

Electronic Processes in Organic Semiconductors

An Introduction

Ideal resource for learning about the fundamentals of organic semiconductors and their device applications with minimal prior knowledge

Assuming only basic knowledge of excitations in molecules and semiconductors, *Electronic Processes in Organic Semiconductors* comprehensively explains the electronic structure of organic semiconductors, the flow of charges and the nature of excited states, and the intricacies of the electronic and optical processes. The text is complemented by feature boxes detailing aspects that may be trivial to one group of readers yet fully unknown another, as the book is intended for chemists, physicists, material scientists, engineers and biologists alike.

The book is structured into four chapters. Chapter one introduces the reader to basic concepts of molecular photophysics. Chapter two explores how interactions between chromophores affect charges and excited states. Chapter three delineates the processes that are relevant to optoelectronic devices. Chapter four discusses how charge carrier transport, recombination and exciton dissociation can be employed in the operation of organic semiconductor devices.

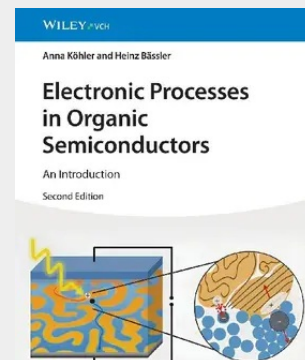
This newly revised and updated Second Edition responds to the development of novel material classes and the increase in bioelectronic applications. It reflects the advanced insight on electronic structure, charge transport, excitonic processes and the key role played by film morphology in this.

Sample topics covered in *Electronic Processes in Organic Semiconductors* include:

- * Electronic, vibrational, and spin factors in transitions between molecular states
- * Experimental methods to study charge transport and excited states, comprising spectroscopic techniques as well as device-based measurements
- * Mechanisms of charge generation and transport in undoped and doped systems
- * Properties of excitations in single-compound materials, donor-acceptor systems and host-guest systems
- * Basics of device fabrication for solar cells, light-emitting diodes and transistors, operational principles, performance assessment and approaches for further improvement

Written in a way that makes understanding of organic semiconductors easy even for the uninitiated, the Second Edition of *Electronic Processes in Organic Semiconductors* continues to be the go-to resource for students intending to learn about organic semiconductors. It also serves as key reference for scientists from adjacent fields that need information on a particular aspect of organic semiconductors.

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