Laser Crystals
NLO Crystals
Birefringent Crystals
AO and EO Crystals
Magneto-optical Crystal

Terbium Gallium Garnet(TGG)

Introductions

The magneto-optical crystal TGG is an optimum material for Faraday devices (Rotator and Isolator) in the range from 400nm-1100nm, excluding 470-500nm.The Faraday rotator consists of a TGG rod contained inside a special designed magnet. The rotation sense of the polarization of a light beam passing through the rotator only depends on the direction of the magnetic field and not on the direction of propagation of the light beam. The optical isolator is a Faraday rotator set between two suitably aligned polarizer which allow a light beam to pass through in one direction only. TGG has a combination of excellent properties such as large Verdet constant, low light loss, high thermal conductance and high light damage threshold which makes it a unique material for Faraday devices particularly suitable for YAG lasers and Ti: sapphire tunable lasers, ring lasers and seed injected lasers.

Basic Properties

Items	Specification
Chemical Formula	$Tb_3Ga_5O_{12}$
Lattice Parameter	a=12.355Å
Growth Method	Czocralski Method
Density	7.13g/cm^3
Mohs Hardness	8.0
Melting Point	1725^{o}C
Refractive Index	1.954 @1064nm
Thermal Conductivity	9.4x10^{-6} ^{o}C^{-1}
Verdet Constant	0.12min/Oe.cm @ 1064nm

Standard Specification

Items	Specification
Orientation	[111] within 5 degrees
Wave Front Distortion	< 1/8 Lambda @ 633 nm
Extinction Ratio	> 30dB
Diameter Tolerance	+0.00mm/-0.05mm
Dimension Tolerance	±0.2mm
Flatness	≤ λ / 10@ 633nm
Surface Quality	Scratch and Dig 10-5
Parallelism	< 30 arc second

TGG

Crystal | TGG 01