PARTOW TECHNOLOGIES LLC

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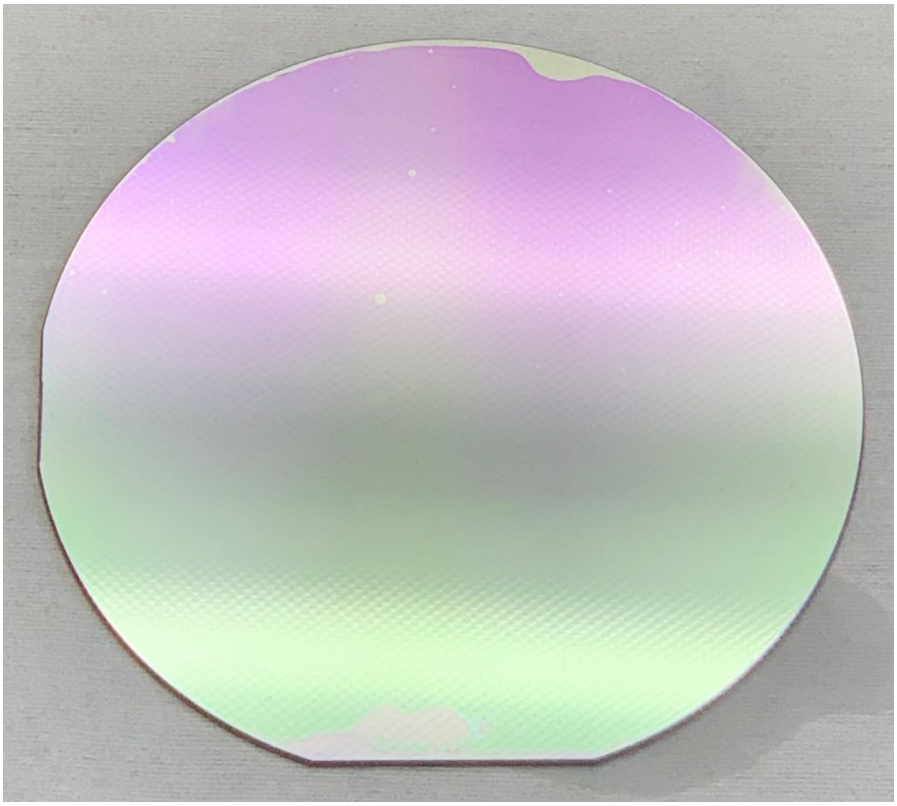
Wafer bonding service and ion Sliced lithium niobate thin films.

Partow's technology is based on crystal ion slicing of lithium niobate wafers. The process uses ion implantation to weaken the crystal bondage in a lithium niobate wafer. The implanted crystal is then bonded to a handle substrate and a thin layer of lithium niobate is transferred to the handle substrates using crystal ion slicing technique. A final chemical-mechanical polishing step smoothens the surface of the bonded thin film wafer. Currently, the company produces customized photonic thin film platforms using its thin film bonding system and can extend its process to provide more customized bonded platforms based on customer's needs and application.



4" x-cut lithium niobate thin film on Silicon

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Lithium niobate single crystal thin film substrates

Type	Low Thickness	High Thickness
	Top lithium niobate layer	
Parameter	**Standard**	**Custom Order**
Orientation	Any orientation	Any orientation
Doping	Undoped, Black, MgO	Undoped, Black, MgO
Secondary Flat (on LN film)	TBD	TBD
Lithium niobate film diameter	100 mm	100mm
Thickness range	200-550nm	550-1000 nm
Thickness uniformity	< 2%	< 2%
Surface roughness	< 0.5 nm	< 0.5 nm
Defective area >50micron	< 5%	< 5%
Defect density <50micron	<1 per cm^2	<1 per cm^2
	Intermediate SiO_2 layer	
Type	**Standard**	**Custom Order**
Thickness range	2000 nm	0 nm – 6000 nm
Thickness uniformity	< 3%	< 3%
	Substrate	
Type	**Standard**	**Custom Order**
Material	Silicon, Quartz, Sapphire	Silicon, Quartz, Sapphire
Substrate thickness	0.5 mm	0.5 – 6 mm
Substrate diameter	100 mm	100 mm
Substrate resistivity	> 5000 ohm-cm	0-20000 ohm-cm

Wafer bonding service:

Parameter	Substrate 1	Substrate II
Material	Silicon, Lithium niobate, Quartz, GaAs, InP, diamond, Ga2O3 …..	Silicon, Lithium niobate, Quartz, GaAs, InP, diamond,Ga2O3 …..
Diameter	75 mm, 100mm	75 mm, 100mm
Thickness	0.5mm, or custom thickness	0.5mm, or custom thickness
Surface roughness	<0.5nm	<0.5nm