Abstract

Ordered Interface Texturing for a Light Emitting Device

This method relates to the fabrication of semiconductor light-emitting devices having at least one ordered textured interface. Controlled interface texturing with an ordered pattern is provided on any or all interfaces of such a device to enhance light extraction from these interfaces and thus improve the performance of the device.

Ordered interface texturing offers an improvement in light extraction by increasing the transmission of total optical power from the device into the ambient. This improvement is possible because ordered interface texturing can provide: 1) a reduction in Fresnel losses at the interface between the device and the ambient and, 2) a change or increase in the angular bandwidth of light which may transmit power into the ambient. This latter effect may be thought of a change or increase in the escape cone at an interface. Both effects can result in an overall increase in total light extraction efficiency for the LED.

(Figure 4)