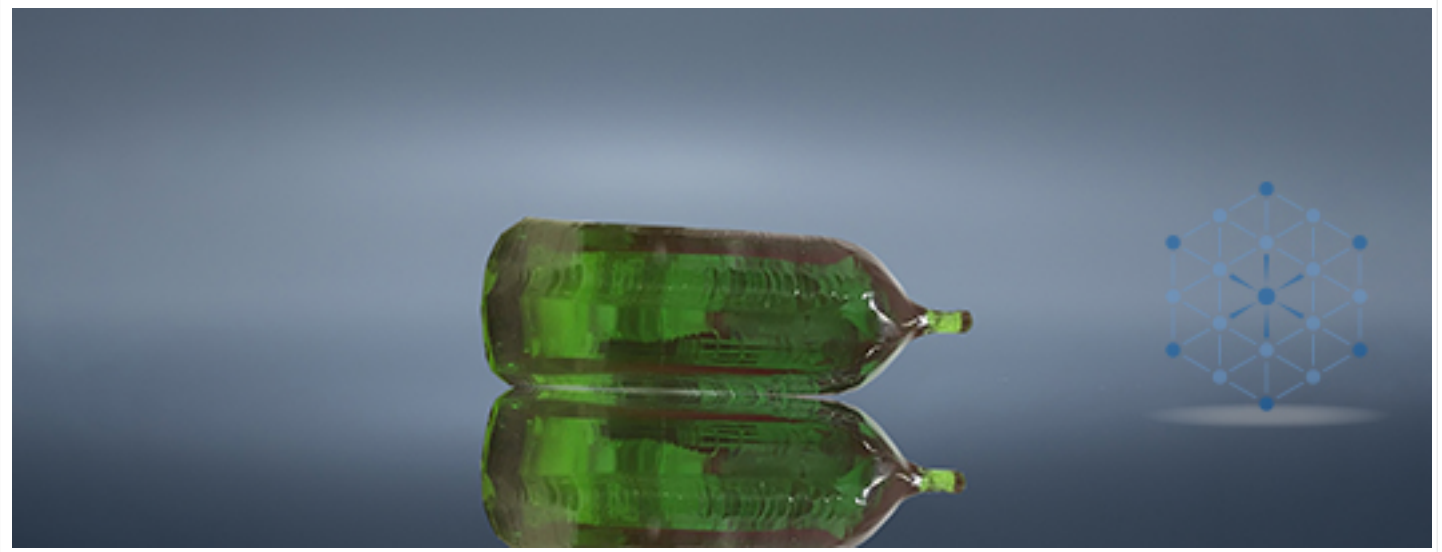


# Cr,Tm,Ho:YAG



## DESCRIPTION

Cr,Tm,Ho:YAG is high efficient laser crystal pumped by Xenon lamp or diode with wavelength of 2.1 $\mu$ m. the pump source main originates from the flashlamp energy absorbed by Cr<sup>3+</sup>, Ho<sup>3+</sup> is working ion and Tm<sup>3+</sup> acts as intermediary to transfer energy. 2.1  $\mu$ m laser wave can be absorbed by water very well, transmits atmosphere easily and is safe to eye. Therefore, it is widely used in medical treatment, laser radar, military and so on. What's more 2.1  $\mu$ m laser is ideal pump source for 3-5  $\mu$ m mid-infrared optical parametric oscillator.

## FEATURES

- Wide absorption band
- 2.1  $\mu$ m lasing wavelength is for eye
- High slope efficiency
- Can be pumped by flash lamp or diode

## APPLICATIONS

- 2100nm laser used in medical application
- Laser radar

## PARAMETERS

### MATERIAL AND SPECIFICATIONS

Property	Value
Doped Concentration	Ho:0.3~0.4at% Cr:0.3~1.2at% Tm:5~6at%
Wavefront Distortion	Trigonal, 3m
Extinction Ratio	$\geq 25$ dB
Rod Sizes	Diameter:3~6mm,Length:50~120mm
Dimensional Tolerances	Diameter:+0.00/-0.05mm, Length: $\pm 0.5$ mm
Barrel Finish	50-80 micro-inch (RMS)
Parallelism	$\leq 30''$
Perpendicularity	$\leq 5'$
Flatness	$\lambda/10$ @ 633 nm
Surface Quality	10/5
Chamfer	0.006'' $\pm 0.002''$ at 45° $\pm 5^\circ$
AR Coating Reflectivity	$\leq 0.25\%$ (@2094nm)



# Cr,Tm,Ho:YAG

## PHYSICAL AND CHEMICAL PROPERTIES

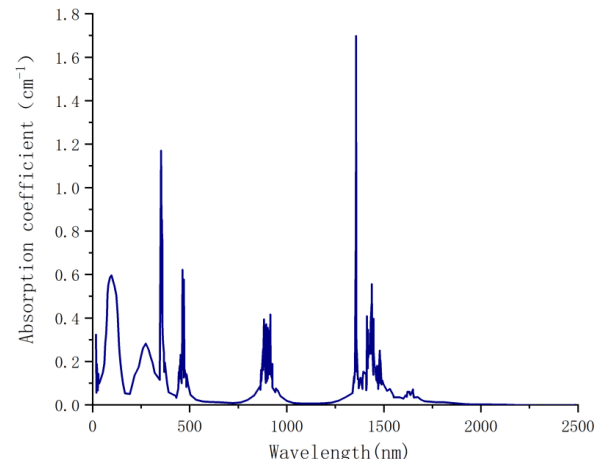
Property	Value
Structure	Cubic
Lattice Constant	12.01Å
Melting Point	1970°C
Density	4.56g/cm <sup>3</sup>
Orientation	<111> or <100> crystalline within 5°
Thermal Expansion	7.8×10 <sup>-6</sup> /K
Thermal Conductivity	14W/m/K, 20°C; 10.5W/m/K, 100°C
Mohs Hardness	8.5
Dielectric Constant	11.7

## PHYSICAL AND CHEMICAL PROPERTIES

Property	Value
Laser Transition	<sup>5</sup> I <sub>7</sub> → <sup>5</sup> I <sub>8</sub>
Laser Wavelength	2.094 μm
Photon Energy	9.55 x 10 <sup>-20</sup> J
Emission Cross Section	7 x 10 <sup>-21</sup> cm <sup>2</sup>
Fluorescence Lifetime	8.5 ms
Index of Refraction	1.80 @2.08 μm
Aperture	>90%
Absorption Linewidth	4 nm
Diode Pump Band	781 nm
Major Pump Band	400~800 nm

## SPECTRA

Absorption



Emission

