

CTH:YAG

Ho,Cr,Tm:YAG -yttrium aluminium garnet laser crystals doped with chromium,thulium and holmium ions to provide lasing at 2.13 microns are finding more and more applications,especially in the medical industry.The inherent advantage of the crystal crystal is that it employs YAG as the host. YAG's physical,thermal and optical properties are well known and understood by every laser designer. It has wide applications in surgery, dentistry, atmospheric testing, etc.

Advantages of CTH:YAG:

- High slope efficiency
- Pumped by flash lamp or diode
- Operates well at room temperature
- Operates in a relatively eye-safe wavelength range

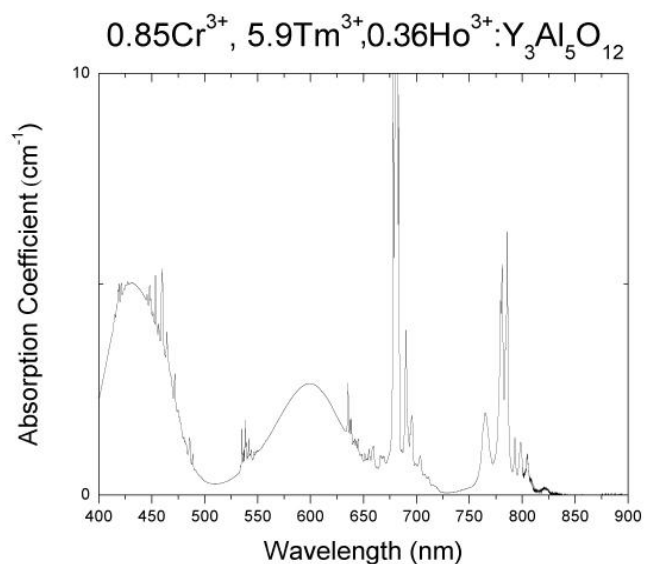


Cr ³⁺ Concentration	0.85%
Tm ³⁺ Concentration	5.9%
Ho ³⁺ Concentration	0.36%

Dopant Ion

Emission Wavelength	2.080 um
Laser Transition	$^5I_7 \rightarrow ^5I_8$
Flourescence Lifetime	8.5 ms
Pump Wavelength	flash lamp or diode pumped @ 780nm

Operating Spec



Absorption coefficient of CTH:YAG crystal



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Basic Properties

Coefficient of Thermal Expansion	$6.14 \times 10^{-6} \text{ K}^{-1}$
Thermal Diffusivity	$0.041 \text{ cm}^2 \text{ s}^{-2}$
Thermal Conductivity	$11.2 \text{ W m}^{-1} \text{ K}^{-1}$
Specific Heat (Cp)	$0.59 \text{ J g}^{-1} \text{ K}^{-1}$
Thermal Shock Resistant	800 W m^{-1}
Refractive Index @ 632.8 nm	1.83
dn/dT (Thermal Coefficient of Refractive Index) @ 1064nm	$7.8 \times 10^{-6} \text{ K}^{-1}$
Melting Point	1965°C
Density	4.56 g cm^{-3}
MOHS Hardness	8.25
Crystal Structure	Cubic
Standard Orientation	<111>
Y3+ Site Symmetry	D ₂
Lattice Constant	a=12.013 Å
Molecular Weight	593.7 g mol^{-1}

Technical Parameters

Wavefront Distortion	$\leq 0.125 \lambda / \text{inch} @ 1064 \text{ nm}$
Rod Sizes	Diameter: 3-6mm ,Length: 50-120mm, Upon request of customer
Dimensional Tolerances	Diameter: $\pm 0.05 \text{ mm}$ Length: $\pm 0.5 \text{ mm}$
Barrel Finish	Ground finish: 400#Grit
Parallelism	< 30"
Perpendicularity	$\leq 5'$
Flatness	$\lambda / 10$
Surface Quality	10/5
AR coating Reflectivity	$\leq 0.25\% @ 2094 \text{ nm}$