-oriented fashion, less descriptive and more practitioner-gear, making it useful in the daily w

---