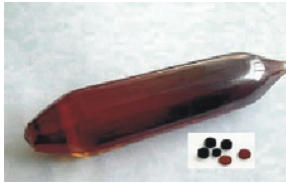


PASSIVE CRYSTAL

Cr 4+ :YAG



Physical Properties

Chemical Formula	$\text{Cr}_{4+} : \text{Y}_3\text{A}_{15}\text{O}_{12}$
Crystal Structure	Cubic Garnet
Recovery Time	8.5 μ s
Hardness Mohs	8.5
Density	4.56g/cm ³
Orientation	[100] +/-10°
Thermal Conductivity	12.13w/m/k
Refractive Index	1.82 @ 1064nm

Optical Properties

Base State Absorption Cross Section	$\sigma_{s1} = 4.3 \times 10^{-18} \text{ cm}^2$
Emission State Absorption Cross Section	$\sigma_{s2} = 8.2 \times 10^{-19} \text{ cm}^2$
Fluorescence Lifetime	3.4us

Capabilities

Cr ₄₊ Dopant Concentration	0.5 mol%~3 mol%
Aperture	2x2~14x14mm
Initial transmission	10% ~ 99%

Typical Specification and Tolerance

DimensionTolerance	(W ± 0.1mm) x (H ± 0.1mm) x (L + 0.2mm/-0.1mm)
Flatness	< λ /8 @ 633nm
Scratch/Dig	Better than 10/5 Scratch/Dig per MIL-O-13830A
Parallelism	< 20 arc seconds
Perpendicularity	<5 arc minutes
Wavefront Distortion	Less than λ /8 @ 633nm
Clear Aperture	> 90% Central Area
Coating	Anti-reflective

TERBIUM GALLIUM GARNET(TGG)

Terbium Gallium Garnet (TGG) is the right crystal material for Farady devices(Rotator and Isolator). The Farady rotator is made up of a TGG rod contained in a special designed magnet. The polarization of a light beam passing through the rotator makes rotation.The direction of rotation is only dependent on the direction of the magnetic field and not on the direction of propagation of the light beam.The optical isolator consists of a 45 degree rotator set between two suitably arrayed polarizers which allow a light beam to pass through in one direction only. With a combination of excellent properties, such as large verdet constant,low light loss, high thermal conductance and high light damage threshold,TGG is the unique material for Farady devices. It is widely used for YAG lasers and Ti:sapphire tunable lasers,ring lasers ,etc.

Physical Properties

Crystal	Terbium Gallium Garnet ($Tb_3Ga_5O_{12}$)
Orientation	[111] Within 5 Degrees
Wavefront Distortion (Per Inch of Rod Length)	$\lambda / 8$
Extinction Ratio	30 dB over 2/3 Clear Aperture
Diameter Tolerance	+0.000" / -0.002"
Length Tolerance	+0.010 / -0.010"
Chamfer	0.005" \pm 0.003" @ 45° \pm 5°
Flatness	$\lambda / 10$ wave @ 633 nm
Parallelism	< 1 minutes of arc
Perpendicularity	< 10 minutes of arc
Surface Quality	10/5 Scratch/Dig per MIL-0-13830A
Reflectivity	< 0.25% @ 1064 nm
Thermal Conductivity	7.4 W $cm^{-1} K^{-1}$
Refractive Index	1.95 @ 1064nm