Journal of Vacuum Science & Technology B
Volume 23, Issue 1, pages 48-50, January 2005

Electrical properties of Ni/Au and Au contacts on p-type GaN

Lin, Yow-Jon

Abstract

The electrical properties of Ni/Au and Au contacts on p-type GaN (p-GaN) were investigated in this study. From the experimental result, it is suggested that the current–voltage characteristic of Au/Ni/p-GaN is better than that of Au/p-GaN. The secondary-ion mass spectroscopy measurements revealed that hydrogen is effectively removed from the p-GaN layer by the existence of the Ni film. These results suggest that a Ni film of Au/Ni/p-GaN significantly enhances hydrogen desorption from the p-GaN film, which leads to an increase in the hole concentration, the occurrence of the tunneling transmission for holes at the interface, and the improvement of electrical properties of Au/Ni/p-GaN.

Keywords：Gallium compounds; Nickel; Gold; III-V semiconductors; Ohmic contacts; Desorption; Secondary ion mass spectra; Tunnelling; Semiconductor-metal boundaries