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Part I Advanced Nanomaterials -- 1 Tuning the Electronic, Optical, and Transport Properties of Phosphorene -- 2 Detection of CBRN Agents through Nanocomposite Based Photonic Crystal Sensors -- 3 Impurity Ordering Effects on Graphene Electron Properties -- 4 Multiferroics for Detection of Magnetic and Electric Fields -- 5 Many-Fermion Wave Functions: Structure and Examples -- 6 Factors and Lattice Reactions Governing Phase Transformations in Beta Phase Alloys -- 7 Quantum-Chemical Calculations of Pure and Phosphorous Doped Ultra-Small Silicon Nanocrystals -- 8 Theoretical Aspects of Nanosensors for Radiation Hazards Detecting -- Part II Nanosensors -- 9 Chemoelectrical Gas Sensors of Metal Oxides with and Without Metal Catalysts -- 10 Ion Track Etching Revisited: Influence of Aging on Parameters of Irradiated Polymers as Required for Advanced Devices -- 11 Plasmon Metal Nanostructures Formation in Piezocomposite Material Controllable in Micrometric Level for Detection and Sensing Cell-Biological Particles -- 12 Detection of CBRN Agents at the Interface with P(VDF-TRFE) Film by Scanning Third Harmonic Generation -- 13 Nanoscale-Specific Analytics: How to Push the Analytic Excellence in Express Analysis of CBRN -- 14 Model of Interaction between TiO<sub>2</sub> Nanostructures and Bovine Leucosis Proteins in Photoluminescence Based Immunosensor -- 15 Superconducting Gravimeters Based on Advanced Nanomaterials and Quantum Neural Network -- 16 Replicated Computer Generated Microstructure onto Piezoelectric Nanocomposite and Nanoporous Aluminum Oxide Membranes Usage in Microfluidics -- 17 Nanopore-Penetration Sensing Effects for Target DNA Sequencing via Impedance Difference between Organometallic-Complex-Decorated Carbon Nanotubes with Twisted Single-Stranded or Double-Stranded DNA -- 18 Functional Nanocomposites Based on Quantum Dots -- 19 Polymer Lattice and Track Nanostructures to Create Novel Biosensors -- 20 The Sensitivity Peculiarities of Nanosized Tin Dioxide Films to Certain Alcohols -- 21 Porous Silica Glasses as a Model Medium for the Formation of Nanoparticles Ensembles -- 22 The Revised SI Systems of Units of 2018 and Its Impact on Nanotechnology -- 23 CBRNe as Conceptual Frame Of An All Hazards Approach of Safety and Security: the Creation of Organic Networks of -- Military, Civil, Academic/Research and Private Entities at National and International Level to Generate Solutions for Risk Reduction. A European and Italian Perspective -- 24 Decrease in the Concentration of Hazardous Components of Exhaust Gases from a Combustion Chamber of a Heat Engine -- 25 Visual Analytics in Machine Training Systems for Effective Decision -- 26 Apoptosis in Atherosclerosis and the Ways of its Regression.

Sommario/riassunto

This book is devoted to advanced materials and perspective sensors, which is one of the most important problems in nanotechnology and security. This book is useful for researchers, scientist and graduate students in the fields of solid state physics, nanotechnology and security.