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Autore	Garcia Sole J (Jose)
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2.3.4 Pumping Techniques2.3.5 The Resonator; 2.4 Types of Lasers; 2.4.1 The Excimer Laser; 2.4.2 Gas Lasers; 2.4.3 Dye Lasers; 2.4.4 Semiconductor Lasers; 2.4.5 Solid State Lasers; 2.5 The Tunability of Laser Radiation; 2.5.1 Tunable Solid State Lasers; 2.5.2 Tunable Coherent Radiation by Frequency-Mixing Techniques; 2.5.3 Optical Parametric Oscillation and Amplification; 2.6 Advanced Topics: Site Selective Spectroscopy and Excited State Absorption; 2.6.1 Site Selective Spectroscopy; 2.6.2 Excited State Absorption; Exercises; References and Further Reading; 3 Monochromators and Detectors
3.1 Introduction3.2 Monochromators; 3.3 Detectors; 3.3.1 Basic Parameters; 3.3.2 Types of Detectors; 3.4 The Photomultiplier; 3.4.1 The Working Principles of a Photomultiplier; 3.4.2 Noise in Photomultipliers; 3.5 Optimization of the Signal-to-Noise Ratio; 3.5.1 The Averaging Procedure; 3.5.2 The Lock-in Amplifier; 3.5.3 The Photon Counter; 3.5.4 The Optical Multichannel Analyzer; 3.6 Detection of Pulses; 3.6.1 Digital Oscilloscopes; 3.6.2 The Boxcar Integrator; 3.7 Advanced Topics: The Streak Camera and the Autocorrelator; 3.7.1 The Streak Camera; 3.7.2 The Autocorrelator; Exercises
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5 Optically Active Centers

Sommario/riassunto

This practical guide to spectroscopy and inorganic materials meets the demand from academia and the science community for an introductory text that introduces the different optical spectroscopic techniques, used in many laboratories, for material characterisation.Treats the most basic aspects to be introduced into the field of optical spectroscopy of inorganic materials, enabling a student to interpret simple optical (absorption, reflectivity, emission and scattering) spectraContains simple, illustrative examples and solved exercisesCovers the theory, instrumentat