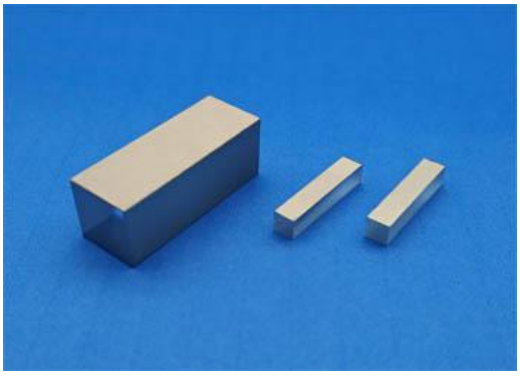
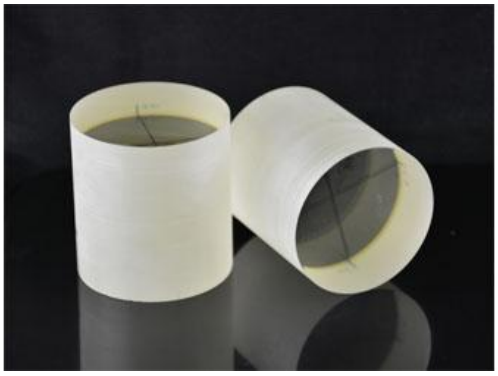
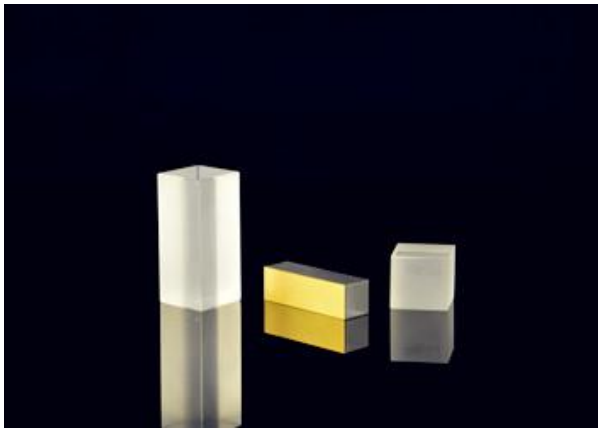
# LiNbO3 crystals for EO applications

- **Preferably for Er:YAG-, Ho:YAG-, Tm:YAG laser**
- **Wavelengths up to 3μm**
- **Brewster for laser with low amplification**

LiNbO3 crystals have become one of the most commonly used material for Q-switches and phase modulators for its high EO coefficients, with an electric field applied transverse to the direction of light propagation, LiNBO3 cells can be configured to operate at a lower voltage than comparable KD*P cells. LiNbO3 can also be a good choice for infrared wavelengths as long as 3.0 μm. Hangzhou Shalom EO offers the polished, and AR coating and Au-Cr electroded **LiNbO3 crystals** used in pockels cells.

## Modules or types

### A variety types of crystals are available upon your request:

- Crystal boules with inspection polishing
- Crystal blanks with inspection polishing
- Crystals with laser grade polishing
- Crystals with AR coating and Cr-Au electrode

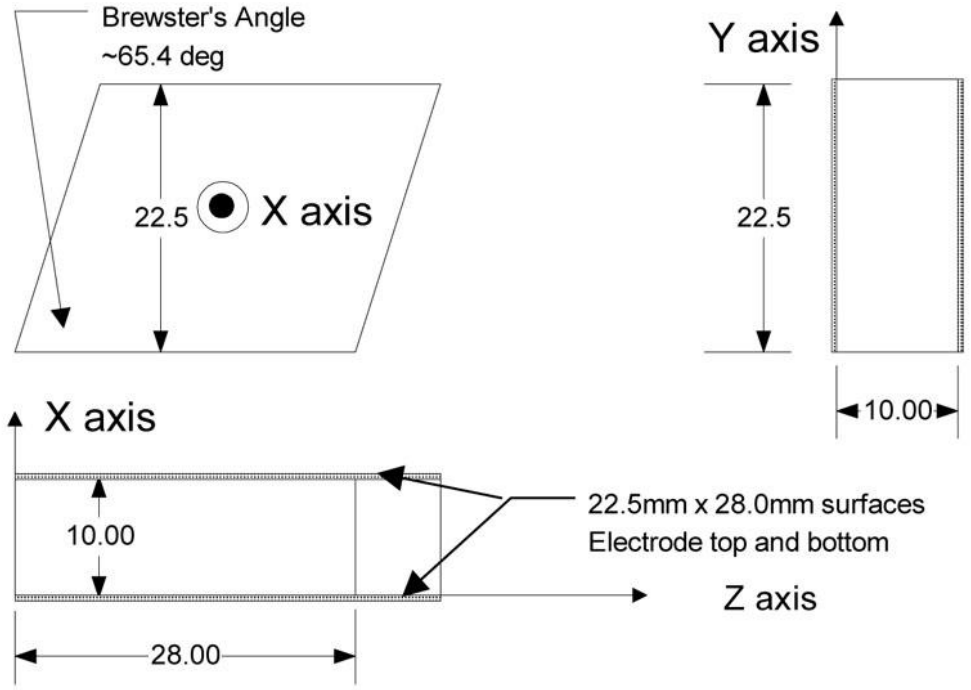

Addr. Room A1031, Boke Mansion, No.9 Xiyuan Road, Xihu District, Hangzhou 310030, China.
Tel:+86-571-87920630 Fax:+86-571-87603342 E-mail:sales@shalomeo.com Home:www.shalomeo.com

