

用荧光光谱法研究OLED用的新型蓝色发光染料和三-(8-羟基喹啉)铝(AIQ₃)的光诱导电子转移和激基复合物的生成

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摘要 在合成了三种新型发射蓝光化合物的基础上, 对它们在溶液中的光物理行为作了详细研究。发现它们的荧光能强烈地被三-(8-羟基喹啉)铝所猝灭, 并在荧光光谱的长谱部分出现因发生光诱导电子转移而生成激基复合物的发光。几个方面的工作-如猝灭常数的测定, 电子转移过程自由能的计算, 都表明化合物荧光猝灭过程的电子转移性质。此外, 还讨论了因出现光诱导电子转移和激基复合物给OLED器件带来的影响, 特别对三种作为器件发射蓝光化合物的优劣进行了讨论, 表明化合物DPF有着最佳的发光特征。

关键词 [羟基喹啉类](#) [铝化合物](#) [光诱导](#) [电子转移反应](#) [发光特性](#) [荧光猝灭剂](#)

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Study on the Photo-induced Electron Transfer and the Exciplex Formation of Some Novel Blue Emission Dyes with Aluminum Tris (8- hydroxyquinoline) Using Fluorescent Spectra Methods

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Abstract Based on the synthesis of three novel dyes with blue color emission, the photo-physical behaviors of these compounds in solution have been studied in details. It was found that the fluorescence emission of these compounds can be quenched strongly by the aluminum tris(8- hydroxyquinoline), and simultaneously a new emissive band which was assigned to the exciplex formation appeared in the long wavelength region of fluorescence spectrum. Several experiments such as the measurement of fluorescence quenching constants of these compounds and the calculation of Gibbs' free energy changes of these processes indicated that the process studied in this work possesses electron transfer characteristic. The influence of photoinduced electron transfer and the exciplex formation between different components in device on the behavior of OLED and the comparison of these compounds used as blue emission dye were discussed preliminary. The compound DPF was thought to have the best emission characteristic.

Key words [HYDROXY QUINOLINES](#) [ALUMINIUM COMPOUNDS](#) [PHOTOINDUCED](#) [CHARGE TRANSFER REACTION](#) [CHARACTERISTICS OF LUMINESCENCE](#) [FLUORESCENCE QUENCHER](#)

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