

Salah, N.^a, Habib, S.S.^a, Khan, Z.H.^a, Al-Ghamdi, A.A.^b

Optical properties of LiF:Mg,Cu,P nanorods

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^a Center of Nanotechnology, King Abdulaziz University, Jeddah-21589, Saudi Arabia

^b Department of Physics, Faculty of Science, King Abdulaziz University, Jeddah-21589, Saudi Arabia

Abstract

Nanorods of LiF:Mg,Cu,P synthesised by the chemical co-precipitation technique have been investigated for their optical properties. Photoluminescence (PL) emission and excitation spectra and UV-visible absorption spectrum have been investigated in this paper. PL emission spectrum shows a wide emission band located at the range 350 nm-450 nm along with emerging of a sharp intense band at 376 nm. Normally, a broad emission band is observed in the bulk (micro/single crystal) material of LiF:Mg,Cu,P which is due to Cu⁺ transition. The nanorods have sizes approximately 50 nm in diameter and several hundreds nm in length. The sharp band at 376 nm may be attributed to quantum confinement. Moreover, the result obtained from the UV-visible absorption measurement is consistent with the PL result. It shows a broad absorption band contains a small sharp one at around 373 nm. These remarkable results might be useful for some applications such as high power lasers. Copyright © 2009 Inderscience Enterprises Ltd.

Author Keywords

LiF:Mg,Cu,P; Nanorods; Photoluminescence; PL; UV-visible

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