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Nota di contenuto	Luminescence of Lanthanide Ions in Coordination Compounds and Nanomaterials; Contents; List of Contributors; Preface; 1 Introduction to Lanthanide Ion Luminescence; 1.1 History of Lanthanide Ion Luminescence; 1.2 Electronic Configuration of the +III Oxidation State; 1.2.1 The 4f Orbitals; 1.2.2 Energy Level Term Symbols; 1.3 The Nature of the f-f Transitions; 1.3.1 Hamiltonian in Central Field Approximation and Coulomb Interactions; 1.3.2 Spin-Orbit Coupling; 1.3.3 Crystal Field or Stark Effects; 1.3.4 The Crystal Field Parameters B _{qk} and Symmetry; 1.3.5 Energies of Crystal Field Split Terms 1.3.6 Zeeman Effect 1.3.7 Point Charge Electrostatic Model; 1.3.8 Other Methods to Estimate Crystal Field Parameters; 1.3.9 Allowed and Forbidden f-f Transitions; 1.3.10 Induced Electric Dipole Transitions and Their Intensity - Judd-Ofelt Theory; 1.3.11 Transition Probabilities and Branching Ratios; 1.3.12 Hypersensitive Transitions; 1.3.13 Emission Efficiency and Rate Constants; 1.4 Sensitisation Mechanism; 1.4.1 The Antenna Effect; 1.4.2 Non-Radiative Quenching; References;

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2.4.1 Number of Coordinated Solvent Molecules References; 3 Circularly Polarised Luminescence; 3.1 Introduction; 3.1.1 General Aspects: Molecular Chirality; 3.1.2 Chiroptical Tools: from CD to CPL Spectroscopy; 3.2 Theoretical Principles; 3.2.1 General Theory; 3.2.2 CPL Intensity Calculations, Selection Rules, Luminescence Selectivity, and Spectra-Structure Relationship; 3.3 CPL Measurements; 3.3.1 Instrumentation; 3.3.2 Calibration and Standards; 3.3.3 Artifacts in CPL Measurements; 3.3.4 Proposed Instrumental Improvements to Record Eu(III)-Based CPL Signals; 3.4 Survey of CPL Applications
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Sommario/riassunto

This comprehensive book presents the theoretical principles, current applications and latest research developments in the field of luminescent lanthanide complexes; a rapidly developing area of research which is attracting increasing interest amongst the scientific community. Luminescence of Lanthanide Ions in Coordination Compounds and Nanomaterials begins with an introduction to the basic theoretical and practical aspects of lanthanide ion luminescence, and the spectroscopic techniques used to evaluate the efficiency of luminescence. Subsequent chapters introduce a variety of different app
