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功率型LED封装材料的研究现状及发展方向

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摘要:

综述了近年来国内外功率型LED封装材料的研究现状, 通过对现有功率型LED封装材料的应用情况展开讨论, 明确指出有机硅封装材料不可替代的作用及其存在的广阔的应用前景和巨大的经济效益。针对当前LED产业发展对封装材料提出的高性能、高可靠性等要求, 指出有机硅封装材料下一步发展重点应集中在如何提高材料折射率、热导率、机械强度等综合性能方面。

关键词: LED 封装材料 有机硅

Status quo and development directions of high-power LED encapsulation materials

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Abstract:

This paper surveys the global development status quo of power LED encapsulation materials. Based on the analysis of present applications of power LED encapsulation materials, we present the irreplaceable role, wide application prospect and huge economic benefits of organic silicon encapsulation materials. We also indicate that the next development emphasis should be the increase of their refractive index, thermal conductivity and mechanical strength in view of the high-performance and high-reliability requirements of current LED industrial development for encapsulation materials.

Keywords: LED encapsulation materials organic silicon

收稿日期 2011-05-12 修回日期 网络版发布日期

DOI:

基金项目:

山东省自然科学基金 (2009ZRB02340)

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参考文献:

[1] 王华, 耿凯鹤, 赵义坤, 等. 大功率白光LED封装工艺技术与研制 [J]. 半导体技术, 2009, 34(5): 470-473.

[2] 雷通, 王小平, 王丽军, 等. 第三代半导体材料在LED产业中的发展和应用 [J]. 材料导报, 2009, 23(1): 7-11.

[3] AKIIKE T. Optical semiconductor element sealing material therefore and sealing composition: JP, 2006225515 [P]. 2006-08-31.

[4] 黄文润. 发光二极管封装用有机硅材料 (一) [J]. 有机硅材料, 2008, 22(5): 315-324.

[5] IMAZAWA K, KASHIWAGI T, KOJIMA T, et al. Epoxy silicone mixed resin composition, cured article thereof and light emitting semiconductor device: US, 0270808 [P]. 2006-11-30.

[6] KASHIWAGI T, SHIOBARA T. Epoxy silicone mixed resin composition and light emitting semiconductor device: US, 7276562 [P]. 2007-10-02.

[7] RUBINSZTAJN M I, RUBINSZTAJN S. Composition comprising silicone epoxy resin hydroxyl compound anhydride and curing catalyst: US, 6632892 [P]. 2003-10-14.

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- [8] RUBINSZTAJN M I, RUBINSZTAJN S. Epoxy resin compositions, solid state devices encapsulated therewith and method: US,7144763 [P] .2006-12-05.
- [9] RUBINSZTAJN M I, RUBINSZTAJN S. Epoxy resin compositions, solid state devices encapsulated there with and method: US ,6916889 [P] .2005-07-12.
- [10] HAITKO D A, SCHENECTADY N Y, RUBINSZ2 TAJN S, et al. Silicone epoxy formulations: US, 0282975 [P] .2005-12-22.
- [11] HAITKO D A, BUCKLEY D. Silicone epoxy formulations: US, 0282976 [P] .2005-12-22.
- [12] ITO H, OTA S. Epoxy resin composition for encapsulating optical semiconductor element and optical semiconductor device using the same: US, 7307286 [P] .2007-12-11.
- [13] 吴启保, 青双桂, 熊陶, 等. 大功率LED器件封装材料的研究现状化 [J] . 工技术与开发,2009,38(2):15-17.
- [14] Shin Etsu Chemical Co., Ltd. Addition curing type silicone resin composition: JP, 6815520 [P] .2004-11-09.
- [15] MIYOSHI K. Silicone resin composition for LED devices: US, 0116640 [P] .2004-06-17.
- [16] GOTO T, TABEL E, YAMAMOTO A. Curable silicone resin composition: US, 7294682 [P] .2007-11-13.
- [17] SHIOBARA T, KASHIWAGI T, IMAZAWA K. Silicone resin lens for light emitting diode and manufacturing method thereof: JP, 324596 [P] .2006-11-30.
- [18] TABEL E, YAMAMOTO A. Curable silicone resin composition: US, 7291691 [P] .2007-11-06.
- [19] CRIVELLO J V. Silicone encapsulants for light emitting diodes: US, 0134440 [P] .2006-06-22.
- [20] BOARDMAN L D, THOMPSON D S, LEATHERDALE C A, et al. Method of making light emitting device with silicon containing encapsulant: US, 7314770 [P] .2008-01-01.
- [21] TOMOKO K, MINURO I. Curable organopolysiloxane composition, use of the cured product of the composition, and semiconductor device: US, 7271232 [P] .2007-09-18.
- [22] 黄文润. 发光二极管封装用有机硅材料(二) [J] . 有机硅材料,2008,22(6):382-388.
- [23] KOZA I T. UV curing silicone composition for light emitting diode element: JP, 2007214543 [P] .2007-08-23.
- [24] KOZA I T. Thermosetting silicone composition and light emission diode element using the same: JP, 2008074982 [P] .2008-04-03.
- [25] 杨雄发, 伍川, 董红, 等. LED 封装用液体交联剂的制备与表征 [J] .高分子材料科学与工程,2009,25(2):131-137.
- [26] 吴启保, 青双桂, 熊陶, 等. 封装用有机硅材料的制备及性能研究 [J] .广东化工,2009,36(2):23-25.

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