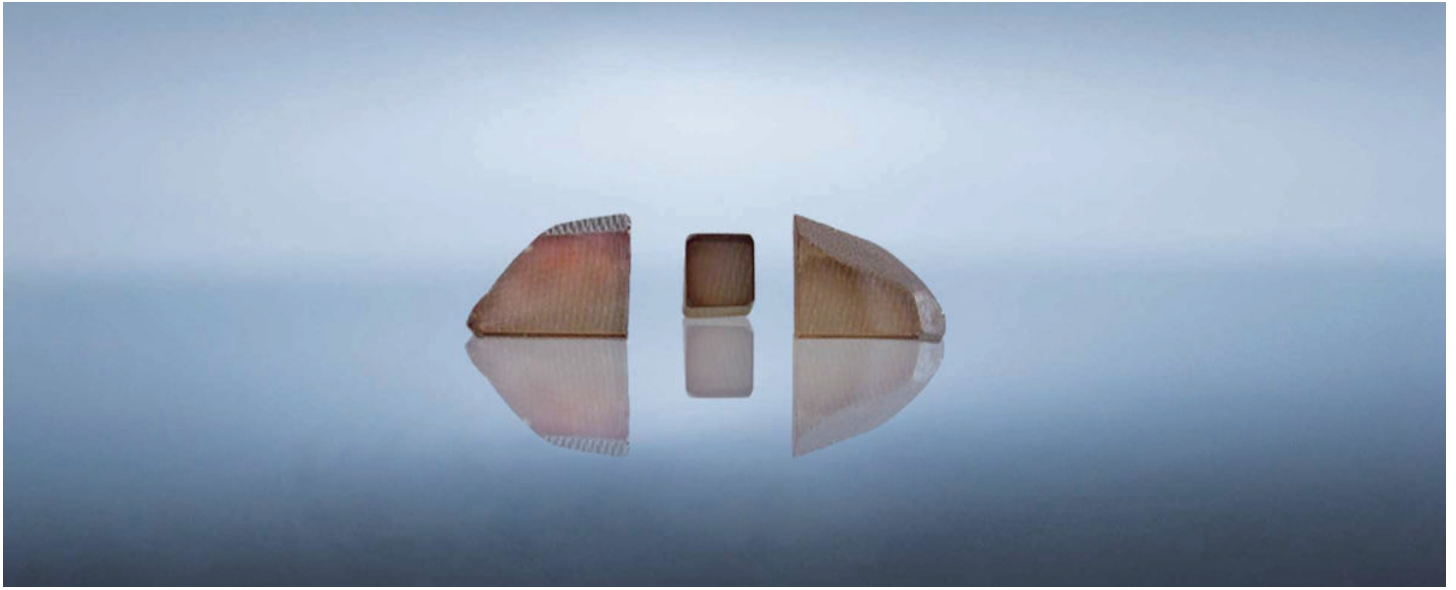# LiInSe$_2$

DESCRIPTION

LiInSe$_2$ (Lithium Indium Selenide), referred to as LISe crystal, mm^2 dot group, transmittance range of 0.43~13.2 µm, large effective nonlinear coefficient (d_{31}=11.78, d_{24}=8.17@2.3 µm), can be applied to pump titanium sapphire laser, optical parametric oscillation (OPO) can be obtained from 1-13 µm mid-infrared laser output and mid-infra-red range (2-13 µm) with different frequencies.

FEATURES

- Small band gap, suitable for neutron detection
- High heat conductivity
- High laser damage threshold
- Crystal growth is not easy to crack
- Good neutron recognition capability
- It is not easy to crack during growth

APPLICATIONS

- Optical parametric oscillation (1-13 micron OPO effective material)
- In the range of 2-13µm infrared laser difference frequency
- Through DFG OPA OPO and other ways to achieve long-wave infrared laser output
- Gas detection, medical diagnosis and treatment
- Infrared guidance, infrared confrontation, infrared remote sensing, etc

OPTICAL ELEMENT PARAMETERS

Positional Accuracy	<30′
Parallelism	<30″
Flatness	λ/4@546nm
Surface Finish	30/20 sratch/dig

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LiInSe$_2$

PHYSICAL AND CHEMICAL PROPERTIES

Crystal Structure	Orthorhombic, point group: mm2, space groups: Pna2$_1$
Lattice Parameters Å	a=7.192, b=8.412, c=6.793
Transparency Range	0.43-13μm
Nonlinear Coefficient pm/V	d$_{31}$=11.78, d$_{24}$=8.17 @2.3μm
Standard Reflectance	@10.0 μm n$_x$=2.2015, n$_y$=2.2522, n$_z$=2.2566
	@5.0 μm n$_x$=2.2370, n$_y$=2.2772, n$_z$=2.2818
SHG Fundamental Frequency Light Range	x-y, Type II, eoe: 2.73 – 8.24μm
	x-z, Type I, ooe: 2.08 – 12.4μm
	y-z, Type II, oeo: 2.73 – 3.07μm
	y-z Type II, oeo, 7.66 – 8.24μm
	Total wavelength coverage: 2.08 – 12.4μm
Damage Threshold, GW/cm^2	40 @1064nm (t=10 ns)
Thermal Conductivity, WM/M°C	k$_x$=4.73 ± 0.3; k$_y$=4.67 ± 0.3; k$_z$=5.45 ± 0.3
Band gap energy at room temperature	2.73eV
Far infrared absorption edge at 0.2 level of transmittance	1.24 THz @240 μm

SPECTRA

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