



Laser Crystals

Product Description:

Laser crystal rods are the most important part of pumped solid state lasers. The host materials are chosen to obtain a desired combination of optical, mechanical, and thermal properties. They are doped with ions of chromium (*Cr*), neodymium (*Nd*) or titanium (*Ti*) to provide gain media for the stimulated emission. Recently diode pump laser has replaced flashlamp in many applications in terms of compactness and efficiency. Frequency-doubled technology has enabled the wavelength extended into UV range. The first laser was a small ruby rod that was surrounded by a helical flash lamp. It becomes one of the most important inventions in last century. Ruby is chromium doped sapphire.

We provides high quality neodymium doped yttrium vanadate (**ND:YVO4**), neodymium doped yttrium aluminum garnet (**ND:Y3Al5O12**), titanium doped sapphire (**Ti3+:Al2O3**) and Chromium Doped Yttrium Aluminum Garnet (**Cr4+:Y3Al5O12**)

You may refer to this page (<http://www.pmoptics.com/crystals.html>) for material properties, absorption coefficient, emission cross-section and others.

Specifications (ND:YVO4):

Nd: Dopant Concentration	0.1 ~ 3 atom %
Concentration Tolerance	< 10%
Maximum length	20 mm
Dimension Tolerance	±0.1mm
Orientation	A-cut or C-cut
Orientation Tolerance	±0.5 degree
End Surface	Plano/Plano
Surface Quality	10 ~ 5 Scratch/Dig
Flatness	$\lambda/10$ @ 632.8nm
Clear Aperture	> 90%
Parallelism	< 20 arc sec
Intrinsic Loss	< 0.001 cm^{-1} at 1064nm
Chamfer	~ 0.15mmx45°
Coating	Specified by customer

Specifications (ND:Y3Al5O12):

Nd: Dopant Concentration	0.5 ~ 1.2 atom %
Concentration Tolerance	< 10%
Maximum length	150 mm
Rod Diameter Tolerance	$\pm 0.03\text{mm}$
Length Tolerance	$\pm 0.1\text{mm}$
Orientation	<111> crystalline direction
Orientation Tolerance	± 0.5 degree
Extinction Ration	> 28dB
Surface Quality	10 ~ 5 Scratch/Dig
Flatness	$\lambda/10$ @ 632.8nm
Clear Aperture	> 90%
Parallelism	< 20 arc sec
Chamfer	$\sim 0.15\text{mm} \times 45^\circ$
Coating	Specified by customer

Specifications (Ti³⁺:Al₂O₃):

Ti ³⁺ : Dopant Concentration	0.06 ~ 0.25 atom %
Figure of Merit	100 ~ 300
Concentration Tolerance	< 10%
Maximum length	120 mm
Maximum Diameter	20 mm
Orientation	A-axis
Orientation Tolerance	± 1 degree
End Surface	Plano/Plano or Brewster/Brewster cut
Surface Quality	20 ~ 10 Scratch/Dig
Flatness	$\lambda/4$ @ 632.8nm
Clear Aperture	> 90%
Parallelism	< 20 arc sec
Chamfer	$\sim 0.15\text{mm} \times 45^\circ$
Coating	Specified by customer

Specifications (Cr⁴⁺:Y₃Al₅O₁₂):

Cr ⁴⁺ : Dopant Concentration	0.5 ~ 3 atom %
Concentration Tolerance	< 10%
Maximum length	120 mm
Surface Quality	10 ~ 5 Scratch/Dig
Flatness	$\lambda/10$ @ 632.8nm
Clear Aperture	> 90%
Parallelism	< 20 arc sec
Chamfer	$\sim 0.15\text{mm} \times 45^\circ$
Coating	Specified by customer