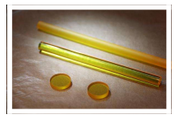

Nd:Ce:YAG

Nd:Ce:YAG is an excellent laser material used for no-water cooling and miniature laser systems. The thermal distortion of Nd:Ce:YAG is appreciably less and the output laser energy is greater(30%-50%) than that in Nd:YAG at the same pumping. It is the most ideal laser material for air cooling laser and is also suitable for different modes of operation (pulsed, Q-switched, mode locked) and high-average power lasers.

ADVANTAGES

- Low threshold
- Very high slope efficiency(30%-50% more than Nd:YAG)
- Good anti-UV irradiation property
- Good thermal stability
- High optical quality

Laser Rods

- Flat/flat
- Parallel/ anti-parallel wedged
- Brewster angle
- Concave/convex radii
- Cylinder grooved

Specifications

Material	Nd:Ce:YAG
Dopant concentration	Nd:1.0 - 1.1atm% Ce:0.05-0.1atm%
Orientation	<111> or <100>
Dimension	Diameter:1mm-30mm Length:1mm-115mm(upon customer’ s request)
Wavefront distortion	<λ/10 per inch@632.8nm
Extinction ratio	>30dB (depends on actual sizes)

Diameter tolerance	+0/-0.04mm
Length tolerance	+0.5/-0mm
Chamfer	<0.1mm@45°
Chips	<0.1mm
Barrel finish	50-80 micro-inch(RMS)
Clear Aperture	>95%
Flatness	λ/10 per inch@632.8nm
Scratch/Dig	10-5 @MIL-0-13830A
Perpendicularity	<5 arc minutes
Parallelism	<10 arc seconds
Damage threshold	>750MW/cm2@1064nm 10ns 10HZ
Anti-Reflection coating	R<0.15%@1064nm per surface
High-Reflection coating	Standard HR coating with R>99.8%@1064nm and R<5%@808nm

Properties

Crystal Structure	Cubic
Lattice constant	12.01Å
Melting Point	1970°
Rupture stress	1.3-2.6*103 kg/cm2
Density	4.55g/cm3
Mohs hardness	8.5
Thermal Expansion Coefficient	[100] Orientation--8.2x10-6/oC (0-250oC)
	[110] Orientation--7.7x10-6/oC (0-250oC)
	[111] Orientation--7.8x10-6/oC (0-250oC)
Laser transition	4F3/2 --> 4I11/2
Laser wavelength	1064nm
Photon energy	1.86×10-19J
Emission linewidth	4.5Å @1.064μm

Stimulated emission cross section	2.7-8.8x10-19 cm2 @Nd 1at%
Fluorescence lifetime	230μs
Refractive Index	1.8197 @1.064μm

