

InGaN/GaN laser diodes with threshold current densities that were comparable to state-of-the-art c-plane InGaN/GaN laser diodes were demonstrated.

4. Conclusions

In summary, the current study revealed the Mn memory effect of the MOCVD reactor. Redistribution of the Mn dopants during subsequent regrowth layers in a Mn-free MOCVD chamber was also observed. In addition to the memory effect, the high residual Mn level and the slow decay rate of the Mn concentration tail could be also attributed to the surface segregation and redistribution of Mn from the Mn-doped GaN underlying layer. The contamination effect of the residual Mn in the reactor could be eliminated effectively by the air-exposed and H₂-baking procedure. Comparing the Mn profiles from the samples grown on Mn-GaN templates with different surface treatments, the segregation of Mn at Mn-doped GaN surface was also reasonably speculated to lead to the Mn dopant tail in the regrown undoped GaN layers.

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