

Electronics

Organic Electroluminescence gives an overview of the on-going research in the field of organic light-emitting materials and devices, covering the principles of electroluminescence in organic thin films, as well as recent trends, current applications, and future potential uses.

The book begins by giving a background of organic electroluminescence in terms of history, and basic principles. More details on the mechanism(s) of electroluminescence in thin organic films with in-depth discussions of the parameters that control the external electroluminescence quantum efficiency, including the light-output coupling factor, carrier/charge injection and transport in organic semiconductors, and electron and hole recombination processes are presented.

The authors address the design and the characterization of amorphous charge transport materials with high glass transition temperatures, light-emitting small molecules and conjugated polymers. The book covers state-of-the-art concepts and technologies such as fluorescent and phosphorescent OLEDs, various approaches for patterning organics, and active matrix organic emissive displays including their back panel thin film transistors and pixel electronics. It concludes by summarizing future directions for OLEDs in organic light-emitting displays, large area distributed solid state light sources and lasers using organic thin films and photonic crystals.

Features:

- Presents a comprehensive treatment and unified approach to the theoretical background of electroluminescence
- Gives details on designing efficient materials for charge injection/transport and for light emission
- Contains approximately 170 figures elucidating the characteristics and functions of organic light-emitting diodes
- Offers an international perspective from experts in specialized fields of chemistry, physics, materials science, and electrical engineering
- Includes a discussion by industrial experts on future directions

Organic Electroluminescence is an excellent resource and reference for students, novices, and experts interested in designing and studying light-emitting materials and devices, and their numerous applications.