1. Record Nr. UNINA9910458570303321

Titolo	Computational materials engineering [[electronic resource]] : an introduction to microstructure evolution / / editors Koenraad G. F. Janssens ... [et al.]
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier / Academic Press, c2007
ISBN	1-281-18659-7 9786611186593 0-08-055549-7
Edizione	[1st edition]
Descrizione fisica	1 online resource (359 p.)
Altri autori (Persone)	JanssensKoenraad G. F. <1968->
Disciplina	548/.7
Soggetti	Crystals - Mathematical models Microstructure - Mathematical models Polycrystals - Mathematical models Electronic books.
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	Front Cover; Computational Materials Engineering: An Introduction to Microstructure Evolution; Copyright Page; Table of Contents; Preface; Chapter 1. Introduction; 1.1 Microstructures Defined; 1.2 Microstructure Evolution; 1.3 Why Simulate Microstructure Evolution?; 1.4 Further Reading; Chapter 2. Thermodynamic Basis of Phase Transformations; 2.1 Reversible and Irreversible Thermodynamics; 2.2 Solution Thermodynamics; Chapter 3. Monte Carlo Potts Model; 3.1 Introduction; 3.2 Two-State Potts Model (Ising Model); 3.3 Q-State Potts Model; 3.4 Speed-Up Algorithms 3.5 Applications of the Potts Model3.6 Summary; 3.7 Final Remarks; 3.8 Acknowledgments; Chapter 4. Cellular Automata; 4.1 A Definition; 4.2 A One-Dimensional Introduction; 4.3 +2D CA Modeling of Recrystallization; 4.4 +2D CA Modeling of Grain Growth; 4.5 A Mathematical Formulation of Cellular Automata; 4.6 Irregular and Shapeless Cellular Automata; 4.7 Hybrid Cellular Automata Modeling; 4.8 Lattice Gas Cellular Automata; 4.9 Network Cellular Automata-A Development for the Future?; 4.10 Further Reading; Chapter 5.

Modeling Solid-State Diffusion; 5.1 Diffusion Mechanisms in Crystalline Solids
5.2 Microscopic Diffusion5.3 Macroscopic Diffusion; 5.4 Numerical Solution of the Diffusion Equation; Chapter 6. Modeling Precipitation as a Sharp-Interface Phase Transformation; 6.1 Statistical Theory of Phase Transformation; 6.2 Solid-State Nucleation; 6.3 Diffusion-Controlled Precipitate Growth; 6.4 Multiparticle Precipitation Kinetics; 6.5 Comparing the Growth Kinetics of Different Models; Chapter 7. Phase-Field Modeling; 7.1 A Short Overview; 7.2 Phase-Field Model for Pure Substances; 7.3 Study Case; 7.4 Model for Multiple Components and Phases; 7.5 Acknowledgments
Chapter 8. Introduction to Discrete Dislocations Statics and Dynamics8. 1 Basics of Discrete Plasticity Models; 8.2 Linear Elasticity Theory for Plasticity; 8.3 Dislocation Statics; 8.4 Dislocation Dynamics; 8.5 Kinematics of Discrete Dislocation Dynamics; 8.6 Dislocation Reactions and Annihilation; Chapter 9. Finite Elements for Mierostructure Evolution; 9.1 Fundamentals of Differential Equations; 9.2 Introduction to the Finite Element Method; 9.3 Finite Element Methods at the Meso- and Macroscale; Index

Sommario/riassunto

Computational Materials Engineering is an advanced introduction to the computer-aided modeling of essential material properties and behavior, including the physical, thermal and chemical parameters, as well as the mathematical tools used to perform simulations. Its emphasis will be on crystalline materials, which includes all metals. The basis of Computational Materials Engineering allows scientists and engineers to create virtual simulations of material behavior and properties, to better understand how a particular material works and performs and then use that knowledge to design improvements

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Record Nr.	UNISALENTO991002124249707536
Autore	Teitler, H. C.
Titolo	Notarii and exceptores : an inquiry into role and significance of shorthan dwriters in the imperial and ecclesiastical bureaucracy of the Roman empire, (from the early principate to c. 450 a. D.) / H. C. Teitler
Pubbl/distr/stampa	Amsterdam : J. Gieben, 1985
ISBN	907026577X
Descrizione fisica	ix, 380 p. ; 24 cm.
Collana	Dutch monographs on ancient history and archeology ; 1
Disciplina	937
Soggetti	Impero romano - Burocrazia Tachigrafia - Impero romano
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia