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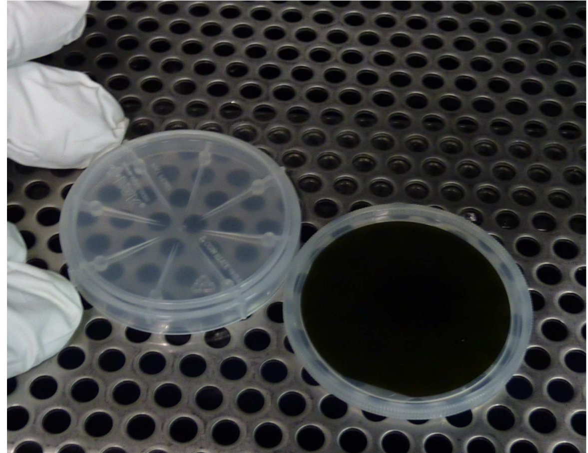
Customised epitaxy GaN structures on SiC and Si suitable for HEMTs, LEDs


GaN n-type layer on 330µm thick 2" wafer.

C-plane GaN on 4H or 6H SiC structures

- n-type, p-type or semi-insulating GaN epitaxial layers available;
- undoped GaN buffer 1µm thick, AlN buffer 50-90nm thick;

could also be

- vertically conductive structures on n-type SiC;
- AlGaN – 40-60nm thick, (30%Al), Si doped buffer;

Thickness uniformity < 5%;
XRD r.c. 002 FWHM≤0.1º±10% for structures ≥3µm thick;

C-plane $Al_x(Ga)_{1-x}N$ on SiC structures

- AlN layers;
- AlGaN layers, 20-30% Al;
- Layer thickness 0.2-1 µm;
- Thickness uniformity < 5%;
- XRD r.c. 002 FWHM≤0.1º±10% for structures ≥3µm thick;

SiC substrate specifications:

- substrate 4H or 6H SiC, 0±0.5deg-off, minimum 330µm thick;
- substrate can be n-type or semi-insulating type;

C-plane GaN on Silicon (111) structure

- undoped GaN, up to 1.2µm thick, AFM rms<2,0nm;
- CC < $1{\cdot}10^{17}/cm^3$;
- Thickness uniformity < 20%;
- AlN and graded AlGaN buffer layers used in order to relax GaN – total thickness 0.5µm-1.5µm;
- substrate Si (111), minimum 675µm thick, diameter 2", n-type or resistive (300Ωcm);

- XRD r.c. 002 FWHM≤0.18°±20%;
- EPD ~$1{\cdot}10^{9}/cm^2$;

Wafers are of 2", 3", 4" in size.

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