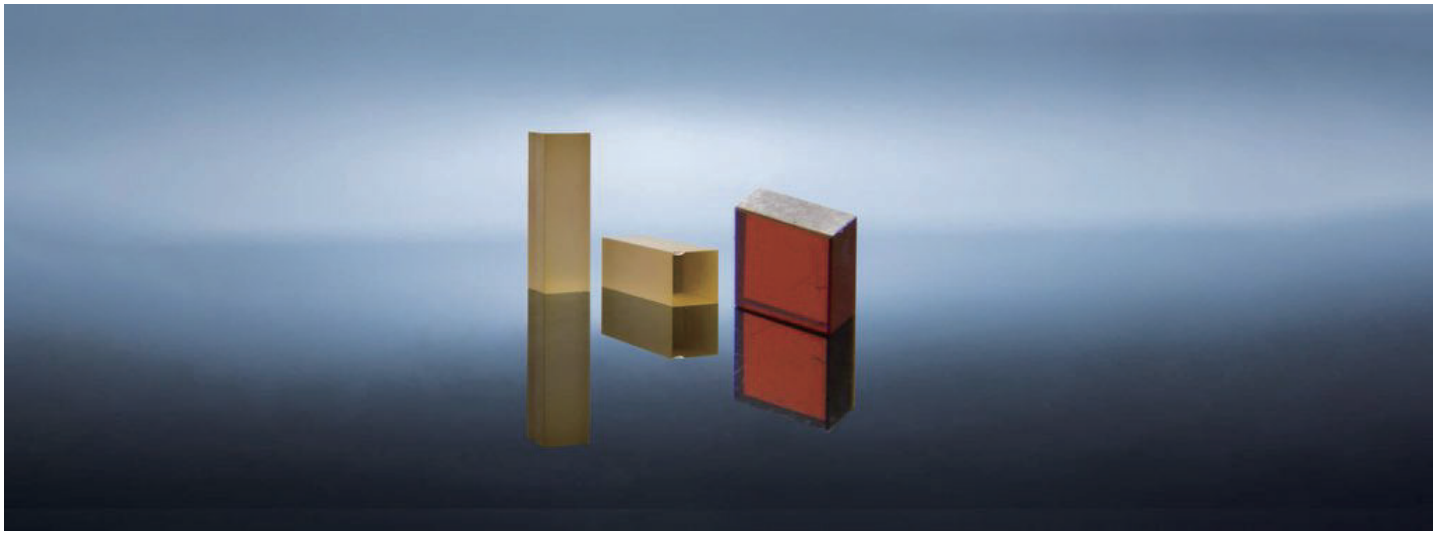
Cr:ZnSe



DESCRIPTION

Cr: ZnSe laser crystal has the advantages of normally no excited state absorption and upper level conversion, an extremely broad absorption band and large emission cross-section, superb fluorescence quantum efficiency at room temperature and extra broad emission width as well as good chemical and mechanical properties, which make it become an excellent source of efficient and powerful tunable mid infrared laser. Because of mid infrared wavelength band is the window of atmosphere, the Cr:ZnSe laser crystal has important application prospect in the field of photo-communication, pollution gas detection, industrial combustion product test and so on.

FEATURES

- Broad tunability (lasing from 2.1-3.1 μm)
- Broad absorption bands
- Large gain cross section (σemission ~ 9×10^{-19} cm^2)
- Minimal problem of excited state absorption (no spin-allowed excited state transitions from the upper laser level)
- High thermal conductivity – better than YAG (18 W/m·K in ZnSe versus 13 W/m·K in YAG)
- High IR (0.6-20 μm) transparency

APPLICATIONS

- Surgery
- Remote sensing
- Dentistry
- Free space communications
- Military applications

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Cr:ZnSe

PARAMETERS

MATERIAL AND SPECIFICATIONS

Crystal structure	Cubic
Poisson Ration	0.28
Thickness/Diameter Tolerance	±0.05mm
Orientation Tolerence	< 0.5°
Surface Flatness	<λ/8@632nm
Wavefront Distortion	<λ/4@632nm
Surface Quality	10-5(MIL-O-13830A)
Parallel	30 ″
Perpendicular	15 ′
Clear Aperture	>90%
Chamfer	<0.2×45°
Melting Point	1520 ºC

PHYSICAL AND CHEMICAL PROPERTIES

Thermal Expansion Coeff. @20ºC	1.5×10^{-6}/ºC
Thermal Conductivity Coeff. @20ºC	14 W/m/ºK
Specific Heat	0.79 J/g K
Density	5.27 g/cm³
Durability Knoop Hardness	112 kgf/mm²
Mohs Hardness	8.5
Young's Modulus	67 GPa
Modulus of Rupture	55 MPa
Orientation	<111>or <100>

OPTICAL AND SPECTRAL PROPERTIES

Laser Wavelengths	2150 – 2600 nm
Emission Linewidth	<1 nm
Emission Cross-section (@1064nm)	9×10-19 cm²
Intrinsic Loss @1064nm	$<0.003\ cm^{-1}$
Refractive Index (n) @ 1650nm	2.455
Thermal Optical Coeff. (dn/dT) @nm	61×10^{-6}/ºC

Cr:ZnSe

SPECTRA