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Autore	Ray Hem Shanker
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Soggetti	Metals Mechanics Mechanics, Applied Thermodynamics Heat engineering Heat - Transmission Mass transfer Chemical engineering Manufactures Metallic Materials Solid Mechanics Engineering Thermodynamics, Heat and Mass Transfer Industrial Chemistry/Chemical Engineering Manufacturing, Machines, Tools, Processes
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Nota di contenuto	Chapter 1: Introduction -- Chapter 2: Empirical and Semi-empirical Kinetics -- Chapter 3: Chemically Controlled Reactions -- Chapter 4: Diffusion Through Product Layer -- Chapter 5: Fluid Phase Mass Transfer -- Chapter 6: Reaction Between Two Fluids -- Chapter 7: Nucleation and Growth -- Chapter 8: Non-ideal Conditions and Complex Reactions -- Chapter 9: Non-isothermal Kinetics -- Chapter 10: Thermal Analysis Techniques -- Chapter 11: Analysis of Kinetic Data for Practical Applications -- Chapter 12: Kinetics of Plastic

Deformation -- Chapter 13: Kinetics of Creep Fracture.

Sommario/riassunto

This book is intended as a text for upper undergraduate and graduate courses on kinetics of metallurgical processes for students of materials science, metallurgical engineering, and chemical engineering. Focusing on basic and essential topics, selected from the authors' teaching and research, it serves as a comprehensive guide to metallurgical kinetics. Chapters 1–10 discuss the "logic" of various kinetics processes, while Chapter 11 explores the systematic analysis of raw rate data generated from controlled experiments. The final chapters illustrate how the fundamental concept of thermal activation is used to describe the kinetics of rate-dependent plastic deformation and creep fracture. With numerous examples, illustrations, and step-by-step tutorials, it is ideally suited for both self-study and classroom use. The examples were selected from research papers to highlight how the topics discussed can be, and are, used to solve real-world technological problems. Providing a comprehensive list of resources for further study, and end-of-chapter review questions to help students test their knowledge, it can be used for university coursework or as a text for professional development courses.