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Titolo	Aperiodic Crystals // edited by Siegbert Schmid, Ray L. Withers, Ron Lifshitz
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Collana	Gale eBooks
Altri autori (Persone)	SchmidSiegbert WithersRay L LifshitzRon
Disciplina	548 548.81
Soggetti	Building materials Crystallography Spectrum analysis Structural Materials Crystallography and Scattering Methods Spectroscopy
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes index.
Nota di contenuto	A brief history of aperiodic crystals: 1962-2012 -- Squirrel Diffraction -- Random Noble Means Substitutions -- Magic Numbers in the Discrete Tomography of Cyclotomic Model Sets -- Some Comments on the Inverse Problem of Pure Point Diffraction -- Well-rounded sublattices and coincidence site lattices -- Octagon-based Quasi-crystalline Formations in Islamic Architecture -- The Ammann-Beenker Tilings Revisited -- Substitution rules and topological properties of the Robinson tilings -- Short-range Spin Fluctuation in the Zn-Mg-Tb Quasicrystal and the Relation to the Boson peak -- Anomalous properties and the electronic glass-like state in Al-based stable quasicrystals -- Quantum Diffusion in Separable d-Dimensional Quasiperiodic Tilings -- Hume-Rothery Stabilization Mechanism of Be-Based Complex Alloys -- Hume-Rothery Stabilization Mechanism in

Tsai-type Cd<sub>6</sub>Ca Approximant and e/a Determination of Ca and Cd Elements in the Periodic Table -- Hume-Rothery Stabilization Mechanism in Low-Temperature Phase Zn<sub>6</sub>Sc Approximant and e/a Determination of Sc and Y in M-Sc and M-Y (M=Zn, Cd and Al) Alloy Systems -- Analysis of dislocations in quasicrystals composed of self-assembled nanoparticles -- Average Unit Cell in Fourier Space and Its Application to Decagonal Quasicrystals -- Study of phase equilibria in Al-Pd-Co system at 700 °C -- Evolution of phases in selected Al-Co-Cu complex metallic alloys under near-equilibrium conditions at 800-1150°C -- Superspace Description of the System Bi<sub>2(n+2)</sub>MonO<sub>6(n+1)</sub> (n = 3, 4, 5 and 6) -- Pseudo-Commensurate GdBaCo<sub>2</sub>O<sub>5+</sub> and Its Phase Transition at Elevated Temperatures -- Al<sub>4</sub>(Cr,Fe): a structure survey -- Phase transitions in aperiodic composite crystals -- Pseudo Symmetry in Tungsten Bronze Type Sr<sub>3</sub>TiNb<sub>4</sub>O<sub>15</sub> -- Structural Investigation of the Incommensurate Modulated Ta<sub>2</sub>O<sub>5</sub>•Al<sub>2</sub>O<sub>3</sub> System -- First-principles study for phase diagrams of Cd-Ca and Cd-Y Tsai-type Approximants under pressure -- The choice of vector basis for Ammann Tiling in a context of the Average Unit Cell -- Real Space Structure Factor and Scaling for Quasicrystals -- Direct observations of aperiodic arrangements of transition-metal atoms in Al-Co-Ni decagonal quasicrystals by Cs-corrected HAADF-STEM -- Arrangement of transition-metal atoms in an approximant crystal related to Al-Cu-Co decagonal quasicrystals studied by Cs-corrected HAADF-STEM -- Structure of the 16 phase in Al-Pd-Co system studied by HREM and X-ray diffraction -- Structure of t<sub>2</sub>-Al<sub>3</sub>Co, a monoclinic approximant of the Al-Co decagonal quasicrystal -- Reverse Monte Carlo study of diffuse scattering from a frustrated protein system -- Dynamical flexibility in the periodic Zn<sub>6</sub>Sc 1/1-approximant -- Trajectories of colloidal particles in laser fields with eight-, ten-, or twelve-fold symmetry and phasonic drift -- Catalytic properties of fivefold surfaces of quasicrystal approximants -- Effect of leaching on surface microstructure and chemical composition of Al-based quasicrystals.

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### Sommario/riassunto

Aperiodic Crystals collects 37 selected papers from the scientific contributions presented at Aperiodic 2012 - the Seventh International Conference on Aperiodic Crystals held in Cairns, Australia, 2-7 of September 2012. The volume discusses state-of-the-art discoveries, new trends and applications of aperiodic crystals - including incommensurately modulated crystals, composite crystals, and quasicrystals - from a wide range of different perspectives. Starting with a general historical introduction to aperiodic crystals, the book proceeds to examine the complex mathematics of aperiodic long-range order, as well as the theoretical approaches aimed at understanding some of the unique properties and mechanisms underlying the existence of aperiodic crystals. The book then explores in detail such topics as complex metallic alloys, modulated structures, quasicrystals and their approximants, dynamics, disorder and defects in quasicrystals. It concludes with an analysis of quasicrystal surfaces and their properties. By describing the latest research and the progress made on the structure determination of aperiodic crystals and the influence of this unique structure on their physical properties, this book represents a valuable resource to mathematicians, crystallographers, physicists, chemists, materials and surface scientists, and even architects and artists, interested in the fascinating nature of aperiodic crystals.

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