Nd:YVO4 Laser Crystal


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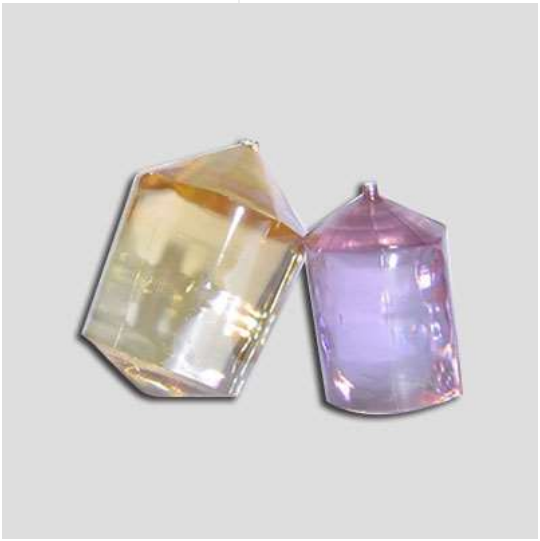
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Description | Online Message

Applications

◆For Single-longitudinal-mode output and compact design

◆Diode laser-pumped Nd:YVO4 compact laser and its frequency-doubled green, red or blue laser will be the ideal laser tools of machining, material processing, spectroscopy, wafer inspection, light show, medical diagnostics, laser printing and other most widespread applications

Features

◇Better choice than Nd:YAG for low-power devices such as hand-held pointers, and others compact lasers

◇As high as about five times larger absorption efficient over a wide pumping bandwidth around 808 nm (therefore, the dependency on pumping wavelength is much lower and a strong tendency to the single mode soutput)

◇As large as three times 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.

	Material	Neodymium Doped Yttrium Orthovanadate
	Nd dopant concentration Dopant tolerance	0.1 - 5.0 atm%
	Diameter	3×3×3 mm^3, 3×3×1 mm^3, 3×3×0.5 mm^3

Main ation	Length	0.02 ~ 20mm
	Dimensional Tolerance	±0.1mm
	Coating	AR @ 1064nm, R< 0.1% & HT @ 808nm, T>95% HR @ 1064nm, R>99.8% & HT@ 808nm, T>9% HR @ 1064nm, R>99.8%, HR @ 532 nm, R>99% & HT @ 808 nm, T>95%
	Orientation	a-cut crystalline direction (+/-5℃)
	Orientation Tolerance	±0.5deg
	Wavefront Distortion	<λ/8 at 633nm
	Surface quality Scratch/Dig	10/5 Scratch and Dig
	Parallelism	< 10 arc sec
	Perpendicularity	< 5 arc min
	Surface flatness	<λ/10 at 632.8nm
	End-faces Configuration	Plano/Plano
	Clear aperture	> Central 90%
	Chamfer	0.15×45°
	Damage Threshold	over 15J/cm2 (rods without coating) over 700 MW/cm^2 (coating)
Physical and Chemical Properties	Crystal Structure	Zircon Tetragonal, space group D4h-I4/amd a=b=7.1193A,c=6.2892A
	Dimensional tolerances	+/-0.1mm(typical), High precision +/-0.005mm can be available upon request
	Melting Point	1810 ± 25℃
	Atomic Density	~1.37×10^{20} atoms/cm^2
	Density/密度	4.22 g/cm^3
	Mohs Hardness	Glass-like, 4.6 ~ 5
	Refractive Index	positive uniaxial, no=na=nb ne=nc no=1.9573, ne=2.1652, @ 1064nm no=1.9721, ne=2.1858, @ 808nm no=2.0210, ne=2.2560, @ 532nm
	Thermal Expansion Coefficient	(300K) α_a=4.43×10^{-6}/K α_c=11.37×10^{-6}/K
	Thermal Conductivity	//C:0.0523W/cm/K ⊥C:0.0510W/cm/K
Optical properties	Lasing Wavelength	914nm, 1064 nm, 1342 nm
	Scattering	Invisible, probed with a He-Ne laser
	Stimulated Emission Cross Section	25.0×10^{-19} cm^2 , @1064 nm
	Fluorescent Lifetime	90 ms (about 50 ms for 2 atm% Nd doped) @ 808 nm
	Absorption Coefficient	31.4 cm^{-1} @ 808 nm
	Absorption Length	0.32 mm @ 808 nm
	Polarized Laser Emission	parallel to optic axis (c-axis)
	Thermal Optical Coefficient	dn_o/dT=8.5×10^{-6}/K dn_e/dT=2.9×10^{-6}/K （300K）
	Intrinsic Loss	< 0.1% cm^{-1} , @1064 nm
	Gain Bandwidth	0.96 nm (257 GHz) @ 1064 nm
	Diode Pumped Optical to Optical Efficiency	> 60%
	Sellmeier Equation (for pure YVO4 crystals)	$n_o^2(\lambda)$ =3.77834+0.069736/(λ^2 - 0.04724) - 0.0108133λ^2 $no^2(\lambda)$ =4.59905+0.110534/(λ^2 - 0.04813) - 0.0122676λ^2
	Crystal Class	Positive uniaxial, n_o=n_a=n_b, n_e=n_c, n_o=1.9573, n_e=2.1652, @1064nm n_o=1.9721, n_e=2.1858, @808nm n_o=2.0210, n_e=2.2560, @532nm

Previous page: first page

Next page: Nd:YAG Laser Rod (http://laserton.com/index.php?m=content&c=index&a=show&catid=37&id=84)

Add

1-C501, Pioneer Park for Oversea Chinese Scholars
No. 69 Huayang Road, Lixia District
Ji'nan, Shandong, China.

Contact Us

Tel: +86-531-88029300
Fax:+86-531-88026300
E-mail:sales@laserton.com (mailto:sales@laserton
For oversea: +1 (206)-497-8175

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