

High reflectance metallic thin films of reference mirror layers on
sapphire substrate for LED devices

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Abstract

The effect of high reflectance metallic thin films of reference mirror layers is investigated using three different thin film structures on sapphire substrate: the sapphire/Ti/Ag/AuSn, sapphire/Cr/Ag/AuSn, and sapphire/Al₂O₃/Ag/AuSn structures. Various coating thickness was deposited on sapphire substrate. The experimental results indicate that the Ti and Cr buffer layer are not very effective on the enhancement of reflectance on the Ag layer. Results show that the reflectance properties of the mirror layer can be improved significantly by using Al₂O₃/Ag coating. In a buffer layer solution, the reflectance of reference mirror layer can have about 200% of improvement with the Al₂O₃ buffer layer comparing to that using Ti and Cr as the buffer layer.

Keyword : Coatings, reflectance, thin films