

Preface

The developers and engineers who are doing in products in display and lighting of organic light-emitting diodes (OLEDs) based on organic semiconductors will find useful information on the design principles of high-performance OLEDs. This book will also serve as helpful and valuable support and reference to graduate students to freshly enter this field from synthetic chemistry, electrical engineering, applied physics, and material science.

The semiconductor heterojunctions are the basic for constructing high-performance optoelectronic devices. During past decades, more and more organic semiconductors are utilized to fabricate the heterojunction devices, especially the OLEDs. This subject has attracted great attention and evoked many new phenomena and interpretations in the field. This book, organic semiconductor heterojunctions and its application in OLEDs, systematically introduces the important aspects of organic semiconductor heterojunctions, including the basic concepts and electrical properties. The application of organic semiconductor heterojunctions in OLEDs, as charge injector and as charge generation layer, is comprehensively discussed in this work. This important application is based on the low dielectric constant of organic semiconductors and the weak non-covalent electronic interactions between organic semiconductors, thus easily forming accumulation heterojunction. As we know, the accumulation-type space charge region is highly conductive, which is an important property for highly efficient charge generation in this application as charge injector and charge generation layer in OLEDs. This book can serve as a useful reference for researchers and a textbook for graduate students focusing on the studies and development of OLED for display and lighting.

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Organic Semiconductor Heterojunctions and Its
Application in Organic Light-Emitting Diodes

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2017, VIII, 153 p. 148 illus., Hardcover

ISBN: 978-3-662-53693-3