



## 器件制备及器件物理

基于7-(9H-carbazol-9-yl)-N,N-diphenyl-9,9'-spiro[fluoren]-2-amine主体材料的高效红色电致磷光器件

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**摘要：**研究了基于新型骨架7-(9H-carbazol-9-yl)-N,N-diphenyl-9,9'-spiro[fluoren]-2-amine (CzFA) 双极性主体材料的红色电致磷光器件的光电特性。研究表明：将红色磷光染料iridium (III) bis[2-methyldibenzo-(f,h)quinoxaline](acetylacetonate) (Ir(MDQ)<sub>2</sub>(acac)) 掺杂到CzFA主体材料中，以其制备的电致发光器件具有优良的特性，最大电流效率为27.8 cd/A，最大功率效率为21.8 lm/W，最大功率效率几乎是先前报道的主体材料为CBP器件(13.7 lm/W)的1.6倍。这种咪唑-螺二苄-二胺基团所组成的双极性主体材料对于提升磷光器件的性能起到了重要的作用。

**关键词：**有机电致发光器件 磷光主体材料 红光器件

### Highly Efficient Red Electrophosphorescent Devices Based on 7-(9H-carbazol-9-yl)-N,N-diphenyl-9,9'-spiro[fluoren]-2-amine Host Material

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**Abstract:** Based on a new framework 7-(9H-carbazol-9-yl)-N,N-diphenyl-9,9'-spiro[fluoren]-2-amine (CzFA) bipolar host material, the phosphorescent organic light-emitting diodes(PhOLEDs) were fabricated, and the electroluminescence properties of the devices were investigated. The red PhOLEDs doped with iridium (III) bis [2-methyldibenzo-(f,h) quinoxaline](acetylacetonate) (Ir(MDQ)<sub>2</sub>(acac)) show excellent electroluminescence properties, the maximum current efficiency is 27.8 cd/A, and the maximum power efficiency is 21.8 lm/W, which is almost 1.6 times higher than the device with CBP as host material(13.7 lm/W). The bipolar host material composed of carbazole fluorene and 2-amine substituent plays an important role for the performances improvement of the phosphorescent device.

**Keywords:** organic light emitting diodes phosphorescent device red device

收稿日期 2013-10-24 修回日期 2013-12-19 网络版发布日期

基金项目:

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