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Synthesis and Photolumenescence Charecterisation of CO^{2+} Doped Alq_3

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ABSTRACT

Alq_3 phosphor was doped by divalent Co^{2+} ion, which has been synthesized by the wet chemical route. These organic phosphors were characterized by photoluminescence measurements. The photoluminescence characterization revealed the presence of Co^{2+} ion changes the photoluminescence of Alq_3 phosphor. The prepared phosphors are suitable for PLLCD, OLED and solid state lighting application devices reported in this paper.

Keywords: Alq_3, Alq_3: Co^{2+} organic phosphor, photoluminescence, OLED.

INTRODUCTION

The rapid progress in performance and lifetime make organic light – emitting diodes (OLED) suitable candidates for flat panel display applications. Since the first report of efficient and stable OLED [1, 2] , tri (8-hydroxyquinoline) aluminum (Alq_3) which is used as the emission and electron transport layer, the interest in this archetype material is persistent. Properties such as relative stability, easy synthesis, good electrons, an emitting properties result in extensive applications of Alq_3 in OLED design. Tang and coworkers discovered Alq_3- based multilayer thin film electroluminescent devices in 1987. Alq_3 still continues to be the workhorse among the class of low molecular weight materials for OLED. Research into organic materials for use in OLED has mostly focused on conjugated or low molecular weight materials [3]. However, so far comparatively few investigations have been devoted to the electronic and optical properties of material, in particular in the