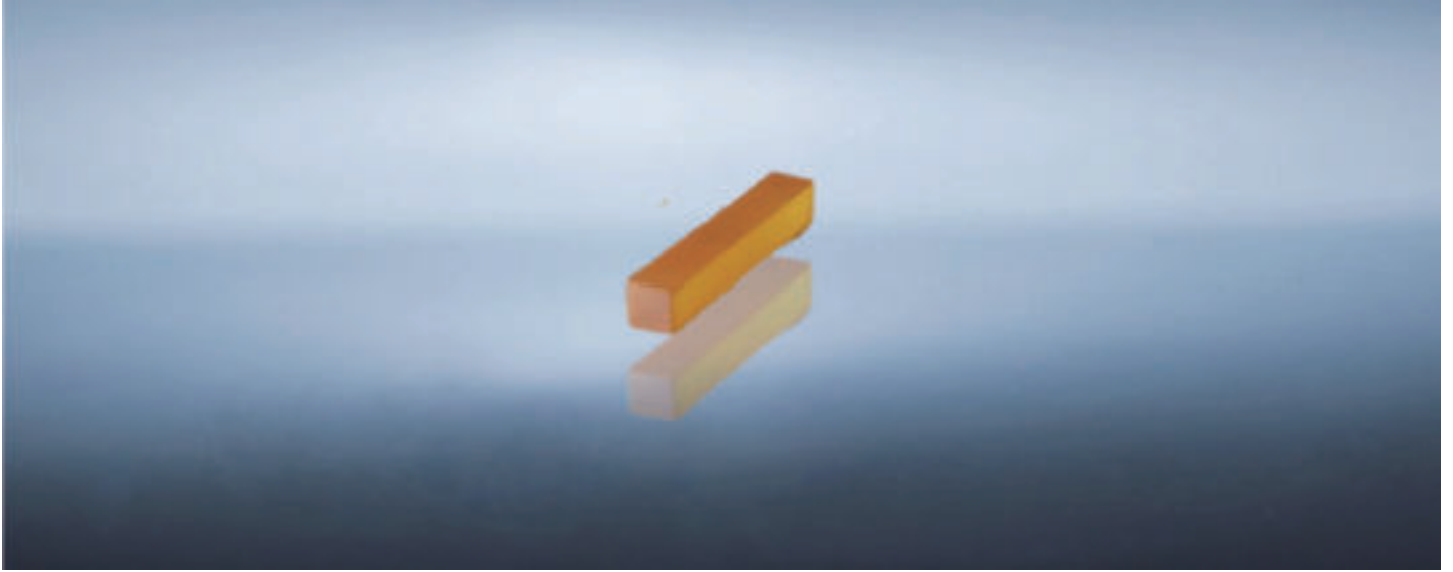


BaGa₄Se₇



DESCRIPTION

BaGa₄Se₇ (Barium Gallium Selenide), referred to as BGSe crystals, belongs to the monoclinic P_c (No. 7) space group, which has a large band gap (2.64 eV), a wide transmission range (0.47~18 μm), large nonlinear effects ($d_{11}=24.3$ pm/V, $d_{13}=20.4$ pm/V), moderate birefringence ($\Delta n=0.06@2$ μm) and a high laser damage threshold. The BGSe crystals have good growth performance and are easy to obtain large size high quality single crystals suitable for high power output. the BGSe crystals can be pumped by laser of 1~3 μm to produce tunable lasers up to 18 μm in the mid- and far-infrared.

Compared with ZnGeP₂, BGSe can be pumped by 1 μm laser sources and can be easily prepared for large-aperture devices. BGSe is currently the best nonlinear optical crystal for frequency down-conversion output of mid- and far-infrared lasers for mature 1 μm lasers.

APPLICATIONS

- Remote sensing
- Spectrum analyzer
- Terahertz communication
- Three μ m-band optical parametric oscillator

FEATURES

- Transparent band width
- High nonlinear coefficient
- High thermal conductivity
- Large band phase matching
- High light damage threshold
- 1064nm pump has no two-photon absorption effect
- Coverage 3-5 μ M and 8-14 μ M two important atmospheric windows have good mechanical properties and are easy to process



BaGa₄Se₇

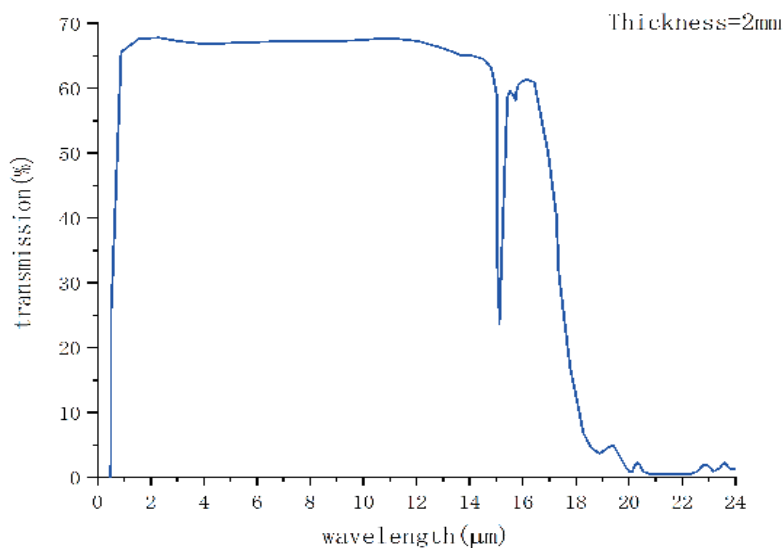
MACHINING PARAMETERS

Orientation accuracy	<±0.1°
Surface finish	60/40 per MIL-O-13830A
Facial form	λ/8@632.8nm for T>=1mm
Tolerance of smooth surface	+0/-0.1mm
Length tolerance	±0.1mm
Parallelism	30 "
verticality	10'
Chamfering	<0.2mm×45°

BASIC CHARACTERISTICS

chemical formula	BaGa ₄ Se ₇
Crystallographic system	Monoclinic system, point group M, space group PC
Cell parameters	a=7.6252 (15) Å, b=6.5114 (13) Å, c=14.702(4)Å,β=121.24(2), Z=2
Light transmission range	0.47-18μm
Nonlinear coefficient	d ₁₁ = 24 pm/V
Birefringence	0.07@2μm
Damage threshold (μm, 5ns)	550MW/cm ²
band gap	2.64eV
Sellmeier equation	$n_x^2 = 5.952953 + 0.250172 / (\lambda^2 - 0.081614) - 0.001709\lambda^2$ $n_y^2 = 6.021794 + 0.256951 / (\lambda^2 - 0.079191) - 0.001925\lambda^2$ $n_z^2 = 6.293976 + 0.282648 / (\lambda^2 - 0.094057) - 0.002579\lambda^2$

SPECTRA



BaGa₄Se₇

