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Titolo	Multiscale deformation and fracture in materials and structures [[electronic resource]] : the James R. Rice 60th anniversary volume / / edited by T.-J. Chuang and J.W. Rudnicki
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Collana	Solid mechanics and its applications ; ; v. 84
Altri autori (Persone)	ChuangT. J RudnickiJ. W RiceJ. R
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Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	Deformation -- Approximate Yield Criterion for Anisotropic Porous Sheet Metals and its Applications to Failure Prediction of Sheet Metals Under Forming Processes -- A Dilatational Plasticity Theory for Aluminum Sheets -- Internal Hydrogen-induced Embrittlement in Iron Single Crystals -- A Comprehensive Model for Solid State Sintering and Its Application to Silicon Carbide -- Mapping the Elastic-plastic Contact and Adhesion -- The Critical Shear Stress to Transmit A Peierls Screw Dislocation Across A Non-slipping Interface -- Self-organizing Nanophases on a Solid Surface -- Elastic Space Containing A Rigid Ellipsoidal Inclusion Subjected to Translation and Rotation -- Strain Percolation in Metal Deformation -- Diffusive Instabilities in Dilating and Compacting Geomaterials -- Fracture -- Fracture Mechanics of An Interface Crack between a Special Pair of Transversely Isotropic Materials -- Path-independent Integrals Related to The J-integral and Their Evaluations -- On the Extension of The Jr Concept to Significant

Crack Growth -- Effect of T-stress on Edge Dislocation Formation at A Crack Tip Under Mode I Loading -- Elastic-plastic Crack Growth Along Ductile/Ductile Interfaces -- Study of Crack Dynamics Using the Virtual Internal Bond Method -- Crack Tip Plasticity in Copper Single Crystals -- Numerical Simulations of Subcritical Crack Growth by Stress Corrosion in An Elastic Solid -- Energy Release Rate for a Crack with Extrinsic Surface Charge in a Piezoelectric Compact Tension Specimen -- Micromechanics of Failure in Composites -- J-integral Applications to Characterization and Tailoring of Cementitious Materials.

Sommario/riassunto

Modern Solid Mechanics considers phenomena at many levels, ranging from nano size at atomic scale through the continuum level at millimeter size to large structures at the tens of meter scale. The deformation and fracture behavior at these various scales are inextricably related to interdisciplinary methods derived from applied mathematics, physics, chemistry, and engineering mechanics. This book, in honor of James R. Rice, contains articles from his colleagues and former students that bring these sophisticated methods to bear on a wide range of problems. Articles discussing problems of deformation include topics of dislocation mechanics, second particle effects, plastic yield criterion on porous materials, hydrogen embrittlement, solid state sintering, nanophases at surfaces, adhesion and contact mechanics, diffuse instability in geomaterials, and percolation in metal deformation. In the fracture area, the topics include: elastic-plastic crack growth, dynamic fracture, stress intensity and J-integral analysis, stress-corrosion cracking, and fracture in single crystal, piezoelectric, composite and cementitious materials. The book will be a valuable resource for researchers in modern solid mechanics and can be used as reference or supplementary text in mechanical and civil engineering, applied mechanics, materials science, and engineering graduate courses on fracture mechanics, elasticity, plasticity, mechanics of materials or the application of solid mechanics to processing, and reliability of life predictions.