

III-Nitride Based UV LEDs and Laser Diodes

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High brightness III-nitride based blue/green LEDs and laser diodes (LDs) are commercially available nowadays. However, UV LEDs and LD have a lot of problems for the commercialization. We have studied UV-A~C LEDs by changing the V/III ratio and a pausing time of multi-quantum well (MQW) and super lattices (SLs) using a low pressure MOCVD. The surface morphology of the active layer showed the rough surface with nano disk structures with low V/III ratio of 10. With the surface morphology of nano disk structures of the MQW active layer, the EQE of UV-C LED was as high as 10%. For p-type layers, the short period SLs with a polarization doping were used. For UV LDs, we are developing a new structure using the strain relaxed layer.