Laser Crystal
Cr,Tm,Ho:YAG

Cr,Tm,Ho:YAG crystal products are high-efficiency laser crystals pumped by xenon lamps or diodes. They are laser crystals with good comprehensive performance.

Cr,Tm,Ho:YAG wavelength is 2.1 μm. The pump source mainly comes from the flash energy absorbed by Cr^{3+}, Ho^{3+} is the working ion, and Tm^{3+} acts as the intermediary for energy transfer. two point one μm laser can be well absorbed by water, easy to penetrate the atmosphere, and safe for eyes.

In addition, for 3-5 μm mid infrared optical parametric oscillator, 2.1 μm laser is an ideal pump source. Cr, Tm,Ho:YAG crystal has the characteristics of wide absorption band, high slope efficiency, can be pumped by flash lamp or diode, operates well at room temperature and works in a wavelength range relatively safe to human eyes. Therefore, it is widely used in medical, lidar and other fields.

Key Features

- Wide absorption band
- The slope of high efficiency
- Can use flash or diode pumped
- 2.1 μm lasing wavelength is suitable for the eyes

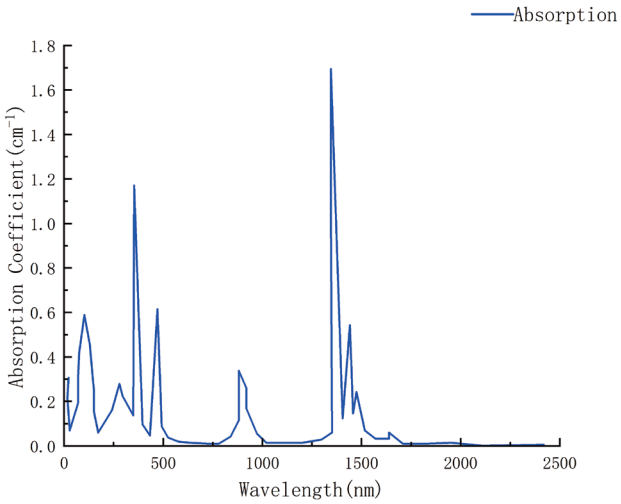
Applications

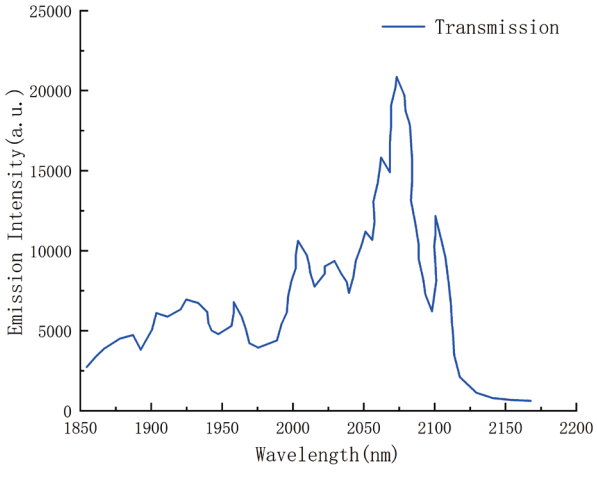
Laser radar

Laser medicine

2100 nm laser for medical applications

Spectra





Technical Specifications

Material Specifications	
Doping Concentration	Ho:0.3~0.4at% Cr:0.3~1.2at% Tm:5~6at%
Wavefront Aberration	<λ/4@632nm
Extinction Ratio	≥25 dB
Size	Diameter:3~6mm,Length:50~120mm
Size Tolerance	Diameter:+0.00/-0.05mm, Length: ± 0.5mm
Precision Grinding	50-80 Micro Inches(RMS)
Parallelism	≤30″
Perpendicularity	≤5′
Flatness	λ/10@ 633 nm
Surface Finish	10/5 Scratch / Digper
Chamfer	0.006″±0.002″ at 45°± 5°
High Permeable Film Reflectivity	≤ 0.25% (@2094nm)

Physical and Chemical Properties	
Structure	Cubic
Lattice Constant	12.01Å
Melting Point	1970°C
Density	4.56g/cm^3
Orientation	<111> or <100> 5°
Thermal Expansion	7.8×10^{-6} /K
Coefficient of Thermal Conductivity	14W/m/K, 20°C； 10.5W/m/K, 100°C
Mohs hardness	8.5
Dielectric Constant	11.7

Optical and Spectral Properties	
Laser Transition	$^5I_7 \rightarrow {}^5I_8$
Laser Wavelength	2.094 μm
Photon Energy	9.55 x 10^{-20} J
Radiation Cross Section	7 x 10^{-21} cm^2
Fluorescence Lifetime	8.5 ms
Refractive Index	1.80 @2.08 μm
Aperture	>90%
Absorption Line Width	4 nm
Diode Pump Band	781 nm
Main Pump Belt	400~800 nm