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Nota di contenuto	Highly Efficient OLEDs with Phosphorescent Materials; Contents; Preface; List of Contributors; 1 Triplet Emitters for Organic Light-Emitting Diodes: Basic Properties; 1.1 Introduction; 1.2 Electro-Luminescence and the Population of Excited States; 1.2.1 Multilayer Design of an OLED; 1.2.2 Electron-Hole Recombination, Relaxation Paths, and Light Emission; 1.3 Electronic Excitations and Excited States; 1.3.1 Ligand-Centered (LC) Transitions: States and Splittings; 1.3.2 Metal-Centered Transitions and States 1.3.3 Metal-to-Ligand Charge Transfer/Ligand-Centered Transitions: States in Organo-Transition Metal Triplet Emitters1.3.3.1 Introductory MO Model and Energy States; 1.3.3.2 Extended MO Model and Energy States; 1.3.3.3 Spin-Orbit Coupling, Triplet Substates, Zero-Field Splitting, and Radiative Decay Rates; 1.4 Zero-Field Splitting (ZFS) of the Emitting Triplet, Photophysical Trends, and Ordering Scheme for Organo-Transition Metal Compounds; 1.4.1 Ordering Scheme; 1.4.2 Photophysical Properties and ZFS; 1.4.2.1 Singlet-Triplet Splitting; 1.4.2.2 Intersystem Crossing Rates

1.4.2.3 Emission Decay Time and Photoluminescence Quantum Yield1.4.2.4 Zero-Field Splitting - Summarizing Remarks; 1.4.2.5 Emission Band Structures and Vibrational Satellites; 1.4.2.6 Localization/Delocalization and Geometry Changes in the Excited Triplet State; 1.5 Characterization of the Lowest Triplet State Based on High-Resolution Spectroscopy: Application to Pt(thpy)(2); 1.5.1 Highly Resolved Electronic Transitions; 1.5.2 Symmetry and Grouptheoretical Considerations; 1.6 Characterization of the Lowest Triplet State Based on Decay Time Measurements: Application to Ir(ppy)(3)
1.7 Phosphorescence Dynamics and Spin-Lattice Relaxation: Background and Case Study Applied to Pt(thpy)(2)1.7.1 Processes of Spin-Lattice Relaxation; 1.7.1.1 The Direct Process; 1.7.1.2 The Orbach Process; 1.7.1.3 The Raman Process; 1.7.2 Population and Decay Dynamics of the Triplet Substates of Pt(thpy)(2); 1.8 The Triplet State Under Application of High Magnetic Fields: Properties of Ir(btp)(2)(acac); 1.9 Vibrational Satellite Structures: Case Studies Applied to Pt(thpy)(2) and Ir(btp)(2)(acac); 1.9.1 Vibrational Satellites: Background; 1.9.1.1 Franck-Condon Activity
1.9.1.2 Herzberg-Teller Activity1.9.2 Pt(thpy)(2) Emission: Temperature- and Time-Dependence of the Vibrational Satellite Structure; 1.9.2.1 Herzberg-Teller-Induced Emission from Substate I: The 1.3 K Spectrum; 1.9.2.2 Franck-Condon Activity in the Emissions from Substates II and III: The 20 K Spectrum; 1.9.2.3 Time-Resolved Emission and Franck-Condon/Herzberg-Teller Activities; 1.9.3 Ir(btp)2(acac) Emission: Low-Temperature Vibrational Satellite Structure; 1.10 Environmental Effects on Triplet State Properties: Case Studies Applied to Ir(btp)(2)(acac); 1.10.1 Energy Distribution of Sites
1.10.2 Zero-Field Splittings at Different Sites

Sommario/riassunto

This brand-new monograph on organic light emitting diodes, edited by a pioneer, and written by front-line researchers from academia and industry, provides access to the latest findings in this rapidly growing field. More than ten contributions cover all areas -- from theory and basic principles, to different emitter materials and applications in production.