

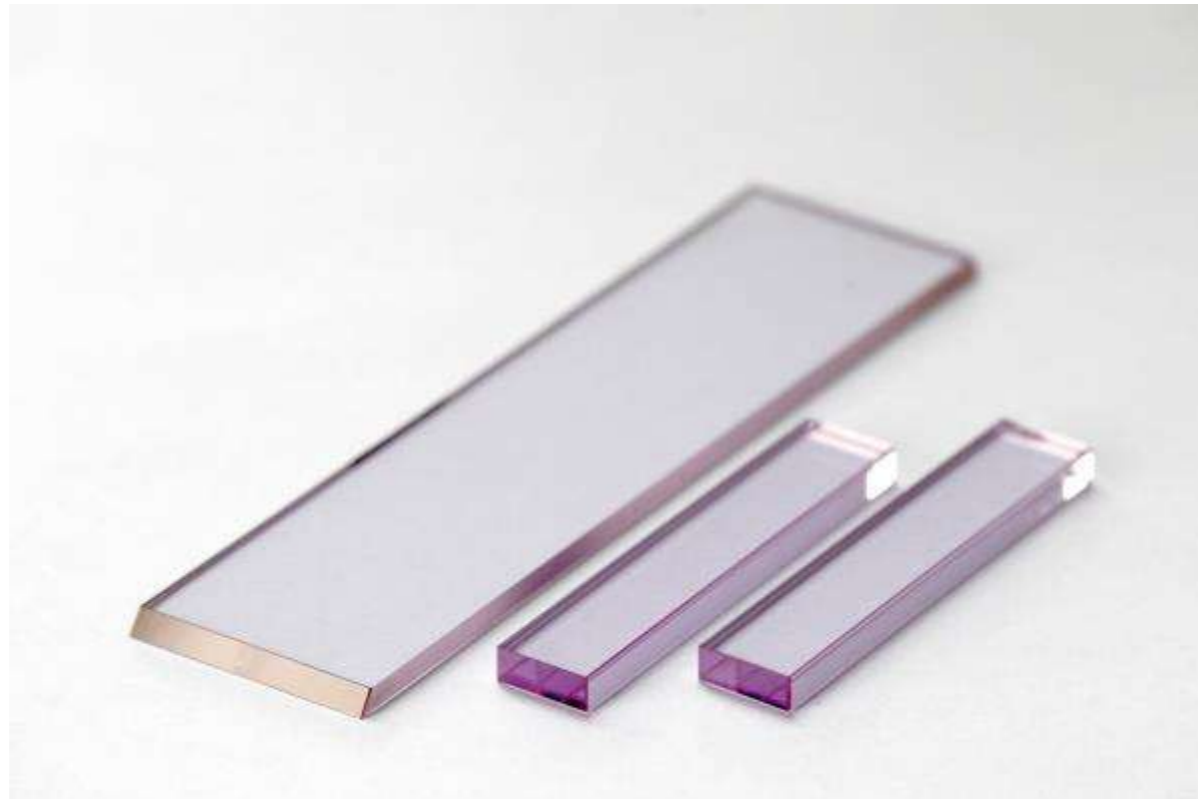
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## Nd:YAG

Cryslaser grows Nd:YAG using the Czochralski technique for use in industrial, medical and scientific applications. Cryslaser manufactures various finished laser rods with different sizes, slabs and wafers as well as supplying Nd:YAG blank or materials.

### ADVANTAGES

- High gain
- Low threshold
- High efficiency
- Low loss at 1.06um
- Good thermal conductivity and thermal shock characteristics
- Mechanical strength
- High optical quality
- Material characteristics allow for various modes of operation (CW, pulsed, Q-switched, mode locked and cavity dumped.)

### Laser Rods

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

### Specifications

Material	Nd:YAG
Nd dopant level	0.1- 2.5(+/-0.1)atm%
Orientation	or
Dimension	Diameter:1-50mm, Length:0.3-220mm(upon customer' s request)
Diameter tolerance	+0/-0.04mm
Length tolerance	+0.5/-0mm

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Wavefront distortion	<λ/10 per inch@632.8nm
Chamfer	<0.1mm@45°
Damage threshold	>750MW/cm2@1064nm 10ns 10HZ
Clear aperture	>95%
Flatness	λ/10 per inch@632.8nm
Scratch/Dig	10-5 @MIL-0-13830A
Barrel finish	50-80 micro-inch(RMS)
Chips	<0.1mm
Extinction ratio	>30dB(depends on actual sizes )
Perpendicularity	<5 arc minutes
Parallelism	<10 arc seconds
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**

Chemical Formula	Nd:Y3Al5O12
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

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Emission linewidth	4.5Å @1.064μm
Stimulated emission cross section	2.7-8.8x10 <sup>-19</sup> cm <sup>2</sup> @Nd 1at%
Fluorescence lifetime	230μs
Refractive Index	1.8197 @1.064μm

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