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**Properties of p-GaN Layer on Different Nitride Surfaces**

N. Fatihah, N. Zainal, Z. Hassan

*Institute of Nano Optoelectronics Research and Technology (INOR), School of Physics,  
Universiti Sains Malaysia, 11800 Penang, Malaysia.*

Achieving high-quality p-type GaN (p-GaN) layer is crucial for development of nitrides-based optoelectronic and power devices like as light-emitting diodes (LEDs), laser, transistor and so forth. Although, nitride based devices are commonly grown on foreign substrates e.g. sapphire, growing the nitrides based devices in cheap substrate like silicon (Si) is more preferable as it can promote the devices production at low-cost level. Apart from that, Si substrate provides good thermal conductivity, easier fabrication and available in larger wafer size. It should be concerned that, the nitrides grown on Si substrate usually suffer from large lattice mismatch that causes crack and defects in the overgrown GaN layer. To overcome the problem, we propose to use aluminum nitride (AlN) as the buffer layer for p-GaN layer. In this work, we investigate the structural, optical and electrical properties of p-GaN layer grown on different nitrides surfaces using Si and sapphire substrates for comparison. Towards the end, the prospective of the p-GaN layer on AlN/Si substrate will be determined.