

Technologies and Devices International (TDI)

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Hydride Vapour Phase Epitaxy

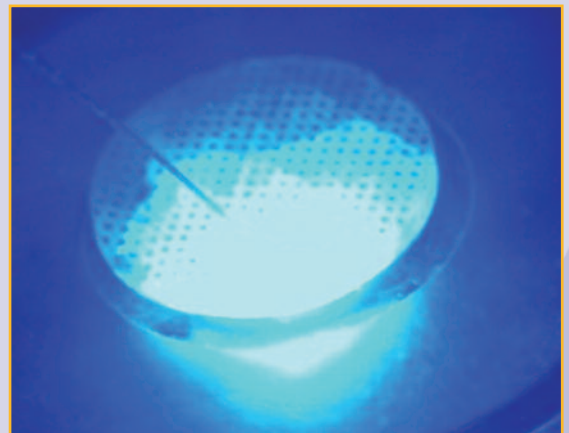
TDI is a world leader in the development of **Hydride Vapour Phase Epitaxy (HVPE)** processes and techniques for the production of novel compound semiconductors such as GaN, AlN, AlGaN, InN, InGaN.

Key Features of HVPE technology

- Flexible growth rates, from 1 $\mu\text{m}/\text{hour}$ (for submicron layer control) to 1000 $\mu\text{m}/\text{hour}$ (for fast buffer layer growth)
- Low dislocation density
- Wide range of layer thickness up to 100 μm
- Cost effective templates for device manufacturing
- P and N type doped materials are available

Processing capabilities offered through TDI laboratories

- Custom design Epitaxy
- Many templates supplied from stock
- Low to medium volume templates on 2", 3" & 4" wafers as standard
- Research and development programmes & contracts undertaken for specific client requirements



HVPE grown LED on HVPE bulk substrate



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INSTRUMENTS

The Business of Science®

World leading solutions from TDI

- HVPE
- Plasma Etch & Deposition
- Atomic Layer Deposition
- Molecular Beam Epitaxy
- Ion Beam Etch & Deposition
- Nanoscale Growth Systems

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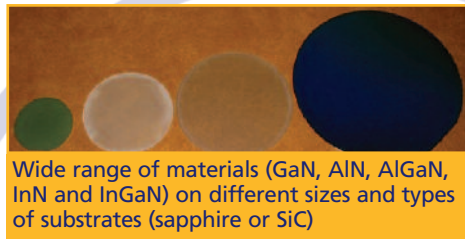
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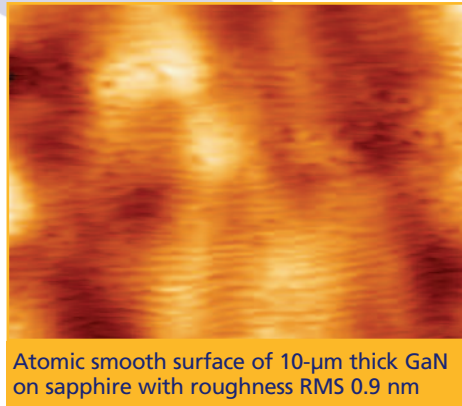
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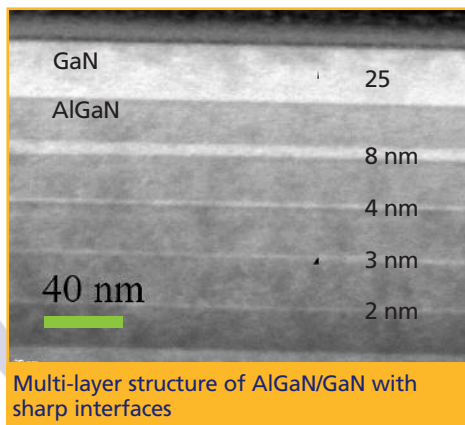
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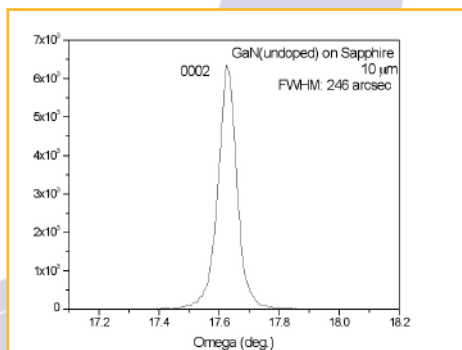
Wide range of materials (GaN, AlN, AlGaIn, InN and InGaIn) on different sizes and types of substrates (sapphire or SiC)



Atomic smooth surface of 10-µm thick GaN on sapphire with roughness RMS 0.9 nm



Multi-layer structure of AlGaIn/GaN with sharp interfaces



High crystalline quality with low dislocation density

TDI - An Oxford Instruments Company

Oxford Instruments Plasma Technology offers flexible, configurable process tools and leading-edge processes for the precise, controllable and repeatable engineering of micro- and nano-structures.

Using TDI's HVPE technology, Oxford Instruments can produce tools for applications such as High Brightness Light Emitting Diodes (HBLEDs), Laser Diodes and High Electron Mobility Transistors (HEMT).