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Titolo	Solid-state photoemission and related methods : theory and experiment // Wolfgang Schattke, Michel A. Van Hove, (eds.)
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Solid-State Photoemission and Related Methods; Preface; In Memoriam Lars Hedin (1930-2002); Contents; List of contributors; 1 Electronic structure theory for ground and excited state properties of materials; 1.1 Introduction; 1.2 Density functional theory and the FLAPW method; 1.2.1 Introduction; 1.2.2 Density-functional theory; 1.2.3 The FLAPW basis-set; 1.3 Electronic structure theory for excited states; 1.3.1 Band gaps and derivative discontinuities; 1.3.2 Band gaps and nonlocal potentials; 1.3.3 Quasiparticle calculations; 1.3.4 Density functional theory using non-local functionals 1.4 Application to semiconductor materials 1.4.1 Bulk semiconductor materials; 1.4.2 Semiconductor/semiconductor interfaces; 1.4.3 Semiconductor/metal interfaces; 1.5 Applications of the first-principles FLAPW approach to studies of magnetism; 1.5.1 Magnetism; 1.5.2 Magneto-crystalline anisotropy in thin films; 1.5.3 Higher-order magneto-crystalline anisotropy; 1.5.4 Magnetostriction; 1.5.5 Magneto-optical effects; 1.5.6 Magnetic circular dichroism; References;

2 Overview of core and valence photoemission; 2.1 Introduction; 2.2 Green function methods  
2.2.1 Photoemission and the many-body problem 2.2.2 Green functions and one-particle Schrodinger equation; 2.2.3 Elementary excitations in systems of interacting particles; 2.2.4 The self-energy; 2.2.5 Independent particle states and related methods; 2.2.6 Perturbation expansion; 2.2.7 Diagrams in many-body systems; 2.2.8 Spectral representation; 2.2.9 Photocurrent; 2.3 Three-step model versus one-step model; 2.4 Golden Rule; 2.4.1 Linear response in the external field; 2.4.2 Dipole approximation; 2.5 Initial state; 2.5.1 Core levels; 2.5.2 Valence bands; 2.6 Final state  
2.6.1 Direct solution of Schrodinger equation 2.6.2 Multiple scattering method; 2.7 Matrix elements: core versus valence levels; 2.8 Optical effects; 2.8.1 Resonant photoemission; 2.8.2 Photoemission by surface optical response fields; 2.9 Spin effects; 2.10 Computer codes for photoelectron diffraction and spectroscopy; References; 3 General theory of core electron photoemission; 3.1 Introduction; 3.2 Theory; 3.2.1 General considerations; 3.2.2 A model Hamiltonian with a priori determined parameters; 3.2.3 Extrinsic and intrinsic losses in core electron photoemission  
3.2.4 Charge transfer and shake-down satellites 3.2.5 Resonant photoemission; 3.2.6 Phonons and temperature effects; 3.3 Concluding remarks; References; 4 Valence band VUV spectra; 4.1 Introduction; 4.2 Electrons at crystal surfaces; 4.2.1 One-electron approach; 4.2.2 Many-electron approach; 4.3 Photoelectron spectroscopy; 4.3.1 Band mapping (peak positions); 4.3.2 Electron and hole lifetimes (peak widths); 4.3.3 Orbital orientation (peak intensities); 4.3.4 EDC spectra (profiles); 4.4 Summary; References  
5 Angle-resolved photoelectron spectroscopy: From photoemission imaging to spatial resolution

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## Sommario/riassunto

Photoemission is one of the principal techniques for the characterization and investigation of condensed matter systems. The field has experienced many developments in recent years, which may also be put down to important achievements in closely related areas. This timely and up-to-date handbook is written by experts in the field who provide the background needed by both experimentalists and theorists. It represents an interesting framework for showing the connection between theory and experiment by bringing together different concepts in the investigation of the properties of materials.

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