液晶与显示
中文核心期刊
Chinese Journal of Liquid Crystals and Displays
主管：中国科学院
主办：中国科学院长春光学精密机械与物理研究所
中国物理学会液晶分会
中国光学光电子行业协会液晶分会
主编：郭海成

液晶与显示 2014, 29(1) 22-27 ISSN: CN:

材料物理和化学

绿红双发光层有机电致磷光器件的载流子调控研究

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摘要： 制备了结构为ITO/MoO_3（40 nm）/NPB（40 nm）/TCTA（10 nm）/CBP：GIR_1（14%）（x）/CBP：R-4B（6%）（30-x）/BCP（10 nm）/AlQ（40 nm）/LiF（1 nm）/AL（100 nm）的绿红磷光器件。通过调节红绿发光层的相对厚度，对器件的发光性能进行了研究。结果表明：x为15 nm，电压为6 V，电流密度为255.6 mA/cm^2，得到最高电流效率为15.4 cd/A，红色发光峰值强度相对较大，绿色峰值稍弱的电致发光光谱。分析原因可能是掺杂染料与临近层的能级匹配和浓度等会影响发光层载流子注入与传输；空穴及电子阻挡层对发光层内载流子和激子的有效限制作用会提高掺杂染料在发光层的复合几率；另外，CBP的空穴迁移率大于电子迁移率，发光的主要区域位于发光层与BCP界面，掺杂于该区域的R-4B具有较高的发光强度。

关键词： BCP 有机电致发光 磷光

Regulation of carrier in double organic electroluminescent phosphorescent emitting layer(green and red)

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Abstract: The phosphorescent devices(green and red),which structure was ITO/MoO_3 (40 nm)/NPB (40 nm)/TCTA (10 nm)/CBP:GIR_1 (14%)(x)/CBP:R-4B (6%) (30-x)/BCP (10 nm)/AlQ (40 nm)/LiF (1 nm)/AL (100 nm),were prepared.Double emitting layer(green and red) is organic electroluminescent phosphorescent devices,which was regulated at carrier. The results showed that doping order was green, red, (green (red) was 15 nm (15 nm)), at 6 V, current density was 255.6 mA/cm^2, the maximum current efficiency was 15.4 cd/A. In addition, because of utilization the green red doping behavior, red (R-4B) emitting peak was easier to appear, and ultimately the red dye possessed relatively large emitting intensity and weak green light-emitting. Analysis of the reason may be carrier injection and carrier mobility of balance and BCP control effect.

Keywords: BCP electroluminescent phosphor

收稿日期 2013-07-04 修回日期 2013-10-26 网络版发布日期

基金项目:

国家自然科学基金（No. 61076066）；陕西省科技统筹创新工程计划项目（No.2011KTCQ01-09）

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