

HIGH-TEMPERATURE ANNEALING FOR IMPROVED CRYSTALLINE QUALITY OF SEMIPOLAR ALN ON M-PLANE SAPPHIRE

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AlGaIn light-emitting diodes (LEDs) have been studied for highly efficient light sources in deep ultraviolet (DUV) range. In widely used c-plane AlGaIn, the spontaneous and piezoelectric polarization produces a strong electric field along the growth direction, which degrades the performance of the LEDs. To overcome the polarization problem, growth on semipolar/nonpolar substrates has been carried out extensively. However, expected properties have not been clearly observed for AlGaIn alloy in DUV range because of the low crystalline quality. Here, we report the improved crystalline quality of semipolar AlN grown on m-plane sapphire by using a high-temperature annealing process.

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