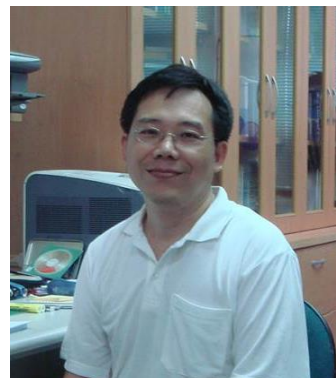


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Topic

Synthesis of Quantum Dots for Display Applications

量子點之合成及其在顯示器上之應用

Abstract

Quantum dots (QDs) with highly pure emission color are superior to other fluorescent materials used in wide-color-gamut displays. To further improve the efficiency of these systems, in which red-emission and green-emission QDs are pumped by the blue LED chips, QDs with properties such as high quantum yield, high blue light absorption, low self-quenching, high photostability, and high thermal stability are desired. II-VI QDs with thick shells (> 10 monolayers), which simultaneously reach small lattice mismatch and low band gap offset, endorse QDs to work in a thin and densely packed film at caustic operating conditions due to their low internal defects, large size, and “wide and smooth” potential well. Thick-shelled QDs for both photoluminescent and electroluminescent applications can be prepared by multiple interfusions of different shell materials to ensure their performance.