1. Record Nr. UNINA9910809093603321

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Titolo	Alkali-doped fullerides : narrow-band solids with unusual properties / / Olle Gunnarsson
Pubbl/distr/stampa	River Edge, N.J., : World Scientific, c2004
ISBN	1-281-93543-3 9786611935436 981-279-495-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (xvii, 282 p.) : ill
Disciplina	537.623
Soggetti	Superconductors Superconductivity Electric conductivity Metal-insulator transitions Electron-electron interactions Electron-phonon interactions Jahn-Teller effect
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (p. 261-277) and index.
Nota di contenuto	ch. 1. Structural properties. 1.1. Structure of the C[symbol] molecule. 1.2. Structures of some solids -- ch. 2. Models and parameters. 2.1. Models of hopping. 2.2. Coulomb interaction. 2.3. Electron-phonon interaction. 2.4. Electron-plasmon coupling. 2.5. Current operator -- ch. 3. Phonons and electron-phonon coupling strength. 3.1. Intramolecular modes. 3.2. Alkali phonons. 3.3. Librations. 3.4. Intermolecular modes -- ch. 4. Interacting electron-phonon system. 4.1. Free molecules. 4.2. Spectral functions in metallic fullerenes. 4.3. Model calculation -- ch. 5. Electronic structure. 5.1. Band structure calculations. 5.2. Tight-binding calculations. 5.3. GW calculations. 5.4. Susceptibility. 5.5. Specific heat. 5.6. Density of states. 5.7. Hall effect. 5.8. Photoemission -- ch. 6. Plasmons. 6.1. Experimental results. 6.2. Plasmon dispersion. 6.3. Plasmon broadening -- ch. 7. Metal-insulator transition. 7.1. Experimental results and U/W ratio. 7.2. Calculational approach: Projection Quantum Monte Carlo method. 7.3. Degeneracy

dependence. 7.4. Filling dependence. 7.5. Lattice structure dependence. 7.6. Effects of electron-phonon and Hund's rule coupling. 7.7. Effects of noncubic lattice structure -- ch. 8. Electrical resistivity. 8.1. Mean free path. 8.2. Resistivity saturation. 8.3. Experimental results. 8.4. Boltzmann theory of resistivity. 8.5. Beyond the Boltzmann equation. 8.6. Different classes of saturation behavior -- ch. 9. Superconductivity. 9.1. Experimental results. 9.2. Retardation effects and Coulomb pseudopotential. 9.3. Local pairing. 9.4. Electronic mechanism. 9.5. Isotope effect. 9.6. Comparison with experiments -- ch. 10. Discussion.

Sommario/riassunto

Alkali-doped fullerides have attracted strong interest since their production became possible about fifteen years ago. This book presents recent work which may solve intriguing problems arising from a variety of remarkable properties. For example, these solids are superconductors with high transition temperatures, although the similarity between the electronic and phonon energy scales should suppress superconductivity. Moreover, the Ioffe-Regel condition for electrical conductivity is strongly violated. The book shows why superconductivity is nevertheless possible, owing to a local pairing mechanism. The Ioffe-Regel condition is derived quantum-mechanically, and it is explained why the underlying assumptions are violated for fullerides and high-Tc cuprates, for example. The book treats electronic and transport properties, reviewing theoretical and experimental results. It focuses on superconductivity, electrical conductivity and metal-insulator transitions, emphasizing the electron-electron and electron-phonon interactions as well as the Jahn-Teller effect.