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研究论文

$Sm(DBM)_3phen$的光致发光和电致发光性质

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摘要 制备了一系列基于配合物$Sm(DBM)_3phen$的电致发光器件. 研究了其光致发光(PL)和电致发光(EL)性质, 实验结果表明, $Sm(DBM)_3phen$具有良好的电子注入和传输性能以及电致发光性能. 器件ITO/TPD(50 nm)/$Sm(DBM)_3phen$(50 nm)/Alq_3(30 nm)/LiF(1.0 nm)/Al的最大亮度和最大效率分别为150 cd/m^2和0.72 cd/A, 器件表现为纯Sm^{3+}离子的发光.

关键词 钐配合物 光致发光 电致发光

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Photoluminescence and Electroluminescence Properties of Samarium Complex $Sm(DBM)_3phen$

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Abstract Photoluminescence(PL) and electroluminescence(EL) properties of a samarium complex Sm(DBM)phen(DBM=dibenzoylmethane, phen=1,10-phenanthroline) were investigated. A series of devices based on Sm(DBM)phen were fabricated. The results show that Sm(DBM)phen owns good electron injecting and transporting properties. By optimizing the device structure, bright efficient orange EL devices could be achieved, and the maximum brightness and efficiency were 150 cd/m^2 and 0.72 cd/A, respectively. The device showed the characteristic emission peaks of the Sm^{3+} ion at all operating voltages. It was noticed that the relative intensity of Sm^{3+} emission peaks differed from each other in PL and EL cases, which could be ascribed to the change of coordination sites of the Sm^{3+} ion during the evaporation of the samarium complex in the EL case.

Key words Samarium complex; Photoluminescence; Electroluminescence

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