



Nd:YVO4

Nd: YVO4 has become popular host crystal for diode pumping among the current commercial laser crystals 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. This is mainly for Nd:YVO4's absorption and emission features surpassing Nd:YAG Pumped by laser diodes. Nd:YVO4 crystal has been incorporated with high NLO coefficient crystals (LBO, BBO or KTP) to frequency-shift the output from the near infrared to green, blue, or even UV.

ADVANTAGES

- High absorption over a wide pumping wavelength bandwidth
- Larger stimulated emission cross-section at the lasing wavelength of 1064nm
- Lower lasing threshold and higher slope efficiency
- As a uniaxial crystal with a large birefringence, the emission is only a linearly polarized

Laser Rods

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

Specifications

Material	Nd:YVO4
Dopant Concentration	0.1 – 3at%
Orientation	A-cut or C-cut
Dimension tolerance	W(+/-0.1)×H(+/-0.1)×L(+/-0.5)mm
wavefront distortion	<λ/8 @633nm
Chamfer	<0.15×45°

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Thickness	~10@ 50mm
Chips	<0.1mm
Scratch/Dig	10-5@MIL-0-13830A
Perpendicularity	≤5 arc minutes
Parallelism	<20 arc seconds
Damage threshold	1GW/cm ² @1064nm 10ns 10HZ
Anti-Reflection coating	R<0.2%@1064nm

Properties

Crystal structure	Tetragonal System
Point Group	D4h
Density	4.22 g/cm ³
Mohs Hardness	4-5
Thermal Expansion Coefficient	$\alpha_a=4.43 \times 10^{-6}/K$ $\alpha_c=11.37 \times 10^{-6}/K$
Thermal Conductivity Coefficient	$\perp C: 51mw/cm.k$ //C: 52.3 mw /cm.k(300k)
Laser Wavelength	1064nm, 1342nm
Pump wavelength	808nm
Stimulated emission cross-section	$25 \times 10^{-19}cm^2$ @ 1064nm
Fluorescent lifetime	90 μs (1% Nd doping)
Absorption coefficient	31.4cm ⁻¹ @810nm
Intrinsic loss	0.02cm ⁻¹ @1064nm
Gain bandwidth	0.96nm@1064nm
Polarized laser emission	p polarization; parallel to optic axis(c-axis)

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