

论文

感光性树脂应用于发光二极管平面自适应封装技术

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摘要:

采用感光性树脂+荧光粉进行了发光二极管平面自适应涂覆技术,实现了白光发光二极管荧光粉涂层的平面化工艺,使器件出光的亮度、空间色度均匀性较之传统封装工艺器件有了明显的改善,光斑及单管间色度、亮度偏差均小于6%。综合聚乙烯醇的感光性和硅胶的物化、光学性能,在粉浆法工艺中采用乳化技术,实现了聚乙烯醇+硅树脂的多相结构的荧光粉平面涂层,有助于进一步改善荧光粉层的物化性能,而多相涂层有效折射率的提高更有利于提高器件的整体出光效率。由于感光性树脂其感光波长覆盖范围非常广,另外还可以通过光增感等技术使其感光波长范围变得其与发光二极管的发光波长相匹配,这样,对于各种荧光粉转化的白光发光二极管都可以实现平面涂层技术。由于大部分感光材料对紫外部分的吸收更强烈,所以对于紫外+三基色荧光粉的传统灌封技术将会得到明显的改善。

关键词: 白光发光二极管 平面自适应涂层 聚乙烯醇 感光性树脂

Photosensitive Polymers Used in LEDs Planar Phosphor Coating

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Abstract:

Adopting the photosensitive polymers + phosphor for LED conformal coating to realize the white LED phosphor coating planarization process, this technology enables the device to give off bright light and more self color space than the traditional packaging process, and spot color between single tube and the deviation of brightness is less than 6%. Integrating photosensitive of PVA and physical chemistry performance of silicone and adopting emulsion technology in slip method process, the phosphor surface coating of PVA and silicone is realized, which is help to improve phosphor layer's physicochemical properties. The improvement of effective refractive index of multiple phase coating is more helpful to improve the whole luminous efficiency of device. Because the range of photopolymer's sensitive wavelength is very wide, besides the technology of adding to photosensitive, so that its photosensitive wavelength range is match to LEDs emitting wavelength, so white LED converted by variety of phosphor can achieve planar coating technique. Because the majority of photopolymers are easy to absorb UV light, the traditional casting technology of UV+ three-color phosphor will be greatly improved.

Keywords: White LEDs Self-adaptive conformal coating PVA Photosensitive polymers

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