Synopsis

Provides an overview of the developments and applications of Organic Light Emitting Transistors (OLETs) science and technology. This book discusses the scientific fundamentals and key technological features of Organic Light Emitting Transistors (OLETs) by putting them in the context of organic electronics and photonics. The characteristics of OLETs are benchmarked to those of OLEDs for applications in Flat Panel Displays and sensing technology. The authors provide a comparative analysis between OLED and OLET devices in order to highlight the fundamental differences in terms of device architecture and working principles, and to point out the enabling nature of OLETs for truly flexible displays. The book then explores the principles of OLET devices, their basic optoelectronic characteristics, the properties of currently available materials, processing and fabrication techniques, and the different approaches adopted to structure the active channel and to control organic and hybrid interfaces. Examines the photonic properties of OLETs, focusing on the external quantum efficiency, the brightness, the light outcoupling, and emission directionality. Analyzes the charge transport and photophysical properties of OLET, emphasizing the excitonic properties and spatial emitting characteristics. Reviews the key building blocks of the OLET devices and their role in determining the deviceâ€™s performance. Discusses the challenges in OLET design, namely color gamut, power efficiency, and reliability. Presents key applications of OLET devices and their potential impact on display technology and sensing. Organic Light-Emitting Transistors: Towards the Next Generation Display Technology serves as a reference for researchers, technology developers and end-users to have a broad view of the distinguishing features of the OLET technology and to profile the impact on the display and sensing markets.

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