



# Cathodoluminescence and Photoluminescence: Theories and Practical Applications (Phosphor Science and Engineering)

By Lyuji Ozawa

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## Cathodoluminescence and Photoluminescence: Theories and Practical Applications (Phosphor Science and Engineering) By Lyuji Ozawa

Written by a senior industry expert with nearly 40 years of hands-on experience, *Cathodoluminescence and Photoluminescence: Theories and Practical Applications* presents a thorough review of advances, challenges, and recommendations for improving photoluminescent (PL) and cathodoluminescent (CL) phosphor display devices in terms of energy efficiency, image quality, color fidelity, operational lifetime, and production cost.

This book traces the development of cathode ray tubes (CRTs), PL and CL phosphor screens, and fluorescent lamps (FL) into modern phosphor display devices. The author relates luminescence phenomena and color to chemical composition, excitation mechanisms, energy conversion efficiencies, and bulk properties of phosphor particles. He also addresses image quality issues such as flickering, smearing, whitening, and contrast. Subsequent chapters focus on powder deposition techniques and the production of phosphor powders themselves. The text describes the necessary raw materials, flux materials, and growth conditions for producing ZnS powders. It provides a quantitative analysis on optimal processes and parameters for ensuring higher quality color and screen resolution.

Offering a detailed guide for next-generation scientists and engineers in the field, *Cathodoluminescence and Photoluminescence* describes current technologies and promising developments for producing higher quality, energy-efficient, and long-lasting phosphor CR and flat CL screen displays.

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Chi Mei Corporation, Tainan County, Taiwan

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