

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Record Nr.           | UNINA9910965083603321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Titolo                  | Handbook of nanophysics . 1 Principles and methods / / edited by Klaus D. Sattler                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Pubbl/distr/stampa      | Boca Raton, : Taylor & Francis, 2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ISBN                    | 1-04-022003-7<br>0-429-19314-9<br>1-4200-7541-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Edizione                | [1st ed.]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Descrizione fisica      | 1 online resource (816 p.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Collana                 | Handbook of Nanophysics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Altri autori (Persone)  | SattlerKlaus D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Disciplina              | 620/.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Soggetti                | Microphysics<br>Nanotechnology<br>Nanoscience                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Lingua di pubblicazione | Inglese                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Formato                 | Materiale a stampa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Livello bibliografico   | Monografia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Note generali           | "A CRC title."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Nota di bibliografia    | Includes bibliographical references and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Nota di contenuto       | Front cover; Contents; Preface; Acknowledgments; Editor; Contributors; Part I: Design and Theory; Chapter 1. The Quantum Nature of Nanoscience; Chapter 2. Theories for Nanomaterials to Realize a Sustainable Future; Chapter 3. Tools for Predicting the Properties of Nanomaterials; Chapter 4. Design of Nanomaterials by Computer Simulations; Chapter 5. Predicting Nanocluster Structures; Part II: Nanoscale Systems; Chapter 6. The Nanoscale Free-Electron Model; Chapter 7. Small-Scale Nonequilibrium Systems; Chapter 8. Nanoionics; Chapter 9. Nanoscale Superconductivity<br>Chapter 10. One-Dimensional Quantum LiquidsChapter 11. Nanofluidics of Thin Liquid Films; Chapter 12. Capillary Condensation in Confined Media; Chapter 13. Dynamics at the Nanoscale; Chapter 14. Electrochemistry and Nanophysics; Part III: Thermodynamics; Chapter 15. Nanothermodynamics*; Chapter 16. Statistical Mechanics in Nanophysics; Chapter 17. Phonons in Nanoscale Objects; Chapter 18. Melting of Finite-Sized Systems; Chapter 19. Melting Point of Nanomaterials; Chapter 20. Phase Changes of Nanosystems; Chapter 21. Thermodynamic Phase Stabilities of Nanocarbon; Part IV: Nanomechanics |

Chapter 22. Computational NanomechanicsChapter 23. Nanomechanical Properties of the Elements; Chapter 24. Mechanical Models for Nanomaterials; Part V: Nanomagnetism and Spins; Chapter 25. Nanomagnetism in Otherwise Nonmagnetic Materials; Chapter 26. Laterally Confined Magnetic Nanometric Structures; Chapter 27. Nanoscale Dynamics in Magnetism; Chapter 28. Spins in Organic Semiconductor Nanostructures; Part VI: Nanoscale Methods; Chapter 29. Nanometrology; Chapter 30. Aerosol Methods for Nanoparticle Synthesis and Characterization; Chapter 31. Tomography of Nanostructures  
Chapter 32. Local Probes: Pushing the Limits of Detection and InteractionChapter 33. Quantitative Dynamic Atomic Force Microscopy; Chapter 34. STM-Based Techniques Combined with Optics; Chapter 35. Contact Experiments with a Scanning Tunneling Microscope; Chapter 36. Fundamental Process of Near-Field Interaction; Chapter 37. Near-Field Photopolymerization and Photoisomerization; Chapter 38. Soft X-Ray Holography for Nanostructure Imaging; Chapter 39. Single-Biomolecule Imaging; Chapter 40. Amplified Single-Molecule Detection; Back cover

---

### Sommario/riassunto

Covering the key theories, tools, and techniques of this dynamic field, Handbook of Nanophysics: Principles and Methods elucidates the general theoretical principles and measurements of nanoscale systems. Each peer-reviewed chapter contains a broad-based introduction and enhances understanding of the state-of-the-art scientific content through fundamental equations and illustrations, some in color. This volume explores the theories involved in nanoscience. It also discusses the properties of nanomaterials and nanosystems, including superconductivity, thermodynamics, nanomechanics, and nanomagn

---