

# Contents

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

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

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