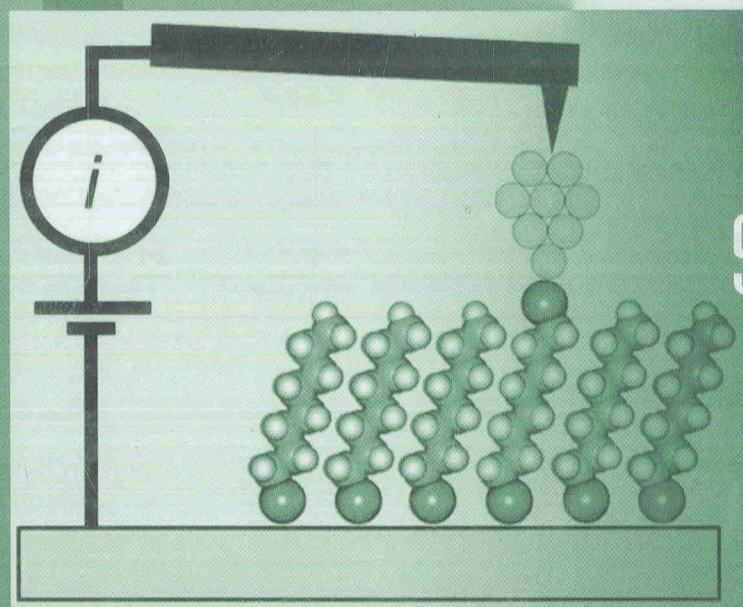


Introduction to Organic Electronic and Optoelectronic Materials and Devices



Edited by

Sam-Shajing Sun

Larry R. Dalton



CRC Press
Taylor & Francis Group

Contents

Book Abstract	xiii
Preface	xv
Acknowledgments.....	xvii
Editors.....	xix
Contributors	xxi
Chapter 1 Introduction to Optoelectronic Materials	1
<i>N. Peyghambarian and M. Fallahi</i>	
Chapter 2 Introduction to Optoelectronic Device Principles	25
<i>Joachim Piprek</i>	
Chapter 3 Basic Electronic Structures and Charge Carrier Generation in Organic Optoelectronic Materials	47
<i>Sam-Shajing Sun</i>	
Chapter 4 Charge Transport in Conducting Polymers.....	87
<i>Vladimir N. Prigodin and Arthur J. Epstein</i>	
Chapter 5 Major Classes of Organic Small Molecules for Electronics and Optoelectronics	129
<i>Xianle Meng, Weihong Zhu, and He Tian</i>	
Chapter 6 Major Classes of Conjugated Polymers and Synthetic Strategies.....	173
<i>Yongfang Li and Jianhui Hou</i>	
Chapter 7 Low Energy Gap, Conducting, and Transparent Polymers	211
<i>Arvind Kumar, Yogesh Ner, and Gregory A. Sozling</i>	
Chapter 8 Conjugated Polymers, Fullerene C ₆₀ , and Carbon Nanotubes for Optoelectronic Devices	237
<i>Liangti Qu, Liming Dai, and Sam-Shajing Sun</i>	
Chapter 9 Introduction of Organic Superconducting Materials	263
<i>Hatsumi Mori</i>	
Chapter 10 Molecular Semiconductors for Organic Field-Effect Transistors	287
<i>Antonio Facchetti</i>	

Chapter 11	Polymer Field-Effect Transistors	319
	<i>Henrik G.O. Sandberg</i>	
Chapter 12	Organic Molecular Light-Emitting Materials and Devices	351
	<i>Franky So and Jianmin Shi</i>	
Chapter 13	Polymer Light-Emitting Diodes: Devices and Materials	373
	<i>Xiong Gong and Shu Wang</i>	
Chapter 14	Organic and Polymeric Photovoltaic Materials and Devices.....	401
	<i>Sam-Shajing Sun and Cheng Zhang</i>	
Chapter 15	Organic Molecular Nonlinear Optical Materials and Devices	421
	<i>Mojca Jazbinsek and Peter Günter</i>	
Chapter 16	Polymeric Second-Order Nonlinear Optical Materials and Devices.....	467
	<i>Sei-Hum Jang and Alex K.-Y. Jen</i>	
Chapter 17	Organic and Polymeric Third-Order Nonlinear Optical Materials and Device Applications	513
	<i>Joel M. Hales and Joseph W. Perry</i>	
Chapter 18	Organic Multiphoton Absorbing Materials and Devices	573
	<i>Kevin D. Belfield, Sheng Yao, and Mykhailo V. Bondar</i>	
Chapter 19	Organic and Polymeric Photorefractive Materials and Devices.....	607
	<i>Oksana Ostroverkhova</i>	
Chapter 20	Organic/Metal Interface Properties	637
	<i>Yongli Gao</i>	
Chapter 21	Single-Molecule Organic Electronics and Optoelectronics.....	659
	<i>Ling Zang, Xiaomei Yang, and Tammene Naddo</i>	
Chapter 22	Introduction to Nonvolatile Organic Thin-Film Memory Devices.....	701
	<i>Yang Yang</i>	
Chapter 23	Introduction to Organic Electrochromic Materials and Devices.....	713
	<i>Prasanna Chandrasekhar</i>	

Chapter 24	An Introduction to Conducting Polymer Actuators	733
	<i>Geoffrey M. Spinks, Philip G. Whitten, Gordon G. Wallace, and Van-Tan Truong</i>	
Chapter 25	Organic Liquid Crystal Optoelectronic Materials and Devices	765
	<i>Sebastian Gauza</i>	
Chapter 26	Organic and Polymeric Photonic Band Gap Materials and Devices	793
	<i>Scott Meng and Thein Kyu</i>	
Chapter 27	Introduction to Polymer Photonics for Information Technology	819
	<i>Antao Chen</i>	
Chapter 28	Organic Low-Dielectric Constant Materials for Microelectronics	845
	<i>Jinghong Chen</i>	
Chapter 29	Self-Assembly of Organic Optoelectronic Materials and Devices	867
	<i>J.R. Heflin</i>	
Index	887