TGG

Terbium Gallium Garnet (TGG) Crystal Substrate

DESCRIPTION

TGG (Terbium Gallium Garnet,$Tb_3Al_5O_{12}$) is an excellent magneto-optical crystal used in various Faraday devices (Rotator and Isolator) in the range of 400nm-1100nm (excluding 475 - 500nm), which can replace YIG crystal. The Faraday rotator consists of a TGG ingot and a specially designed magnet. The polarization direction of the beam passing through the magneto-optical material will deflect under the action of a magnetic field. TGG has high thermal conductivity, and It is also used as a substrate material.

FEATURE

- Large Verdet Constant (35 Rad $T^{-1}m^{-1}$)
- Low optical losses (<0.1%/cm)
- High thermal conductivity (7.4W $m^{-1}K^{-1}$)
- High laser damage threshold (>1GW/cm^2)

APPLICATION

- Faraday Rotator, Optical Isolator
- Magnetic and ferroelectric substrates

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TGG

PARAMETER

Main performance parameters

Molecular Formula	$Tb_3Ga_5O_{12}$
Lattice Constant	a=12.355 A
Growth method	Czochralski method
Melting Point	1725°C
Density	7.13g/cm^3
Mohs Hardness	8
Refractive index	1.954 at 1064nm
Verdet constant	0.12 min/O_e.Cm at 1064nm

Crystal processing quality

Flatness	<1/10 wave at 633nm
Parallelism	<1 minutes of arc
Verticality	<1 degree
Packing	100 class clean bag, 1000 class clean room
Standard Size	Dia30,10x10,5x5,3x3mm
Special specification	We can customize Specific specification upon

TGG Standard Specification

Crystal Orientation	<111>
Wavefront distortion	<1/8 wave total (633nm measurement)
Extinction ratio	>30dB
Size tolerance	+/-0.05mm
Chamfer	0.13MM (+0.00mm, -0.08mm) at 45° ~ + 5°