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Titolo	A functional biology of Scyphozoa / Mary N. Arai
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Soggetti	Materials science Composite materials Nanotechnology Materials science - Data processing Surfaces (Technology) Thin films Materials - Analysis Materials Science Composites Nanoscale Design, Synthesis and Processing Computational Materials Science Surfaces, Interfaces and Thin Film Materials Characterization Technique
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Contents -- Contributors -- List of Figures -- Processing Techniques of Advanced Materials -- Chemisorption of Molybdenum Atom on Carbon Nanotube Using Density Functional Theory -- 1 Introduction -- 2 Computational Details -- 3 Results and Discussions -- 3.1 Geometrical Properties -- 3.2 Electronic Properties -- 3.3 Adsorption Properties -- 4 Conclusion -- References -- Carbon Nanoparticles from Thermally Expanded Graphite: Effect of the Expansion Conditions on the Derived Nanoparticles Morphology

-- 1 Introduction -- 2 Experimental -- 3 Results and Discussion -- 3.1 Graphite Nitrate Cointercalation Compound with Carboxylic Acids as Precursor for Expanded Graphite -- 3.2 Thermally Expanded Graphite, Obtained from GNCC with Acetic and Formic Acids -- 3.3 Carbon Nanoparticles Obtained from TEGs -- 4 Conclusion -- References -- Optimization of the Synthesis Conditions of N-Doped TiO2 Nanoparticles -- 1 Introduction -- 2 Experimental Part -- 2.1 Material Synthesis -- 2.2 Materials Characterization -- 2.3 Photocatalyst Preparation -- 3 Result and Discussion -- 3.1 DTA/TGA Measurements -- 3.2 XRD Patterns -- 4 Conclusions -- References -- Fragrance Durability Depending on Compression of Knitted Fabric Bandage Coated by Microcapsule Contained Cinnamon Essential Oil -- 1 Introduction -- 2 Experimental Part -- 2.1 Materials -- 2.2 Methods -- 3 Results and Discussion -- 3.1 Influence of Fabric Characteristic on Fragrance Durability of Interlock Knitted Fabric -- 3.2 Application of the Laplace Law to Calculate Fabric Compression -- 3.3 Influence of Compression on the Fragrance Durability of Knitted Bandage Coated by Microcapsules Contained Cinnamon Oil -- 4 Conclusions -- References.

Effect of High-Power Nanosecond Electromagnetic Pulses and Dielectric Barrier Discharge in Air on the Structural, Physicochemical and Flotation Properties of Eudialyte -- 1 Introduction -- 1.1 Research Purpose -- 1.2 Research Scope -- 2 Experimental -- 2.1 Materials and Research Technique -- 3 Results and Discussions -- 3.1 Effect of HPEMP and DBD on the Morphology and Defects of Eudialyte Surface -- 3.2 Effect of High-Power Nanosecond Electromagnetic Pulses and Dielectric Barrier Discharge on Microhardness, Physicochemical and Flotation Properties of Eudialyte -- 4 Conclusions -- References -- Use of Technogenic Raw Materials in the Technology of Ceramic Materials -- 1 Introduction -- 1.1 The Purpose of the Study -- 2 Research Methods -- 3 Results and Discussion -- 4 Conclusion -- References -- Parametric Transformation of Fractal Structures -- 1 Introduction -- 2 Description of Model Parameters -- 3 Results and Discussion -- 4 Discussion -- 5 Conclusion -- References -- Physics of Advanced Materials -- Zero-Point Energy of Compressed Rare-Gas Crystals in the Model of Deformable Atoms -- 1 Introduction -- 2 Dynamic Matrix of Rare-Gas Crystals -- 3 Phonon Frequencies at the Mean-Value Points -- 4 Zero-Point Energy of Compressed Rare-gas Crystals -- 5 Conclusions -- References -- Orientation Effects in 2-2 Composites Based on [011]-poled PZN-0.065PT Single Crystal -- 1 Introduction -- 2 Model Concepts, Effective Electromechanical Properties and Parameters of the 2-2 Composite -- 2.1 Model of the 2-2 Composite -- 2.2 Effective Electromechanical Properties and Parameters at the Rotation of Main Crystallographic Axes -- 3 Orientation Dependences of Effective Piezoelectric Properties and Related Parameters -- 4 Comparison and Discussion -- 5 Conclusion -- References.

Effect of the Matrix Subsystem on Piezoelectric Properties and Related Parameters of Lead-Free 1-3-Type Composites Based on Domain-Engineered Single Crystals -- 1 Introduction -- 2 Model Concepts, Effective Properties and Parameters of Composites -- 2.1 Model of the Piezo-Active 1-3-Type Composite: Examples of 1-0-3 and 1-2-2 Connectivity Patterns -- 2.2 Effective Electromechanical Properties and Parameters of Composites -- 2.3 Components of Composites -- 3 Piezoelectric Properties, Figures of Merit and Anisotropy Factors of 1-3-Type Composites -- 3.1 1-0-3 Composites -- 3.2 1-2-2 Composites -- 4 Comparison of Results -- 5 Conclusion -- References -- On Solvability of Integral Equations of the First Kind with Mild

