

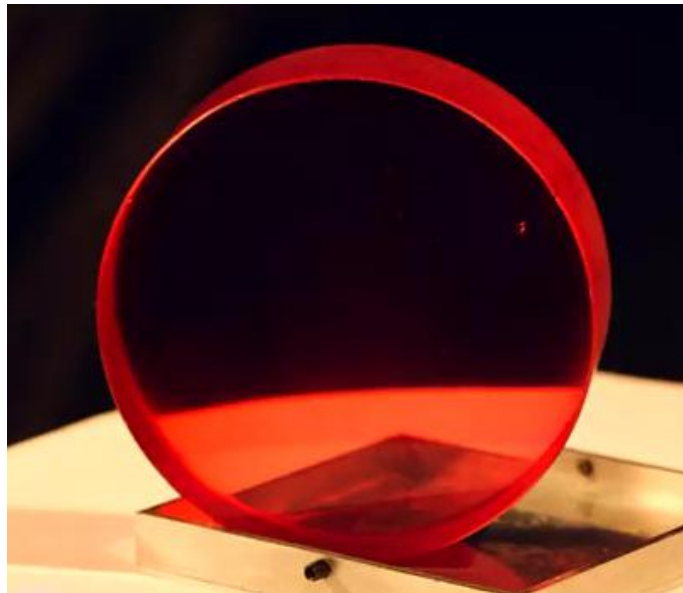


CASCRYSTECH
中科瑞晶

PRODUCT DATA SHEET

Ti:Sapphire

HIGH QUALITY FOR LASERS



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PROPERTIES AND APPLICATION

Titanium-doped sapphire ($\text{Ti}^{3+}:\text{Al}_2\text{O}_3$) crystal is the most widely used tunable laser solid material, with excellent physical, chemical and mechanical properties. Ti:Sapphire lasers and based on them laser systems are unsurpassed in its extraordinary breadth of performance and resulting diversity of applications, such as proton therapy, accelerator physics, nuclear physics, infrared spectroscopy, and materials characterization. CCT produces high quality titanium doped sapphire laser crystals by using superior material quality and precision optical manufacturing techniques.

Excellence of Ti:Sapphire

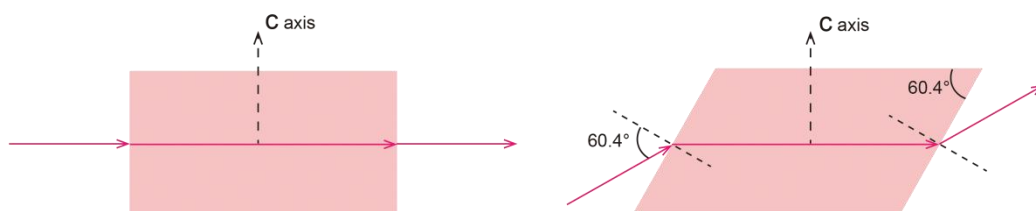
- High FOM
- Large Size and Highly Doped
- High Damage Threshold
- Customized Brewster's Angle & Plano Rods

Application of Ti:Sapphire

- Proton Therapy
- Accelerator Physics
- Nuclear Physics
- Infrared Spectroscopy
- "Cold" Micromachining

MANUFACTURING LASER RODS

Ti:Sapphire design options include plano, plano-ends with coating, Brewster's. angle ends, and others. Sizes range from 3mm up to 220mm finished diameter , with absorption values that range from 0.5 up to 5/cm at alpha 532nm Advanced polishing and coatings create an ultra-smooth surface with low sub-surface damage. The coatings are engineered to provide maximum efficiency at peak power levels. After the rods are produced, they undergo a multi-stage inspection process for homogeneity, absorption values, FOM (at 532nm & 800nm), flatness, and transmitted wave fronts.



Laser Rod Configuration

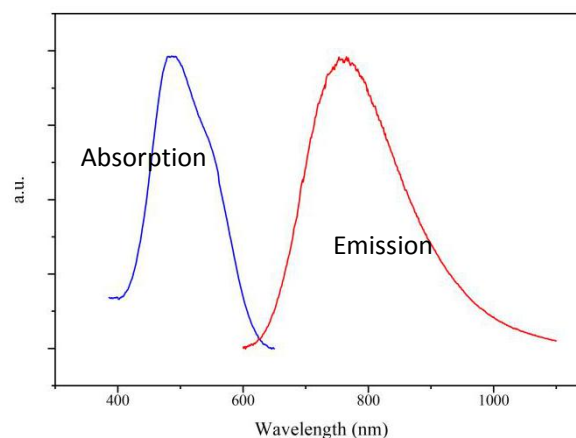


CTC's engineering staff works closely with customers to address individual application needs. This includes scaling up the size of crystals, increasing FOM values, and providing more uniform crystalline structures to improve transmitted wavefronts.

PARAMETERS

Crystal Structure	Hexagonal
Lattice Constant	$a = 4.758 \text{ \AA}$, $c = 12.991 \text{ \AA}$
Thermal Conductivity	>20 (W/mK)
Mohs Hardness	9 (mohs)
Density	3.98 (g/cm ³)
Concentration	0.05-0.5 wt%
Absorption Band / Peak	400-600 nm / 490nm
Absorption Coefficient	0.5-5 cm ⁻¹ at 490nm
FOM Value	100~300
Tuned Range / Emission Peak	660-1050nm / 760nm
Refractive Index	1.76 @ 800 nm
Decay Lifetime	3.2 μ s (T = 300 K)
Diameter	3~220mm
Thickness	1~80mm
Cutting	Flat, Brewster ends or custom specified
Orientation	c axis [0001] or custom specified
Flatness	0.1-0.2 λ @633nm
Parallelism	15 arcsec
S/D	20/10 scratch/dig

SPECTRUM



Ti:Sapphire can be lasing over the entire band between 660 and 1050 nm.