发光学报
CHINESE JOURNAL OF LUMINESCENCE
中文核心期刊
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
中国物理学会发光分会
主编：申德振



发光学报 2013, 34(4) 463-468 ISSN: 1000-7032 CN: 22-1116/O4

器件制备及器件物理

# 载流子迁移率对有机太阳能电池性能影响的模拟研究

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摘要： 通过器件模拟的方法研究了载流子迁移率对有机太阳能电池性能的影响。研究发现载流子迁移率同时影响光生电子-空穴对的解离和载流子的输运过程,电子和空穴的迁移率都有一个最佳值。大于最佳值会导致短路电流的微小上升和开路电压的大幅下降;小于最佳值会降低光生电子-空穴对的解离效率,进而使短路电流和填充因子明显下降。

关键词： 有机太阳能电池 迁移率 短路电流 开路电压 填充因子

## Simulation Study on Influence of The Carrier Mobility on The Performances of Organic Solar Cells

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Abstract: The influence of the carrier mobility on the performances of organic solar cells was studied using the simulation method. It is found that the mobility influences the carrier generation and transport simultaneously. There is an optimal value both for electron mobility and hole mobility. The mobility larger than the optimal value will lead to a small increase in the short circuit current. The mobility smaller than the optimal value will result in the insufficient dissociation of the photogenerated electron hole pair, and decrease the short circuit current and the fill factor.

Keywords: organic solar cells mobility short circuit current open circuit voltage fill factor

收稿日期 2012-11-27 修回日期 2013-01-15 网络版发布日期 2012-12-10

基金项目:

河北省自然科学基金青年科学基金(A2012203016); 河北省教育厅科研计划(Z2009114); 秦皇岛市科学技术研究与发展计划(201101A113); 国家自然科学基金(11004187,61107082)资助项目

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