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罗丹明B掺杂ZnQ_2的电致发光器件及其性能研究

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摘要 将8-羟基喹啉锌(ZnQ_2)和8-羟基喹啉铝(AlQ_3)的发光性能进行比较，筛选出ZnQ_2作为掺杂发光层主体材料，与荧光染料罗丹明B(RhB)共掺杂，采用真空热蒸镀法制备有机电致发光器件(OLEDs). 掺杂不同浓度RhB可以获得不同波长的光发射，得到不同的发光色调. 通过对溶液态荧光光谱和器件发光光谱等特性的测量与分析，探讨了器件的能量转移及发光机理.

关键词 8-羟基喹啉锌；罗丹明B；有机电致发光器件(OLEDs)；能量转移 载流子陷阱俘获

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Fabrication and characterization of OLED with RhB doped in ZnQ_2 (Chinese)

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Abstract

By vacuum evaporation deposition, dye-doped OLEDs were fabricated with the structure of ITO/TPD/ZnQ_2: Rhodamine B(RhB)/Al. The luminescent layer was composed of a dye RhB doped into ZnQ_2 (bis (8-hydroxyquinolato) zinc) layer which showed much better electroluminescent properties than AlQ_3(tri (8-hydroxyquinolato) aluminum). With different RhB concentration, OLED electroluminescence emission got different peak wavelength and visual color. The maximal shift of 34 nm was obtained due to dopant concentration. By investigating photoluminescence as well as electroluminescence behaviors, the energy transfer mode and emission mechanism were discussed in this paper. Both energy transfer and carrier trapping have been suggested to be responsible for dopant excitation and emission.

Key words ZnQ_2 (bis (8-hydroxyquinolato) zinc) Rhodamine B organic light-emitting devices energy transfer carrier-trapping

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