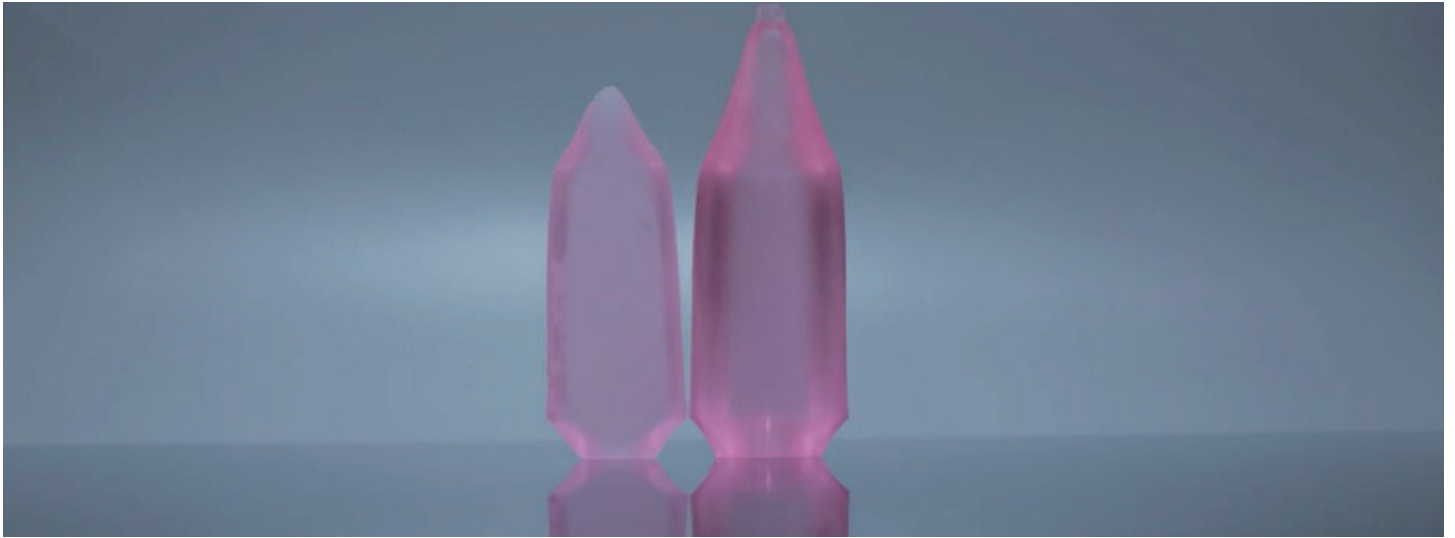


Er:YAG



DESCRIPTION

Er:YAG crystal product, also known as neodymium doped yttrium aluminum garnet crystal, with the chemical formula of $\text{Er:Y}_3\text{Al}_5\text{O}_{12}$, is a laser crystal with good comprehensive performance.

Er:YAG crystals are widely used in plastic surgery and dentistry. Er:YAG laser crystal can excite 2940nm laser for medical and dental use. Combined with different output wavelengths and Er:YAG, it is an excellent laser with a wavelength of 2.94 μm laser crystal.

This wavelength is the most easily absorbed by water and hydroxyapatite among all the existing wavelengths, and is considered as a high surface cutting laser. It is a well-known medical application material. The emission wavelength of Er:YAG is 2940nm, which is located at the water absorption peak and can be strongly absorbed by water molecules. The product has the characteristics of high doping concentration, excellent optical quality, excellent thermal and optical properties, high output and damage threshold. It is used in glaucoma surgery, 2940nm laser penetrating keratoplasty and other fields.

At present, the projects we participate in include laser blood sampling instrument, which adopts the coating on both sides of Er:YAG rod and the structure of xenon lamp end pump. Er:YAG laser wavelength is an excellent choice to improve a variety of skin conditions and aging, including poor pigmentation, photochemical light damage, solar elasticity, acne and traumatic scar formation, fine lines and mild to moderate wrinkle, rough skin texture and skin relaxation.

FEATURES

- Low scattering loss
- Excellent optical quality
- High concentrations of doping
- The energy level structure of rich
- High output and damage threshold

APPLICATIONS

- 1600 nm laser used for optical communication
- 2940 nm laser application in glaucoma surgery
- 2940 nm laser application in vitreous retinal surgery
- 2940 nm laser penetrating keratoplasty
- 2940 nm laser application in cataract surgery



Er:YAG

PHYSICAL AND CHEMICAL PROPERTIES OF CRYSTALS

The crystal structure	Cubic - Ia3d
The lattice constant	12.01
The density/(g/cm ³)	4.56-5.11
Melting point / ° C	1950
Coefficient of thermal conductivity/(w·k ⁻¹ ·m ⁻¹ @25°C)	0.14
Specific heat capacity/ (J·g ⁻¹ ·K ⁻¹)	0.59
Thermal shock resistance/ (W/m)	790
Thermal expansion rate/ (10 ⁻⁶ ·K ⁻¹ @ 25°C)	7.8
Hardness (mo)	8.5
Young's modulus/GPa	317
Shear modulus/Gpa	54.66
The extinction ratio/dB	30
Precision grinding	Precision grinding # 400 from Grit
Poisson's ratio	0.25

MATERIAL SPECIFICATIONS

Material	Er ³⁺ : Y ₃ Al ₅ O ₁₂
Orientation	[100] or [100] <± 0.5°
Parallelism	10"
Vertical degree	5'
The surface quality	5-Oct
Wavefront aberration	<λ/10@632.8nm
The surface roughness	<λ/10@632.8nm
Clear aperture	>90%
Chamfering	0.1mm@45°
The thickness/diameter tolerance	±0.05 mm
The largest size	The diameter: 2mm- 50mm; The length: 5mm- 180mm
Coating	< 0.25% @ 2940 nm

OPTICAL PROPERTYIES

Laser transition	⁴ I _{11/2} → ⁴ I _{13/2} (high doping)
The laser wavelength	2940nm(high doping) 1645nm(low doping)
The photon energy	6.75×10 ⁻²⁰ J@2940nm
Pump absorption bandwidth	600~800 nm (high doping) 1530nm(low doping)
Damage threshold	>500MW/cm ²
Emission cross section	3×10 ⁻²⁰ cm ²
The fluorescence lifetime	0.23 ms(high doping) 2~5 ms(low doping)
Refractive index	1.7838@2940 nm



Er:YAG

SPECTRA

