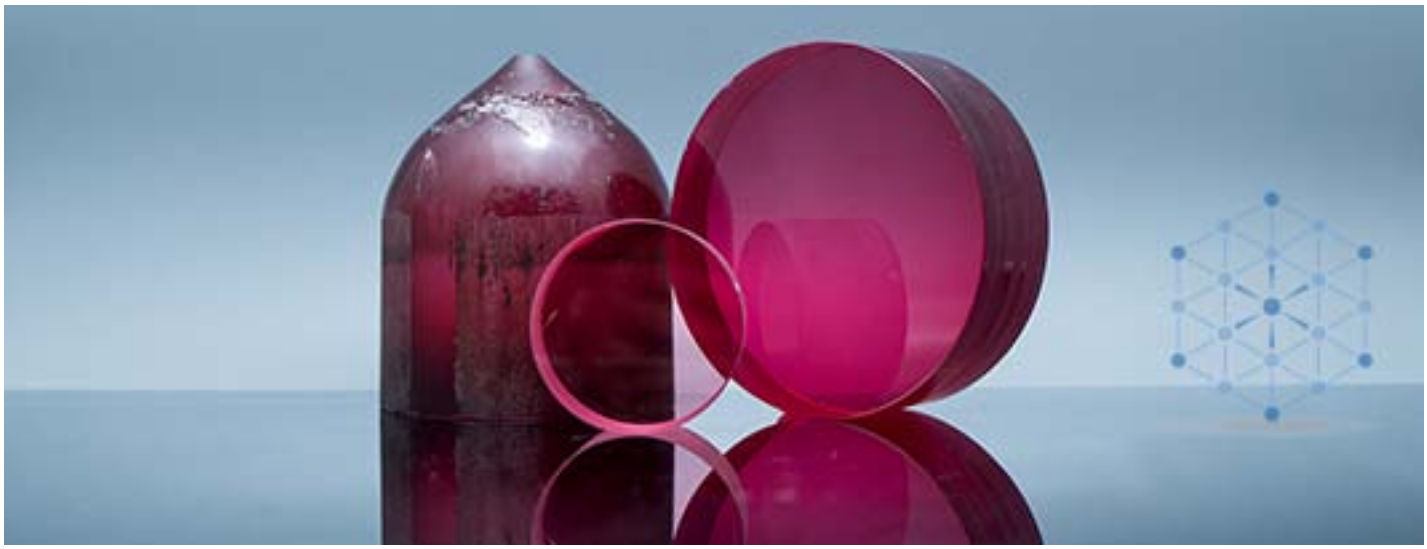
Ti:Sapphire



DESCRIPTION

Titanium-doped sapphire (Ti^{3+}:sapphire) as an optically pumped, solid-state laser crystal is widely used in wavelength tunable laser which tunable range is 650-1100nm, and peaking at 800nm, it is one of the widest wavelength tunable laser crystal. The upper-state lifetime of Ti:sapphire is short to 3.2ms, because of high saturation power, it's hard to pump it by lamp, argon ion lasers or frequency-doubled Nd:YAG laser etc. is usually adapted. Using self-mode-locking technology, the Ti:Sapphire laser can output laser pulse with pulse width as short as 6.5fs directly, which is the narrowest laser pulse of all lasers that directly output from the resonant cavity. Through frequency-double technology, the wavelength of laser beam can cover wide band from blue to deep ultraviolet, produced 193 nm laser has been used in lithography machine.

FEATURES

- Wide wavelength tunability
- Broad absorption pump band
- Preeminent output efficiency
- Short upper-state lifetime(3.2 mm)
- Narrow locked mode width
- High damage thresholdExcellent thermal conductivity

APPLICATIONS

- Femtosecond Ti:sapphire Laser
- Ti:sapphire amplifier
- Ti:sapphire pumped optical parametric oscillator
- Ti:sapphire Tunable laser

PARAMETERS

MATERIAL AND SPECIFICATIONS

Property	Value
Materials	$Ti^{3+}:Al_2O_3$
Concentration	(0.05~0.35) wt%
Orientation	A-Axis within 5°, E-vector parallel to C-Axis
Parallelism	30″
Perpendicularity	5'
Figure of Merit(FOM)	100~300
Wavefront Distortion	<λ/4@632 nm
Surface Flatness	<λ/8@632 nm
Clear Aperture	>90%
Surface Quality	10^{-5}(MIL-PRF-13830B)
Chamfer	<0.2×45°

www.meta-laser.com
celia@meta-laser.com
+86-025-68790685
No.200, Zhaoxian Road, Jiading District, Shanghai, China

Ti:Sapphire

PHYSICAL AND CHEMICAL PROPERTIES

Property	Value
Crystal Structure	Hexagonal
Density	3.98 g/cm^3
Melting Point	2040 °C
Thermal Conductivity	33W / (mK)
Temperature dependence of refractive index	$13 \times 10^{-6} K^{-1}$
Thermal shock resistance parameter	790 W/m
Thermal Expansion	$\approx 5 \times 10^{-6} K^{-1}$
Hardness (Mohs)	9
Young`s Modulus /GPa	335
Specific heat	0.1 cal/g
Tensile Strength/Mpa	400
Diameter	4-12mm
Ti density for 0.1% at. doping	$4.56 \times 10^{19} cm^{-3}$

OPTICAL AND SPECTRAL PROPERTIES

Property	Value
Laser Transition	$F_{3/2} \rightarrow F_{1/2}$
Laser Wavelength	660-1200 nm
Central emission	800 nm
Turnable Absorption Band	400-600 nm
Absorption peak	488 nm
Emission Cross Section @ 790 nm	41×10^{-20} cm^2
Fluorescence Lifetime	3.2 ms
Emission Linewidth	650-1100 nm
Refractive Index @633 nm	1.77@ 532 nm; 1.76@800 nm; 1.75@1100 nm;
Absorption Coefficient	0.5～6.0 cm^{-1}

SPECTRA