

Effect of Epoxy-ZrP Nanocomposite Top Coating on Inorganic Barrier Layer

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Abstract : Epoxy-ZrP (α -zirconium phosphate) nanocomposites were coated on inorganic barrier layer such as sputtering and atomic layer deposition (ALD) to improve the barrier properties and protect the layer. ZrP nanoplatelets were synthesized using a reflux method and exfoliated in the polymer matrix. The barrier properties of coating layer were characterized by measuring water vapor transmission rate (WVTR). The WVTR dramatically decreased after epoxy-ZrP nanocomposite coating, while maintaining the optical properties. It was also investigated the effect of epoxy-ZrP coating on inorganic layer after bending and reliability test. The optimal structure composed of inorganic and epoxy-ZrP nanocomposite layers was used in organic light emitting diodes (OLED) encapsulation.

Keywords : α -zirconium phosphate, barrier properties, epoxy nanocomposites, OLED encapsulation

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