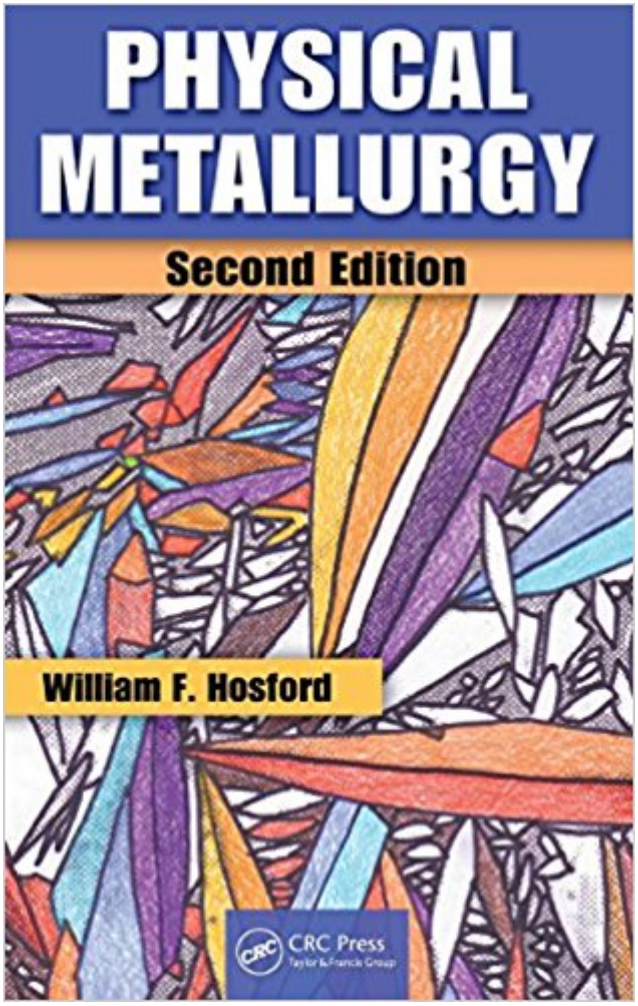
Physical Metallurgy, Second Edition



Synopsis

For students ready to advance in their study of metals, Physical Metallurgy, Second Edition uses engaging historical and contemporary examples that relate to the applications of concepts in each chapter. This book combines theoretical concepts, real alloy systems, processing procedures, and examples of real-world applications. The author uses his experience in teaching physical metallurgy at the University of Michigan to convey this topic with greater depth and detail than most introductory materials courses offer. WhatÃ¢â ¬â„¢s New in the Second Edition: Chapter on crystallographic textures and their influence on microstructure and properties Expanded section on aluminum-lithium alloys Information on copper and nickel Rewritten chapters on other non-ferrous metals and low carbon steels Discussions of compact graphite and austempered ductile iron Expanded discussions of cemented carbide tools Updated table on metal prices Following an introduction to metals, the author covers topics that are common to all metals, including solidification, diffusion, surfaces, solid solutions, intermediate phases, dislocations, annealing, and phase transformations. He also focuses on specific nonferrous alloy systems and their significant metallurgical properties and applications, the treatment of steels (including iron-carbon alloys), hardening, tempering and surface treatment, special steels, low carbon sheet steel, and cast irons. The book also covers powder metallurgy, corrosion, welding, and magnetic alloys. There are appendices on microstructural analysis, stereographic projection, and the Miller-Bravais system for hexagonal crystals. These chapters address ternary phase diagrams, diffusion in multiphase systems, the thermodynamic basis for phase diagrams, stacking faults and hydrogen embrittlement. With ample references and sample problems throughout, this text is a superb tool for any advanced materials science course.

Book Information

Hardcover: 442 pages
Publisher: CRC Press; 2 edition (April 5, 2010)
Language: English
ISBN-10: 1439813604
ISBN-13: 978-1439813607
Product Dimensions: 6.1 x 1 x 9.2 inches
Shipping Weight: 1.6 pounds (View shipping rates and policies)
Average Customer Review: 2.0 out of 5 stars 1 customer review
Best Sellers Rank: #192,760 in Books (See Top 100 in Books) #37 inÃ Â Books > Engineering &

Transportation > Engineering > Materials & Material Science > Metallurgy #129 inÃ Â Books > Science & Math > Physics > Mechanics #160 inÃ Â Books > Engineering & Transportation > Engineering > Materials & Material Science > Materials Science

Customer Reviews

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Hosford knows his stuff and presents the concepts clearly and concisely, assuming the reader has basic background knowledge in materials science and metallurgy. Additionally, the miscellany presented at the end of each chapter provide an interesting historical perspective. However, the real issue is with the phenomenal amount of typos in this edition. A friend of mine has the first edition and noticed mistakes that were in the second edition but not in the first! Spelling issues are one thing, but mathematical mistakes (and not just one or two, it happens multiple times in each chapter) in worked examples are extremely unhelpful to students. Further, the equations in examples are presented inline with the text. This saves space, but it makes the examples quite difficult to follow.All in all, this text is okay for presenting the general concepts, but don't intend to rely on it for the quantitative aspects of metallurgy. There has got to be a better physical metallurgy text out there.