Singularity in the Kernel -- 1 Introduction -- 2 Preliminaries -- 2.1 The Generalized Hölder Spaces and Function Classes of Bary-Stechkin -- 2.2 The Fourier-Laplace Multipliers Theory -- 3 Results and Discussion -- 3.1 The Class of Multipliers of Given Asymptotic and General Theorem -- 3.2 On the Solvability of Some Integral Equations of the First Kind -- 4 Conclusion -- References -- Theoretical Consideration and Experimental Studies of Bending Deformations of Inhomogeneous Ferroceramic Plates -- 1 Introduction -- 1.1 Research Purpose -- 1.2 Research Scope -- 2 Research Method -- 2.1 Continuous Formulation of the Problem (First Model) -- 2.2 Continuous Formulation of the Problem (Second Model) -- 2.3 Technology of Piezoelement Preparation and Polarization -- 3 Results and Discussion -- 4 Conclusion -- References -- Microstructure, Crystal Structure, Piezoelectric and Dielectric Properties of Piezoceramic $SrBi_2Nb_2O_9$ -- 1 Introduction -- 2 Experiment -- 3 Results and Discussion -- 4 Conclusions -- References -- Microstructure, Dielectric and Piezoelectric Properties of Nd-Doped $Bi_4Ti_3O_{12}$ Ceramics -- 1 Introduction -- 2 Experiment.
3 Results and Discussion -- 4 Conclusions -- References -- Microstructure Peculiarities and Electromechanical Properties of Porous Piezoceramics -- 1 Introduction -- 2 Objects of the Study and Methods of Measurements -- 3 Results and Discussion -- 3.1 Microstructure Study -- 3.2 Porosity Dependencies of Electromechanical Parameters -- 3.3 Complex Electromechanical Parameters -- 4 Conclusions -- References -- Investigation of the Microwave Properties of the Transparent Piezoceramics PLZT -- 1 Introduction -- 2 Objective of the Work -- 3 Objects and Research Method -- 4 Results and Discussion -- 5 Conclusion -- References -- Microwave Absorbing Properties of Modified Solid Solutions Based on Bismuth Ferrite and Lead Ferroniobate with Different Degrees of Porosity -- 1 Introduction -- 2 Materials -- 3 Methods -- 4 Results and Discussion -- 4.1 Study of the SS-1 Samples Characteristics -- 4.2 Study of the SS-2 Samples Characteristics -- 4.3 Study of the SS-3 Samples Characteristics -- 5 Additional Comparisons -- 6 Conclusions -- References -- A Novel Method for Determining Thermal Parameters of Moist Material -- 1 Introduction -- 2 Materials and Methods -- 2.1 Physical Model -- 2.2 Mathematical Model -- 2.3 Two Roots of the Thermal Conductivity Equation -- 2.4 Constructing Formula for Determining Thermal Conductivity Coefficient, Thermal Diffusion Coefficient and Specific Heat Capacity -- 2.5 Materials and Experimental Equipment -- 3 Results and Discussion -- 3.1 Results -- 3.2 Discussion -- 4 Conclusions -- References -- Study of Surface Morphology of Anticorrosive Organic Films -- 1 Introduction -- 2 Objects, Conditions and Methods of Research -- 3 Anticorrosive Properties of Films -- 4 Morphology of Film Surface -- 5 Conclusion -- References -- The Results of Calculations of Visualization of Biological Tissues Based on the Optoacoustic Effect.
1 Introduction -- 2 Research Method -- 3 Results and Discussion -- 4 Conclusion -- References -- Mechanics of Advanced Materials -- Modeling the Hysteresis Response of Ferroelectric Ceramics Subjected to High and Low Intensity Electric and Mechanical Fields -- 1 Introduction -- 2 Problem Formulation -- 3 Reversible Components -- 4 Irreversible Components -- 4.1 Ultimate or Limiting Strain and Polarization -- 4.2 Energy Cost to Break the Locking Mechanisms of Domain Walls -- 4.3 Estimate of the Work of the Electric and Mechanical Fields in Real and Ideal Processes -- 4.4 Energy Balance -- 5 Model Analysis and Numerical Experiments -- 6 Conclusion -- References -- Finite Element Study of Effective Moduli of Nanoporous

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2.1 Time-Domain Finite Difference Method.

Sommario/riassunto

This book presents 50 selected peer-reviewed contributions from the 10th Anniversary International Conference on “Physics and Mechanics of New Materials and Their Applications”, PHENMA 2021-2022 (23-27 May, 2022, Divnomorsk, Russia), focusing on processing techniques, physics, mechanics, and applications of advanced materials. The book describes a broad spectrum of promising nanostructures, crystal structures, materials, and composites with unique properties. It presents nanotechnological design approaches, environmental-friendly processing techniques, and physicochemical as well as mechanical studies of advanced materials. The selected contributions describe recent progress in computational materials science methods and algorithms (in particular, finite-element and finite-difference modelling) applied to various technological, mechanical, and physical problems. The presented results are important for ongoing efforts concerning the theory, modelling, and testing of advanced materials. Other results are devoted to promising devices with higher accuracy, increased longevity, and greater potential to work effectively under critical temperatures, high pressure, and in aggressive environments.