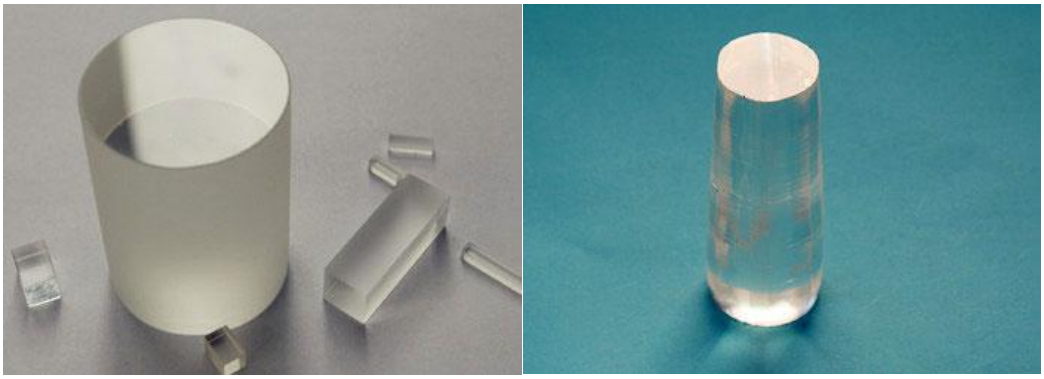
Yb:YAG Crystals

Ytterbium-doped yttrium aluminum garnet or Yb:YAG is a laser media used in DPSS laser of very good overall performance. It is more suitable for diode-pumping than the traditional Nd-doped systems. It can be pumped at 0.94 μm laser output. Compared with the commonly used Nd:YAG crystal, Yb:YAG crystal has a much larger absorption bandwidth to reduce thermal management requirements for diode lasers, a longer upper-state lifetime, three to four times lower thermal loading per unit pump power. **Yb:YAG crystal** is expected to replace Nd:YAG crystal for high power diode-pumped lasers and other potential applications.



Features

- Very low fractional heating, less than 11%
- Very high slope efficiency
- Broad absorption bands, about 8nm@940nm
- No excited-state absorption or up-conversion
- Conveniently pumped by reliable InGaAs diodes at 940nm(or 970nm)
- High thermal conductivity and large mechanical strength
- High optical quality

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SPECIFICATIONS

Specifications	
Yb-dopant concentration	0.2%---30% at% (Tolerance 10% of concentration)
Diameter	20 mm (+0.0/ -0.025mm)
Length	1~70mm, (+/-0.05mm)
Coating specification	a) AR @ 940nm or HR @940nm b) AR @ 1053nm or AR @1030nm or HR @1053nm
Parallelism	< 10 arc seconds
Perpendicularity	< 5 arc minutes
Chamfer	0.15x45°
Barrel finish	ground or polished
Wavefront Distortion	<λ/10 per inch at 632.8nm for <7mm
Surface flatness	<λ/10 at 632.8nm
Surface quality	better than 20/10
Clear aperture	Central 95%

The custom specification are available upon customer's request.

Basic Properties

Physical and optical properties	
Chemical Formula	Yb:Y3Al5O12
Crystal Structure	Cubic
Lattice Constants	12.01 Å
Melting Point	1970C°
Density	4.56 g/cm3
Mohs Hardness	8.5
Thermal Expansion Coefficient	7.8x10-6 /K , [111], 0-250C°
Thermal Conductivity	14 W.s /m /K @ 20C°
Loss Coefficient	0.003 cm-1
Index of Refraction	1.82
Lasing Wavelength	1030 nm
Pump Wavelength	940 nm
Absorption band about pump wavelength	10 nm

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