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Nota di contenuto	Part I. Electron Emission: Quantum Entrapment and Polarization -- Introduction -- Theory: Bond-Electron-Energy Correlation -- Probing Strategies: STM/S, PES, APECS/XAS, ZPS -- Solid and Liquid Skins: Quantum Entrapment and Polarization -- Adatoms, Defects, and Kink Edges -- Atomic Chain Ends, Clusters, and Nanocrystals -- Carbon Allotropes -- Hetero-Coordinated Interfaces -- Tetrahedrally-Coordinated Bond Formation -- Hetero- and Under-Coordination Coupling -- Liquid Phase -- Concluding Remarks -- Part II. Electron Diffraction: Bond-band-Barrier Forming Dynamics -- Principles: Bond-band-barrier Correlation -- Methodology: Parameterization and Justification -- VLEED Capability and Sensitivity -- Bond Geometry, Valence Band, Potential Barrier and Work Function -- Four-Stage Cu3O2 Bonding Dynamics -- Conclusion -- Part 3. Multifield Phonon Dynamics -- Wonders of Multifield Lattice Oscillation -- Theory: Multifield Oscillation Dynamics -- Phonons of the Layered Structures -- Phonons of the Sized Crystals -- Water and Aqueous Solutions -- Concluding Remarks.

Sommario/riassunto

This book presents the latest advances and future trends in electron and phonon spectrometrics, focusing on combined techniques using electron emissions, electron diffraction, and phonon absorption and reflection spectrometrics from a substance under various perturbations to obtain new information on bond-electron-phonon dynamics. Discussing the principles of the bond order-length-strength (BOLS) correlation, nonbonding electron polarization (NEP), local bond average (LBA), and multi-field lattice oscillation dynamics for systems under perturbation, the book covers topics like differential photoelectron/phonon spectrometrics (DPS), which distils transition of the length, energy, stiffness and the fraction of bonds upon chemical or physical conditioning; and the derived performance of electrons in various bands in terms of quantum entrapment and polarization. This book appeals to researchers, scientists and engineers in the fields of chemistry, physics, surface and interface science, and materials science and engineering who are interested in electron and phonon spectrometrics. .