Nd:GdVO4 CRYSTALS

Neodymium doped Gadolinium Vanadate (Nd:GdVO4) is a promising material for diode pumped laser. Similar to Nd:YVO4 crystal, Nd:GdVO4 crystal also exhibits 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. Nd:GdVO4 has the additional advantage over Nd:YVO4 of a much higher thermal conductivity.

Physical and Optical Properties:

Properties	Values
Crystal Structure	Zircon Tetragonal, space group D4h, a=b=7.21, c=6.35
Melting Point	1780°C
Density	5.47g/ cm3
Mohs Hardness	Glass-like, ~ 5
Thermal Expansion Coefficient	aa=1.5x10-6/K, ac=7.3x10-6/K
Thermal Conductivity Coefficient	11.7 W/m/K <110>
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	0.2---3.0 atm%
Dopant tolerance	within 10% of concentration.
Diameter	0.02 ~ 20mm
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:	<lambda/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%

Standard Laser Grade Nd:GdVO4 Box:

Material	Doping	Dimension	Coating	Product Number
Nd:GdVO4	1%	3x3x1mm	HR/AR Coating	UQT-LCNG0201
Nd:GdVO4	1%	3x3x1mm	AR/AR Coating	UQT-LCNG0202
Nd:GdVO4	1%	3x3x3mm	AR/AR Coating	UQT-LCNG0203
Nd:GdVO4	1%	3x3x5mm	AR/AR Coating	UQT-LCNG0204
Nd:GdVO4	0.5%	3x3x5mm	AR/AR Coating	UQT-LCNG0205
Nd:GdVO4	0.5%	3x3x7mm	AR/AR Coating	UQT-LCNG0206
Nd:GdVO4	0.5%	3x3x10mm	AR/AR Coating	UQT-LCNG0207
Nd:GdVO4	0.3%	4x4x8mm	AR/AR Coating	UQT-LCNG0208
Nd:GdVO4	0.3%	4x4x10mm	AR/AR Coating	UQT-LCNG0209

Coating Option:HR/AR Coating:S1: HR@1064nm&532nm HT@808nm S2: AR@1064nm&532nm

AR/AR Coating:S1: AR@1064nm&532nm HT@808nm S2: AR@1064nm&532nm

NOTES!

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