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器件制备及器件物理

双条形电极结构AlGaInP-LED微阵列器件的设计和实验研究

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摘要： 设计了一种基于AlGaInP发光材料的像素为320×240、单元像素面积为100 μm×100 μm 微型LED阵列。通过仿真和分析,设计了一种双条形电极结构。考虑到不同电极宽度下的电流分布情况以及电极的遮光效应,设计了电极宽度为13 μm 的优化电极结构,使得每个发光像素的表面出光面积比为50.15%,并分析了电极对有源层出射的光的反射影响。制定了基于MOEMS工艺的微型LED器件的制作流程并进行了基本实验研究,最终给出了制作出的上电极的单个单元照片。

关键词： AlGaInP 微阵列 双条形电极 微光机电系统

Design and Experiment of AlGaInP Mircro-LED Arrays with Double Strip Electrode

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Abstract: An array of 320×240 micro-LED based on AlGaInP epitaxial wafer with the pixel size of 100 μm×100 μm were designed. By analyzing and simulating the current distribution of the active layer, the AlGaInP mircro-LED arrays with a kind of double strip electrode were designed. Conside-ring the current distribution of electrode with different widths and the shelter of the electrode, the optimized electrode was gotten with the width of 13 μm, and the ratio of emitting area to each pixel is 50.15%. Besides, a fabrication process of the device based on MOEMS technology was presented. Finally, the picture of the double strip electrode was exhibited.

Keywords: AlGaInP micro arrays double strip electrode MOEMS

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