# SPECIFICATIONS

| Specification of LiNbO3 crystals for pockels cells applications | |
|---|---|
| Crystal materials | LiNbO3 crystals |
| Size | Customized |
| Size tolerance | +/-0.1mm |
| Length tolerance | +/-0.2mm |
| Surface quality | 20/10 S/D |
| Parallelism | <20 arc seconds |
| Flatness | < Lambda/10 @633nm |
| Chamfer | 0.1-0.3mmx45° |
| Chips | <0.15mm |
| Side surface | Fine ground |
| Orientation tolerance | < 10 arc minutes |
| Wavefront distortion | <Lambda/4@633nm |
| Extinction ratio | >200:1 |
| Coating | AR/AR@1064nm or customized |
| Damaging threshold | >100mW/cm^2@1064nm 10nS 10Hz pulse |
| Electrode on side surface | Chrome gold electrode (Cr+Au) |

Note: crystals with other special specificaton is available upon request

**Example: LiNbO3 crystals with bruster angle**






Addr. Room A1031, Boke Mansion, No.9 Xiyuan Road, Xihu District, Hangzhou 310030, China.
Tel:+86-571-87920630 Fax:+86-571-87603342 E-mail:sales@shalomeo.com Home:www.shalomeo.com

| Basic Properties | |
|---|---|
| Crystal Structure | Trigonal, space group R3c |
| Cell Parameters | a = 0.515, c = 13.863, Z = 6 |
| Melting Point | 1255±5oC |
| Curie Point | 1140±5oC |
| Mohs Hardness | 5 |
| Density | 4.64 g/cm3 |
| Absorption Coefficient | ~ 0.1%/cm @ 1064 nm |
| Solubility | insoluble in H2O |
| Relative Dielectric Constant | $e^T_{11}/e_0$: 85<br>$e^T_{33}/e_0$: 29.5 |
| Thermal Expansion Coefficients( @ 25oC) | \|\|a, 2.0 x $10^{-6}$/K \|\|c, 2.2 x $10^{-6}$/K |
| Thermal Conductivity | 38 W /m /K @ 25oC |

| Linear Optical Properties | |
|---|---|
| Transparency Range | 420-5200nm |
| Refractive Indices | ne=2.146, no = 2.220 @ 1300 nm |
| | ne= 2.156, no = 2.232 @ 1064 nm |
| | ne= 2.203, no = 2.286 @ 632.8nm |
| Optical Homogeneity | ~ 5 x $10^{-5}$ /cm |
| Sellmeier Equations (l in mm) | $n^2o$ (l) = 4.9048+0.11768/($l^2$ - 0.04750) - 0.027169$l^2$ |
| | $n^2e$ (l) = 4.5820+0.099169/($l^2$ - 0.04443) - 0.021950$l^2$ |

| Nonlinear Optical Properties | |
|---|---|
| NLO Coefficients | d33 = 34.4 pm/V |
| | d31 = d15 = 5.95 pm/V |
| | d22 = 3.07 pm/V |
| Efficiency NLO Coefficients | deff =5.7 pm/V or ~14.6 x d36 (KDP) for frequency doubling 1300 nm |
| | deff =5.3 pm/V or ~13.6 x $d_{36}$ (KDP) for OPO pumped at 1064 nm |
| | deff =17.6 pm/V or ~45 x $d_{36}$ (KDP) for quasi-phase-matched structure |
| Electro-Optic Coefficients | $g^T33$ = 32 pm/V, $g^S33$ = 31 pm/V |
| | $g^T31$ = 10 pm/V, $g^S31$=8.6 pm/V |
| | $g^T22$ = 6.8 pm/V, $g^S22$= 3.4 pm/V |
| Half-Wave Voltage, DC<br>Electrical field\|\|z, light ^z<br>Electrical field\|\|x or y, light\|\|z | 3.03 KV<br>4.02 KV |


Addr. Room A1031, Boke Mansion, No.9 Xiyuan Road, Xihu District, Hangzhou 310030, China.
Tel:+86-571-87920630 Fax:+86-571-87603342 E-mail:sales@shalomeo.com Home:www.shalomeo.com

Addr. Room A1031, Boke Mansion, No.9 Xiyuan Road, Xihu District, Hangzhou 310030, China.
Tel:+86-571-87920630 Fax:+86-571-87603342 E-mail:sales@shalomeo.com Home:www.shalomeo.com