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Collana	Solid mechanics and its applications ; ; v. 76
Altri autori (Persone)	GermainPaul <1920-> MauginG. A <1944-> (Gerard A.) DrouotRaymonde SidoroffFrancois
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Note generali	Description based upon print version of record.
Nota di contenuto	Double diffusive aspects of the convection in moist-saturated air -- Application of the theory of Cosserat media to the elasto-plastic behaviour of polycrystals -- From Clausius to finite anelasticity, via Bridgman, Eckart and Ziegler -- On viscous fluid flow near a moving crack tip -- Elastoviscoplasticity with aging in aluminium alloys -- The application of the irreversible thermodynamics to the development of constitutive equations -- On micromechanics of martensitic transformation in SMA and TRIP steels -- Modelling of coupled effects of damage by microcracking and friction in closed cracks -- Structural plastic microbuckling and compressive strength of long-fibre composite materials -- A new method of optimisation for composite structures -- Material evolution in plasticity and growth -- Thermoelasticity of second-grade media -- The power of the interior forces in solid mechanics -- A continuum damage model in stress corrosion -- Modelling Wetting Behaviour -- Thermodynamics and phenomenology -- On the thermomechanical modelling of shape

memory alloys -- Thermo-Mechanical Modelling of Nematic Polymers -- Multiscale thermomechanical approaches to SMA behaviour -- Regularization of flutter ill-posedness in fluid-saturated porous media -- A 3D-Numerical Thermomechanical Approach for Materials Cutting -- From Clausius-Duhem and Drucker-Ilyushin inequalities to standard materials -- Constitutive relations involving internal variables based on a micromechanical analysis -- Adiabatic shear banding as an example of viscoplastic flow instability -- On the evaluation of damping in a structure with viscoelastic components -- Standard dissipative systems and stability analysis -- Enriched damage models for continuum failure analyses -- Constitutive laws, relaxation thermodynamics and Lagrange-formalism -- Second-gradient theory: Application to Cahn-Hilliard fluids -- Thermodynamics and duality in finite elastoplasticity -- Thermodynamical description of running discontinuities.

Sommario/riassunto

Contributed by world-renowned specialists on the occasion of Paul Germain's 80th birthday, this unique book reflects the foundational works and the intellectual influence of this author. It presents the realm of modern thermomechanics with its extraordinary wealth of applications to the behaviour of materials, whether solid or fluid. The thirty-one contributions follow an easygoing autobiographical sketch by Paul Germain, and highlight the power and richness of a methodological approach to the phenomenology of many materials. This approach combines harmoniously thermodynamics and continuum theory in order to provide exploitable, thermodynamically admissible models of a large variety of behaviours and phenomena, including those of diffusion, thermoelasticity, viscoplasticity, relaxation, hysteresis, wetting, shape-memory effects, growth, phase transitions, stability, fracture, shocks, machining of materials, microstructured solids, complex fluids, etc. Especially aimed at graduate students, researchers, and engineers in mechanical engineering and materials science, this book also presents the state of the art in an active field of research and opens new horizons in other scientific fields, such as applied mathematics and applied physics, because of the intellectual satisfaction and remarkable efficiency provided by the advocated approach.