Advances in Extended and Multifield Theories for Continua [

Markert, Bernd,
ed. lit

Springer Berlin Heidelberg,
2011

Mechanics | Mechanics, Applied | Mechanics, applied | Solid Mechanics | Theoretical and Applied Mechanics | Classical Mechanics

Monografía

Modern computational techniques, such as the Finite Element Method, have, since their development several decades ago, successfully exploited continuum theories for numerous applications in science and technology. Although standard continuum methods based upon the Cauchy-Boltzmann continuum are still of great importance and are widely used, it increasingly appears that material properties stemming from microstructural phenomena have to be considered. This is particularly true for inhomogeneous load and deformation states, where lower-scale size effects begin to affect the macroscopic material response; something standard continuum theories fail to account for. Following this idea, it is evident that standard continuum mechanics has to be augmented to capture lower-scale structural and compositional phenomena, and to make this information accessible to macroscopic numerical simulations

Título: Advances in Extended and Multifield Theories for Continua Recurso electrónico] edited by Bernd Markert

Editorial: Berlin, Heidelberg Springer Berlin Heidelberg Imprint: Springer 2011

Editorial: Berlin, Heidelberg Springer Berlin Heidelberg 2011

Descripción física: XX, 220 p. 79 il

Mención de serie: Lecture Notes in Applied and Computational Mechanics 59

Nota general: Description based upon print version of record

Bibliografía: Includes bibliographical references and index

Diffusion -- Effective Electromechanical Properties of Heterogeneous Piezoelectrics -- Coupled Thermo- and Electrodynamics of Multiphasic Continua -- Ice Formation in Porous Media -- Optical Measurements for a Cold-Box Sand and Aspects of Direct and Inverse Problems for Micropolar Elasto-Plasticity -- Model Reduction for Complex Continua - at the Example of Modeling Soft Tissue in the Nasal Area

Lengua: English

ISBN: 9783642227387 9783642227370 9783642227394 9783662520246

Materia: Mechanics Mechanics, Applied Mechanics, applied Solid Mechanics Theoretical and Applied Mechanics Classical Mechanics

Autores: Markert, Bernd, ed. lit

Enlace a serie principal: Lecture Notes in Applied and Computational Mechanics (CKB)1000000000379201 1860-0816

Enlace a formato físico adicional: 3-642-22737-6

Punto acceso adicional serie-Título: Lecture Notes in Applied and Computational Mechanics, 59

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