

✓ Fabrication of Porous GaN using Bottom-Up Approach through Electron Beam Evaporator for High Efficient Devices

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In recent years, the use of porous semiconductor has become an alternative way in reducing the impact of lattice mismatch and propagation of threading dislocations into the overgrown layer. Porous GaN materials have been considered as one of the most promising materials for optoelectronic applications owing to their unique optical and electronic properties. Such materials exhibit efficient luminescence, good suppression of threading dislocations and strain which subsequently high-quality and stress-free GaN layer could be developed. The fabrication of porous GaN is typically prepared using top-down approach, for example through electrochemical etching. However, such technique is commonly damaging the surface structure of the GaN as well as giving high possibility to formation of non-stoichiometric condition on the surface. Here, we demonstrate the fabrication of porous GaN layer on porous Si substrate via electron beam evaporator (e-beam). Towards the end, the best porous GaN is proposed.