



Intermetallics : synthesis, structure, function /

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Monografía

More than 80 elements of the Periodic Table are metals showing a broad range of structures, bonding peculiarities and physical properties. Thus, alloys and intermetallic compounds play an important role for modern functional and construction materials. Due to the enormous variety of intermetallics the authors introduce to the broad field on the level of final Master studies and focus on the basic materials

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Contenido: Table of Contents; 1. Introduction; 2. Synthesis; 2.1 Starting Materials Crucible Materials; 2.2 Phase Diagrams Metallography; 2.3 Melting, Annealing and Sintering; 2.4 Arc-Melting; 2.5 Induction Melting; 2.6 Spark Plasma Sintering; 2.7 Metal-flux assisted Synthesis; 2.8 Salt-flux assisted Synthesis; 2.9 Thin Films; 2.10 Chemical Vapor Transport; 2.11 Crystal Growth Techniques; 3. Structure; 3.1 The Metallic Elements; 3.2 Alloys, Solid Solutions, Compounds; 3.3 Ordered Close-packed Structures; 3.4 Chemical Bonding; 3.4.1 The Metallic State of Matter 3.4.2 Approaches to Electronic Structure and Bonding in Extended Structures 3.5 Hume-Rothery Phases; 3.6 Laves Phases; 3.7 Zintl Phases; 3.8 Group III Elements; 3.8.1 Borides; 3.8.2 Aluminides; 3.8.3 Gallides; 3.8.4 Indides; 3.8.5 Thallides; 3.9 Tetrelides; 3.9.1 Carbides; 3.9.2 Silicides; 3.9.3 Germanides; 3.9.5 Plumbides; 3.10 Pnictides; 3.10.1 Nitrides; 3.10.2 Phosphides; 3.10.3 Arsenides; 3.10.4 Antimonides; 3.10.5 Bismuthides; 3.11 Chalcogenides; 3.11.1 Suboxides; 3.11.2 Metal-rich Sulphides; 3.11.3 Selenides; 3.11.4 Tellurides; 3.12 Beryllium and Magnesium Intermetallics 3.13 Zinc and Cadmium Intermetallics 3.14 Amalgams; 3.15 Aurides and Platinides; 3.16 Hydrides; 3.17 Classification/Hierarchy; 3.18 Quasicrystals; 4. Function; 4.1 Magnetic Properties; 4.2 Superconductivity; 4.3 Thermoelectric Materials; 4.4 Battery Materials; 4.5 Metallic Glasses; Formula Index; Subject Index

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