1. Record Nr. UNINA9910965967103321

Titolo	Quasicrystals : types, systems, and techniques / / Beth E. Puckermann, editor
Pubbl/distr/stampa	New York, : Nova Science Publishers, c2011
ISBN	1-61761-230-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (238 p.)
Collana	Physics research and technology Materials science and technologies
Altri autori (Persone)	PuckermannBeth E
Disciplina	530.4/1
Soggetti	Quasicrystals Crystals
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	""QUASICRYSTALS: TYPES, SYSTEMS, AND TECHNIQUES""; ""QUASICRYSTALS: TYPES, SYSTEMS, AND TECHNIQUES""; ""Contents""; ""Preface""; ""Dominance of Magnetic Scattering in Al70Pd20+Xmn10-X (X = 0, 1 and 2), Al70Pd20Mn8(TM)2 (TM=Fe, Cr, Co and Ni) and Al70-Xbx Pd20Mn10 (X = 0, 0.5,1, 2 and 4) Stable Icosahedral Quasicrystals""; ""Abstract""; ""1. Introduction""; ""1.1. Phase Diagram""; ""1.2. Magnetic Properties""; ""1.3. Electrical Conductivity""; ""2. Synthesis and Characterization Details""; ""3. Part I""; ""3.1. Results and Discussions""; ""3.1.1. Structural Characterization"" ""3.1.2. Magnetic Characterization""""3.1.3.Conductivity Vs. Temperature ((-T)""; ""3.1.3.1. (-T Minimum""; ""3.1.3.2. (-T Maximum""; ""3.1.3.3. Possible Origin of Observed (-T Behavior""; ""3.1.4. Magneto-Resistance""; ""4. Part II""; ""4.1. Results and Discussion""; ""4.1.1. Structural Characterization""; ""4.1.2. Magnetic Characterization""; ""4.1.3. Conductivity Vs. Temperature""; ""4.1.3.1. ((-T) Minimum""; ""4.1.3.2. (-T Maximum""; ""4.1.3.3. Possible Origin of (-T Behavior""; ""4.1.4. Magneto-Resistance""; ""5. Part III""; ""5.1. Results and Discussion"" ""5.1.1. Structural Characterization""""5.1.2. Magnetic Characterization""; ""5.1.3. Conductivity Vs. Temperature""; ""5.1.4. Magneto-Resistance Measurement""; ""Conclusions""; ""Annexure I""; ""References""; ""Logarithmic Periodicity a€? Properties, Tests and

Uncertainties""; ""Abstract""; ""1. Introduction""; ""2. Model""; ""3. Properties""; ""3.1. Observations""; ""3.1.1""; ""3.1.2.""; ""3.1.3.""; ""3.1.4.""; ""3.1.5.""; ""3.1.6.""; ""3.2. Consequences""; ""3.2.1. Indexation""; ""3.2.2. The Compromise Spacing Effect""; ""3.2.3 Dimensions""; ""3.2.4. Enthalpy, the Driving Force""
""3.2.5. Angular Filtering""""3.2.6. Double Diffraction""; ""3.2.7. Electronic States""; ""4. Evidence""; ""4.1. Simplicity, Symmetry, and Sharpness""; ""4.2. Ranking of Beam Intensities and Calculated a€? Structure Factorsa€?""; ""4.2.1. Logarithmic Periodicity""; ""4.2.2. Double Diffraction in CBED""; ""4.2.3. Bragg Anomaly in the 2-Fold Pattern""; ""4.2.4. 2-Fold Pattern Orientation Anomaly""; ""4.3. Diffraction Due to Clusters""; ""4.4. HREM Images of Clusters and Superclusters""; ""4.4.1. a€?Structure Factora€? For The HREM Model Structure""
""4.4.2. The 3-Fold Cluster Center in the 5-Fold Pattern""""5. Uncertainties""; ""5.1. Extension""; ""5.2. Defects""; ""5.2.1. The Aperiodic Cluster a€?Holea€?""; ""5.2.2. The a€?Holea€? in Supercluster Order 1""; ""5.2.3. The a€?Holea€? in Superclusters of Higher Order""; ""5.2.4. Glassy Structures""; ""5.3. Limitation to Binary Systems""; ""5.4. Quasicrystal Growth Mechanisms""; ""Conclusion""; ""Appendix 1. Quasi Bragg Diffraction""; ""Appendix 2. Lemmas, Proofs and Corollaries""; ""Reference""; ""Vacancies in Quasicrystals""; ""Abstract""; ""1. Introduction""
""2. Positron Annihilation Spectroscopy""

Sommario/riassunto

Quasicrystals are metallic alloys that exhibit atomic scale order, but not periodic order. Atomic scale properties of these materials are different from single crystalline material, for example, extraordinary mechanical properties, electrical and thermal transport properties, and electronic structure. This book presents topical research in the study of quasicrystals, including vacancies in quasicrystals; the formation of quasicrystals in bulk metallic glasses and their effects on mechanical behaviour; the electrical transport observed in Al-Pd-Mn quasicrystals; logarithmic periodicity in quasicrystals; and, positron annihilation studies of quasicrystals.