Nd:YVO4 CRYSTALS

Yttrium vanadate has been growing in popularity because of its high gain, low threshold, and high absorption coefficients at pumping wavelengths, which result from the excellent fit of the neodymium dopant in the crystal lattice. These advantages make Nd:YVO4 is a better choice than Nd:YAG for low-power devices such as hand-held pointers, and others compact lasers.

Physical and Optical Properties:

Properties	Values
Crystal Structure	Zircon Tetragonal. space group D4h, a=b=7.12, c=6.29
Density	4.22 g/cm2
Mohs Hardness	Glass-like, ~5
Atomic Density	~1.37*1020 atoms/cm2
Thermal Expansion Coefficient	aa=4.43*10-6 /K, aa=11.37*10-6/K
Thermal Conductivity Coefficient	IIC:5.23 W/m/K; ⊥ C: W/m/K
Peak Absorption Wavelength	808.5 nm
Lasing Wavelength	912.6 nm, 1063.1 nm, 1341.3 nm
Crystal Class	Positive uniaxial, no=na=nb ne=ncno=1.9854, ne=2.1981,@ 1064nmno=2.0382, ne=2.2929, @ 532nmno=1.9977, ne=2.2198, @ 808nm
Thermal Optical Coefficient	dn/dT=4.7x10-6/K
Stimulated Emission Cross-Section	7.60x10-19cm2 , @1064 nm
Fluorescent LifetimeNd=1.2 atm%	95 ms @ 808 nm
Loss Coefficient	0.003 cm-1@ 1064 nm
Absorption CoefficienceNd=1.2 atm%	74 cm-1 @ 808 nm
Absorption LengthNd=1.2 atm%	0.18 mm @ 808 nm
Intrinsic LossNd=1.2 atm%	Less 0.1% cm-1 , @1064 nm
Line width	0.6 nm
Polarized Laser Emission	p parallel to optic axis (c-axis)
Diode Pumped Optical to Optical Efficiency	> 60%
Sellmeier Equation (for pure GdVO4 crystals)	ne2=4.734369 + 0.1216149/(l2 - 0.0523664) - 0.013927l2 no2=3.8987165+0.05990622/(l2 - 0.0514395) - 0.011319l2

Our Manufacture Technical Capabilities:

Properties	Values
Nd dopant concentration:	0.1~3 atm% Tolerance within 10% of concentration
Width*Height:	1*1~ 16*16mm
Length:	0.02 ~ 20mm
Orientation:	a-cut crystalline direction(+/-0.20)
Dimensional tolerance:	+/-0.1mm(typical)High precision +/-0.005mm can be available upon request.
Wavefront Distortion:	<l/8@633nm
Surface quality:	better than 20/10 Scratch/Dig per MIL-O-1380A
Parallelism:	< 10 arc seconds

Perpendicularity:	< 5 arc minutes
Surface flatness:	<l/10 at 632.8nm
Clear aperture:	Central 95%
Chamfer:	0.15x450
Damage threshold:	over 15J/cm2 (rods without coating) over 700 MW/cm2 (coating)
Coating:	AR@1063nm, R< 0.1% & HT@808nm, T>95% HR@1063nm, R>99.8% & HT@808nm, T>95% HR@1063nm, R>99.8%, HR@532 nm, R>99% & HT@808 nm, T>95% AR@1063 nm, R<0.1%

Please Contact ultiQuest for more information and technical supports.

NOTES!

- Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.