Record Nr. Autore Titolo Pubbl/distr/stampa	UNINA9910876647103321 Balluffi R. W Kinetics of materials / / Robert W. Balluffi, Samuel M. Allen, W. Craig Carter ; with editorial assistance from Rachel A. Kemper Hoboken, N.J., : J. Wiley & Sons, 2005
ISBN	1-280-28813-2 9786610288137 0-470-30216-X 0-471-74931-1 0-471-74930-3
Descrizione fisica	1 online resource (673 pages)
Altri autori (Persone)	AllenSamuel M CarterW. Craig KemperRachel A
Disciplina	620.1/1292
Soggetti	Materials - Mechanical properties Materials science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Wiley-Interscience."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	CONTENTS; Preface; Acknowledgments; Notation; S ymbols-Roman; Symbols-Greek; 1 Introduction; 1.1 Thermodynamics and Kinetics; 1.1.1 Classical Thermodynamics and Constructions of Kinetic Theories; 1.1.2 Averaging; 1.2 Irreversible Thermodynamics and Kinetics; 1.3 Mathematical Background; 1.3.1 Fields; 1.3.2 Variations; 1.3.3 Continuum Limits and Coarse Graining; 1.3.4 Fluxes; 1.3.5 Accumulation; 1.3.6 Conserved and Nonconserved Quantities; 1.3.7 Matrices, Tensors, and the Eigensystem; Bibliography; Exercises; PART I MOTION OF ATOMS AND MOLECULES BY DIFFUSION 2 Irreversible Thermodynamics: Coupled Forces and Fluxes2.1 Entropy and Entropy Production; 2.1.1 Entropy Production; 2.1.2 Conjugate Forces and Fluxes; 2.1.3 Basic Postulate of Irreversible Thermodynamics; 2.2 Linear Irreversible Thermodynamics; 2.2.1 General Coupling between Forces and Fluxes; 2.2.2 Force-Flux Relations when Extensive Quantities are Constrained; 2.2.3 Introduction of the Diffusion Potential; 2.2.4 Onsager's Symmetry Principle;

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Sommario/riassunto	A classroom-tested textbook providing a fundamental understanding of basic kinetic processes in materialsThis textbook, reflecting the hands-on teaching experience of its three authors, evolved from Massachusetts Institute of Technology's first-year graduate curriculum in the Department of Materials Science and Engineering. It discusses key topics collectively representing the basic kinetic processes that cause changes in the size, shape, composition, and atomistic structure of materials. Readers gain a deeper understanding of these kinetic processes and of the properties and applicati