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Autore	Smallman R. E
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2.12.1.4 Relative valency effect 2.12.1.5 The primary solid solubility boundary; 2.12.2 Interstitial solid solutions; 2.12.3 Types of intermediate phases; 2.12.3.1 Electrochemical compounds; 2.12.3.2 Size-factor compounds; 2.12.3.3 Electron compounds; 2.12.4 Order-disorder phenomena; Further reading; 3 Solidification; 3.1 Crystallization from the melt; 3.1.1 Freezing of a pure metal; 3.1.2 Homogeneous nucleation; 3.1.3 Heterogeneous nucleation; 3.2 Continuous growth; 3.3 Lateral growth; 3.4 Dendritic growth; 3.4.1 Plane-front and dendritic solidification at a cooled surface
3.4.2 Length of dendrite cores 3.5 Forms of cast structure; 3.6 Gas porosity; 3.7 Segregation; 3.8 Directional solidification; 3.9 Production of metallic single crystals for research; 3.10 Coring; 3.11 Cellular microsegregation; 3.12 Zone refining; 3.13 Eutectic solidification; 3.14 Continuous casting; 3.15 Fusion welding; 3.16 Metallic glasses; 3.17 Rapid solidification processing; Further reading; 4 Introduction to Dislocations; 4.1 Concept of a dislocation; 4.1.1 Edge and screw dislocations; 4.1.2 The Burgers vector; 4.1.3 Mechanisms of slip and climb
4.2 Strain energy associated with dislocations

Sommario/riassunto

Modern Physical Metallurgy describes, in a very readable form, the fundamental principles of physical metallurgy and the basic techniques for assessing microstructure. This book enables you to understand the properties and applications of metals and alloys at a deeper level than that provided in an introductory materials course. The eighth edition of this classic text has been updated to provide a balanced coverage of properties, characterization, phase transformations, crystal structure, and corrosion not available in other texts, and includes updated illustrations along with
