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Derived from the Closest Packings of Equal Spheres; 2.4.3 Crystal Structures Derived from the Close Packings of Equal Spheres
2.4.4 Crystal Structures Derived from the Packings of the Spheres of Different Sizes2.4.5 Selected Crystal Structures with Complex Structural Patterns; 2.5 Quasicrystals; 2.5.1 Introduction; 2.5.2 Quasiperiodic Structures in Direct and Reciprocal Space; 2.5.3 Formation and Stability; 2.5.4 Structures of Decagonal Quasicrystals (DQCs); 2.5.5 Structures of Icosahedral Quasicrystals; 2.6 Outlook; References; 3 Solidification and Grown-in Defects; 3.1 Introduction: the Solid-Liquid Interface; 3.1.1 Structure of the Solid-Liquid Interface; 3.1.2 Kinetics of the Solid-Liquid Interface
3.1.3 Chemistry of the Solid-Liquid Interface: the Segregation Problem3.1.4 Temperature of the Solid-Liquid Interface; 3.2 Solidification Structures; 3.2.1 The Interface Stability and Cell Periodicity; 3.2.2 Dendrites; 3.2.2.1 Different Types of Dendrites; 3.2.2.2 Kinetics of Columnar Dendrites; 3.2.2.3 Kinetics of Equiaxed Dendrites; 3.2.2.4 Characteristic Dimensions of the Dendrite; 3.2.2.5 Microsegregation; 3.2.3 Rapid Solidification; 3.2.3.1 Absolute Stability and Diffusionless Solidification; 3.2.3.2 Nonequilibrium Phase Diagrams; 3.2.3.3 Structure of the Rapidly Solidified Phase
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4.2.3 Cases of Cubic and Tetragonal Lattices

Sommario/riassunto

Covering the latest research in alloy physics together with the underlying basic principles, this comprehensive book provides a sound understanding of the structural changes in metals and alloys -- ranging from plasticdeformation, deformation dynamics and ordering kinetics right up to atom jump processes, first principle calculations and simulation techniques. Alongside fundamental topics, such as crystal defects, phase transformations and statistical thermodynamics, the team of international authors treats such hot areas as nano-size effects, interfaces, and spintronics, as well astec