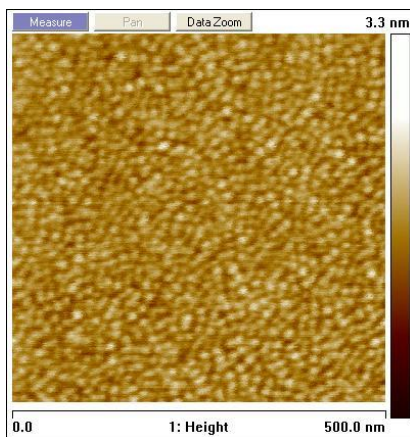


Kyma AlN templates grown by plasma vapor deposition of nanocolumns (PVDNC™) provide a high quality AlN buffer for subsequent GaN device epitaxy on c-plane sapphire. Typically utilized in blue LEDs, the templates are also suitable for use in electronic devices, for bulk GaN growth, and for basic research. Kyma AlN PVD-based templates have several advantages over MOCVD and other PVD growth approaches which include:

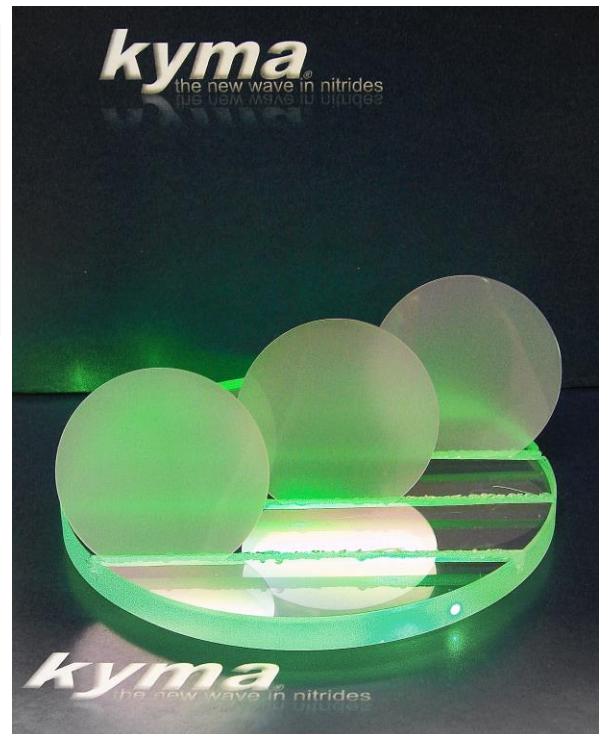
- Increase in MOCVD throughput by eliminating the sapphire pre-treatment and nucleation layer growth steps
- Better repeatability as compared to 2-step GaN on sapphire direct nucleation
- PVDNC AlN offers significantly lower cost and superior scalability versus MOCVD AlN or GaN
- PVDNC growth temperature closer to MOCVD growth temperatures than other PVD processes
- LED manufacturers realize higher LED brightness, better uniformity, and improved ESD handling

Properties:

Orientation: c-axis (00.1) ± 0.2°
 Conduction Type: Semi-insulating
 Typical XRD Linewidth (002): 90-140 arcsec (for 350nm)
 Front Surface Finish (Al-face): Epi-ready, RMS <0.5 nm (25nm)
 Back Surface Finish: SSP or DSP sapphire from vendor
 Edge Exclusion Area: 1 mm for 2-3" & 5 mm for 4-8"



AFM from ~25nm thick PVDNC template on sapphire



Available Sizes: 2" (50.8 mm) – 8" (200 mm)
Available Thickness: 25nm, 350nm, and custom
**custom thickness options available 10nm-2um*

Other sapphire options available: Patterned sapphire substrates (PSS) (micro or nano), double side polished, customer-supplied sapphire and other orientation options available