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Sommario/riassunto	This book provides a comprehensive exploration of luminescence techniques and their practical applications in spectroscopy, materials science, and microscopy. It begins with a solid introduction to the basic principles of luminescence, covering essential topics such as the physics of luminescent materials, electronic transitions, and the

underlying mechanisms governing luminescent phenomena. Subsequently, it systematically examines various techniques within luminescence spectroscopy, offering a detailed analysis of instrumentation, experimental setups required for material synthesis, methods for data analysis, and emerging applications such as in-vivo and in-vitro biological imaging, targeted drug delivery, optical thermometry, and photodetectors. Emphasizing practical applications, the book elucidates not only theoretical aspects but also guides readers through the practical implementation of luminescence techniques. Real-world examples and case studies are used to illustrate how these methods have found success in diverse research contexts, catering to both novices and seasoned researchers aiming to incorporate luminescence techniques into their work. Featuring contributions from an international cross-section of experts, the book covers topics such as luminescence microscopy, biological imaging techniques using both organic and inorganic luminescent materials, and super-resolution microscopy techniques utilizing multimodal imaging approaches. Additionally, the book addresses challenges and limitations in the field, offering a balanced perspective on the practical considerations and potential pitfalls associated with luminescence methodologies. This book serves as an invaluable asset for researchers, scientists, and students seeking an insightful guide to the theory and mechanism of luminescence, along with innovative and emerging applications.