



Substrates for III-V nitride Film Deposition

Crystal	Structure	M.P. °C	Density g/cm ³	Lattice Mis-match to GaN	Thermal Expansion (10 ⁻⁶ /k)	Growth Tech. & Max size	Standard substrate size (mm)
SiC (6H as example)	Hexagonal a=3.073 Å c=15.117 Å	~2700	3.21	3.5 % at <0001>ori.	10.3	CVD	Ø2" x 0.3, Ø3"x0.3 20x20x0.3, 15x15x0.3
		subl.				Ø3"	10x10x0.3, 5x5x0.3 1 side epi polished
Al₂O₃	Hexagonal a=4.758 Å c=12.99 Å	2030	3.97	14% at <0001>ori.	7.5	CZ	Ø50 x 0.33 Ø25 x 0.50
						Ø2"	10x10x0.5 1 or 2 sides epi polished
LiAlO₂	Tetragonal a=5.17 Å c=6.26 Å	1900 ~	2.62	1.4 % at <100>ori.	/	CZ	10x10x0.5
						Ø20 mm	1 or 2 sides epi polished
LiGaO₂	Orthor. a=5.406 Å b=5.012 Å c=6.379 Å	1600	4.18	0.2 % at <001>ori.	/	CZ	10x10x0.5
						Ø20 mm	1 or 2 sides epi polished
MgO	Cubic a=4.216 Å	2852	3.58	3% at <111>ori.	12.8	Flux	2"x2"x 0.5 mm, Ø2" x 0.5 mm 1"x1"x 0.5 mm, Ø1" x 0.5 mm
						Ø2"	10 x10x0.5 mm 1 or 2 sides epi polished
MgAl₂O₄	Cubic a=8.083 Å	2130	3.6	9% at <111>ori.	7.45	CZ	Ø2" x 0.5
						Ø2"	10x10x0.5 1 or 2 sides epi polished
ZnO	Hexag. a=3.325 Å c=5.213 Å	1975	5.605	2.2 % at <0001>ori.	2.9	Hydro-thermal	20x20x0.5
						20mm	1 or 2 sides epi polished
GaN	Hexagonal		6.15		5.59		10x10x0.475mm 5x5x0.475mm