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| Autore | Poelking Carl. R |
| Titolo | The (Non-)Local Density of States of Electronic Excitations in Organic Semiconductors / / by Carl. R Poelking |
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| Descrizione fisica | 1 online resource (XIV, 133 p. 42 illus. in color.) |
| Collana | Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053 |
| Disciplina | 530.416 |
| Soggetti | Semiconductors<br>Optical materials<br>Electronics - Materials<br>Polymers<br>Physics<br>Optical and Electronic Materials<br>Polymer Sciences<br>Applied and Technical Physics |
| Lingua di pubblicazione | Inglese |
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| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references at the end of each chapters. |
| Nota di contenuto | Organic Electronics in a Nutshell -- Particle-Based Models -- Long-Range Polarized Embedding of Electronic Excitations -- Charge Carriers at Organic–Organic Interfaces -- Charge Carriers in Disordered Bulk Mesophases -- Charge Transfer States at Donor–Acceptor Heterojunctions -- Conclusions & Outlook. |
| Sommario/riassunto | This book focuses on the microscopic understanding of the function of organic semiconductors. By tracing the link between their morphological structure and electronic properties across multiple scales, it represents an important advance in this direction. Organic semiconductors are materials at the interface between hard and soft matter: they combine structural variability, processibility and mechanical flexibility with the ability to efficiently transport charge and energy. This unique set of properties makes them a promising class of materials for electronic devices, including organic solar cells and light- |

emitting diodes. Understanding their function at the microscopic scale – the goal of this work – is a prerequisite for the rational design and optimization of the underlying materials. Based on new multiscale simulation protocols, the book studies the complex interplay between molecular architecture, supramolecular organization and electronic structure in order to reveal why some materials perform well – and why others do not. In particular, by examining the long-range effects that interrelate microscopic states and mesoscopic structure in these materials, the book provides qualitative and quantitative insights into e. g. the charge-generation process, which also serve as a basis for new optimization strategies.