Fabrication and Characterization of GaN MESFETs

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ABSTRACT

As GaN material shows very good optoelectronic properties, it has been widely used in the application of light emitting devices, such as blue and green light emitter diodes (LED). Also, GaN with large energy bandgap is very suitable for the fabrication of the high power electronic devices, such as FETs and HBTs. The most important requirement for the fabrication of high quality FETs is that the gate leakage current should be as low as possible. Based on the conventional experience, the gate structure might be MOS, MIS, or Schottky contact. In this work, the GaN layer structures for the fabrication of MESFETs were grown on sapphire substrates by metal-organic chemical vapor deposition (MOCVD). We adopted an alloy of Ti/Al for the formation of ohmic contact on both drain and source terminals. An alloy of Ni was used for the Schottky contact on the gate terminal. Finally, the processed FET devices were measured and the characteristics of I-V curves would be analyzed and discussed.

Keywords : GaN ; MESFET ; Schottky contact

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