

# Yb:YAP



## DESCRIPTION

CRYLINK's Yb:YAP crystal products, also known as ytterbium aluminate. It is a kind of laser crystal product with excellent comprehensive performance. It is widely used in femtosecond laser, sensor and neutrino detection. The product is characterized by high anisotropic thermal expansion coefficient, birefringence and low quantum defects. Can be used in femtosecond lasers, regenerative amplifiers, photoelectric sensors, neutrino detector products.

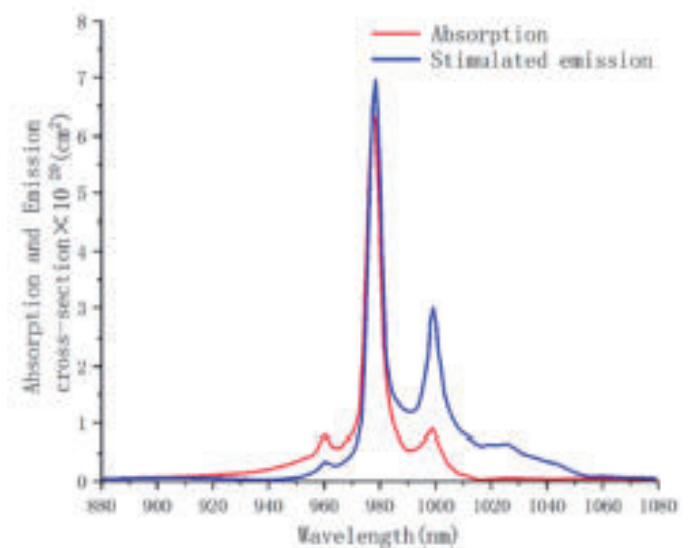
## FEATURES

- Infrared
- Low quantum defects
- High thermal conductivity
- Dual-axis orthogonal crystals
- High-power continuous wave
- The emission spectrum is approximately 1  $\mu\text{m}$
- The high-absorption meson cross-section depends on the orientation of the crystal

## APPLICATIONS

- Femtosecond laser
- Neutrino detectors
- Photoelectric sensors
- Regeneration amplifier
- Solar neutrino detector
- High-efficiency sheet lasers
- Continuous and passive locking thin disc lasers
- High-power continuous wave-adjusting Q-locking laser

## SPECTRA



# Yb:YAP

## PARAMETERS

### STANDARD

Orientation	a-cut
Transparent Aperture	>90%
Face Dimension Tolerance	+0/-0.1mm
Length Tolerance	±0.1mm
Parallelism Error	<10 arcsec
Squareness Error	<10 arcmin
Protective Groove	<0,1 mm @45°
Surface Quality	10-5 S-D
Surface Roughness	< $\lambda$ /10@6328 nm
Coating	Ar(R<0.25%) @978 nm+
Laser Damage Threshold	>10 J/cm <sup>2</sup> @1030 nm, 10 ns

### TECHNICAL CHARACTERISTICS

Absorption Peak Wavelength	978 nm
Peak Absorption Cross Section	$6.6 \times 10^{-20} \text{ cm}^2$
Peak Absorption Bandwidth	4nm
Laser Wavelength	1040 nm
<sup>2</sup> F <sub>5/2</sub> Energy Level Lifetime	500 $\mu$ s
Emission Cross Section@1040 nm	$0.5 \times 10^{-20} \text{ cm}^2$
Refractive Index@632.8 nm	1.96(//a), 1.94(//b), 1.97(//c)
Crystal Structure	Orthogonality
Density	5.35g/cm <sup>3</sup>
Mohs Hardness	8.5
Thermal Conductivity	11.7 (//a), 10.0 (//b), 13.3 (//c) W/mK
dn/dT	$7.7 \times 10^{-6} (//a) \text{ K}^{-1}$
	$11.7 \times 10^{-6} (//b) \text{ K}^{-1}$
	$8.3 \times 10^{-6} (//c) \text{ K}^{-1}$
Thermal Expansion Coefficient	$2.32 \times 10^{-6} (//a) \text{ K}^{-1}$
	$8.08 \times 10^{-6} (//b) \text{ K}^{-1}$
	$8.7 \times 10^{-6} (//c) \text{ K}^{-1}$
Typical Doping Level	<2 at. %

