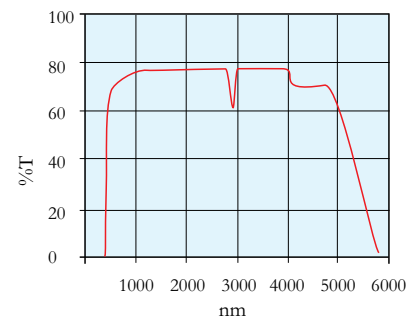


Lithium Niobate Crystal (LiNbO₃)

LiNbO₃ Crystal is widely used as frequency doublers for wavelength > 1μm and optical parametric oscillators (OPOs) pumped at 1064nm as well as quasi-phase-matched (QPM) devices. Due to its large Electro-Optic (E-O) and Acousto-Optic (A-O) coefficient, LiNbO₃ crystal is the most commonly used material for Pockel Cells, Q-switches and phase modulators, waveguide substrate, and surface acoustic wave (SAW) wafers, etc.

Basic Properties:

| | |
|---|--|
| Crystal Structure | Trigonal, space group R3c |
| Cell Parameters | a = 0.515, c = 13.863, Z = 6 |
| Melting Point | 1255+/-5°C |
| Curie Point | 1140+/-5°C |
| Mohs Hardness | 5 |
| Density | 4.64 g/cm ³ |
| Absorption Coefficient | ≈ 0.1%/cm@1064nm |
| Solubility | Insoluble in H ₂ O |
| Relative Dielectric Constant | $\epsilon_{11}^T/\epsilon_0$: 85 $\epsilon_{33}^T/\epsilon_0$: 29.5 |
| Thermal Expansion Coefficients(@ 25°C) | a, 2.0 x 10 ⁻⁶ /K c, 2.2 x 10 ⁻⁶ /K |
| Thermal Conductivity | 38W/m/K@25°C |



LiNbO₃ Transparency Curve

Magnesium Oxide Doped Lithium Niobate Crystals (MgO:LiNbO₃):

Compared with LiNbO₃ crystal, MgO:LiNbO₃ crystal exhibits its particular advantages for NCPM frequency doubling (SHG) of Nd:Lasers, mixing (SFG) and optical parametric oscillators (OPOs). The SHG efficiencies of over 65% for pulsed Nd:YAG lasers and 45% for cw Nd:YAG lasers have been achieved in MgO:LiNbO₃ crystals respectively. MgO:LiNbO₃ is also a good crystal for optical parametric oscillators (OPOs) and amplifiers (OPAs), quasi-phase-matched doublers and integrated waveguide.

New Nonlinear Optics Crystals

PHOTOP is continuing to lead the crystal growing technologies in Fuzhou, Fujian, the center of crystal growth and manufacturing in China. We developed the VGF (Vertical Gradient Freezing) technology for semiconductor GaAs and InP crystals and CZ & Flux technologies for various laser and NLO crystals. Currently, we have self or cooperative projects to develop the following New Nonlinear Optics Crystals:

- BIBO (BiB₃O₆), for high efficiency diode pumped blue, green lasers
- KBBF, for frequency doubling to deep UV output (to 157nm output)
- For more information, please contact our sales engineers