1. Record Nr. UNINA9910877031903321

Titolo	Advanced computational materials modeling : from classical to multi-scale techniques / / edited by Miguel Vaz Junior, Eduardo A. de Souza Neto, and Pablo A. Munoz-Rojas
Pubbl/distr/stampa	Weinheim, Germany, : Wiley-VCH, c2011
ISBN	1-283-30241-1 9786613302410 3-527-63232-8 3-527-63231-X
Edizione	[4th ed.]
Descrizione fisica	1 online resource (452 p.)
Altri autori (Persone)	Vaz JuniorMiguel NetoE. A. de Souza (Eduardo) Munoz-RojasPablo A
Disciplina	620.11015118
Soggetti	Materials - Mathematical models Finite element method
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	Advanced Computational Materials Modeling: From Classical to Multi-Scale Techniques; Contents; Preface; List of Contributors; 1 Materials Modeling - Challenges and Perspectives; 1.1 Introduction; 1.2 Modeling Challenges and Perspectives; 1.2.1 Mechanical Degradation and Failure of Ductile Materials; 1.2.1.1 Remarks; 1.2.2 Modeling of Cellular Structures; 1.2.2.1 Remarks; 1.2.3 Multiscale Constitutive Modeling; 1.3 Concluding Remarks; Acknowledgments; References; 2 Local and Nonlocal Modeling of Ductile Damage; 2.1 Introduction; 2.2 Continuum Damage Mechanics; 2.2.1 Basic Concepts of CDM 2.2.2 Ductile Plastic Damage2.3 Lemaitre's Ductile Damage Model; 2.3.1 Original Model; 2.3.1.1 The Elastic State Potential; 2.3.1.2 The Plastic State Potential; 2.3.1.3 The Dissipation Potential; 2.3.1.4 Evolution of Internal Variables; 2.3.2 Principle of Maximum Inelastic Dissipation; 2.3.3 Assumptions Behind Lemaitre's Model; 2.4 Modified Local Damage Models; 2.4.1 Lemaitre's Simplified Damage Model; 2.4.1.1 Constitutive Model; 2.4.1.2 Numerical Implementation; 2.4.2

Sommario/riassunto

With its discussion of strategies for modeling complex materials using new numerical techniques, mainly those based on the finite element method, this monograph covers a range of topics including computational plasticity, multi-scale formulations, optimization and parameter identification, damage mechanics and nonlinear finite elements.