1. Record Nr. UNINA9910817768903321

Titolo	IUTAM Symposium on Rheology of Bodies with Defects [[electronic resource]] : proceedings of the IUTAM Symposium held in Beijing, China, 2-5 September 1997 / / edited by Ren Wang
Pubbl/distr/stampa	Dordrecht ; ; Boston, : Kluwer Academic Publishers, c1999
ISBN	1-280-20517-2 9786610205172 0-306-46937-5
Edizione	[1st ed. 2002.]
Descrizione fisica	1 online resource (313 p.)
Collana	Solid mechanics and its applications ; ; 64
Altri autori (Persone)	WangRen
Disciplina	620.1/1233
Soggetti	Materials - Creep Continuum damage mechanics Rheology Viscoelastic materials - Thermomechanical properties Viscoplasticity
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	The Rupture Theory of Rheological Materials with Defects -- Rheological Behavior and Failure Characteristics of Viscoelastic Solids with Defects -- Simulation of Slow Kinetic Fracture of Gas Emissionable Materials -- A New Creep Law and its Application to Crack Tip Field Analysis -- Damage Field Equation and Criterion for Damage Localization -- Energy Estimates for Piecewise Smooth Rate Type Thermo-viscoelastic Models with Van Der Waals Type Equilibrium Surface -- Some Remarks on Thermodynamic Theory of Viscous Elastoplastic Media -- Stochastic Response of Degrading Elastic Systems -- Experimental Studies on the Evolution of Defect Temperature Field during Deformation of ABS -- Rheological-thermal Fracture by Laser Beam -- A Constitutive Model of a Particle Reinforced Viscoelastic Composite Material with Debonded Microvoids -- Dynamic Debonding Between Fibers and Matrix in Fiber-Reinforced Composites -- A Model for Shear Stress Relaxation Around a Fiber Break in Unidirectional Composites and Creep Rupture Analysis -- Studies on

Rheological Relation of Materials by Taking into Account the Rate-dependent Evolution of Internal Defects at High Strain Rates -- Damage Wave Propagation in Elastic-brittle Materials -- Effect of Initial Flaws in High Cycle Fatigue of SG Cast Iron -- Study of Crack Development as the Basis for Rheology of Cementitious Materials -- Rate Sensitive Damage Behavior of Mortar in Compression -- Coupled Effect of Creep and Stress Relaxation of Soft Clay -- Prediction of Abrupt Failure of Cracked Rockmass -- On the Study of Creep Rupture of Structure -- Development of Non-unilateral Damage Field in Creeping Plates -- Plastic and Creep Instability of Shells with Initial Imperfections.

Sommario/riassunto

The IUTAM Symposium on Rheology of Bodies with Defects was held in Beijing in September, 1997. It was aimed at the development of Rheology in Solid Mechanics. Rheology is classified in Applied Mechanics Review under fluid mechanics, however, in its broadest content as was envisaged in its earlier days, it covers the whole spectrum of material behavior from elasticity, plasticity, and fluid mechanics to gas dynamics. It was thought of as a branch of continuum mechanics, but emphasized the physical aspects of different materials, and frequently proceeded from basic physical principles. As the temperature rises, the distinction between solid and fluid, and the distinction between their micro-mechanical movements, become blurred. The physical description of such materials and their movements must be based on the thermodynamic principles of state variable theory; the classical division between solid and fluid mechanics disappears. Under the classification adopted by Applied Mechanics Reviews, the subjects dealt with in this symposium come closer to viscoelasticity and viscoplasticity, especially close to the subdivision of creep dealing with creep rupture. The symposium focused at building a bridge between macroscopic and microscopic research on damage and fracture behavior of defective bodies made of metal, polymer, composite and other viscoelastic materials. Two different approaches are presented at the symposium. The first is a continuum damage theory for time-dependent evolution of defects at the macro/meso/microscopic levels.