BioCore Exploring Scientific Community

International Journal of Nanotechnology in Medicine & Engineering

Research Article ISSN 2474-8811

Photoluminescence Properties of Mn^{2+} Doped ALQ3 Organic Phosphors for Oled Devices and Flat Panel Displays

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Abstract

Pure and Mn^{2+} transition metal doped Alq3 Complexes were synthesized by simple precipitation method at room temperature, maintaining stochiometric ratio. These complexes were characterized by XRD, and photoluminescence (PL) spectra. XRD analysis exhibits the poly crystalline nature of the synthesized complexes. The excitation spectra are in the range of 416 nm to 438 nm. Prepared phosphors can be a suitable candidate for green and blue emitting OLED, PLLCD and solid state lighting applications.

Keywords: Transition metal, Metal complexes, Photoluminescence, OLED

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Citation: S.A. Bhagat (2020), Photoluminescence Properties of Mn^{2+} Doped Alq3 Organic Phosphors for Oled Devices and Flat Panel Displays. Int J Nano Med & Eng. 5:1

Introduction

Now a day, organic light emitting materials are attracted attention owing to their applications in OLEDs[1] for industry and academic research. It stimulates interest in next-generation displays and lighting technologies[2]. The efficient and stable tri (8-hydroxyquinoline) aluminum (Alq3) is extensively studied for its high stability, good emission, easy synthesis, electron transport properties and high quantum efficiency. Alq3 is attributed as electron transporting layer, as emission layer where green light emission is generated by electron hole recombination in Alq3. It also acts as host material for various dyes to tune emission color from red to green[3]. Although Alq3 has low fluorescence efficiency, it has excellent properties as emitting