

DESCRIPTION

There are four chemical values of V element: + 2, + 3, + 4 and + 5. The V^{3+} ions with + 3 valence are commonly used Q-switch and saturable absorbent ions, which are doped into YAG matrix crystals to realize the passive Q-switch and mode-locking of laser. V:YAG crystal is a new material of laser saturable absorber and passive Q-switch in wavelength range of $1.06\mu\text{m}$ - $1.44\mu\text{m}$. It is especially suitable for neodymium laser of $1.3\mu\text{m}$. It is an excellent saturable absorber material in wave band of $1.3\mu\text{m}$. In the passively Q-switch solid-state laser, the laser has the advantages of good stability, long lifetime, miniaturization, simplicity and practicality.

FEATURES

- Long upper level life
- Excited state absorption
- High saturation at $1.3\mu\text{m}$
- High damage threshold
- Short recovery time

APPLICATIONS

- 1064nm laser
- 1300nm laser
- Laser plotter
- Laser Range Finder
- Laser cutting machine

PARAMETERS

POLISHING

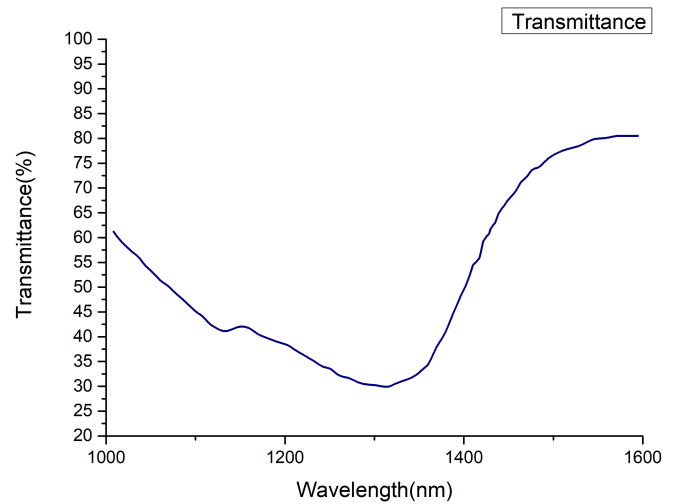
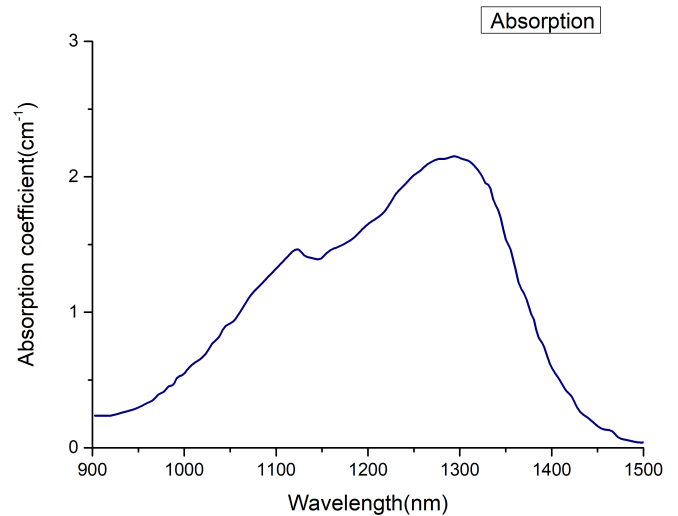
Property	Value
Orientation Tolerance	$< 0.5^\circ$
Thickness/Diameter Tolerance	$\pm 0.05\text{ mm}$
Surface Flatness	$< \lambda/8 @ 632\text{ nm}$
Wavefront Distortion	$< \lambda/4 @ 632\text{ nm}$
Surface Quality	10/5
Parallel	$30''$
Perpendicular	$15'$
Clear Aperture	$> 90\%$
Chamfer	$< 0.2 \times 45^\circ$
HR coating	$\leq 0.2\% (@ 1340\text{nm})$



V:YAG

PROPERTIES

Property	Value
Chemical formula	$V^{3+}:Y_3Al_5O_{12}$
Crystal structure	cubic – Ia3d
Orientation	$\langle 100 \rangle \pm 0.5^\circ$
Transmittance	30%-97%
Optical density	0.1-0.8
Atomic transition structure	Two-level system
Recovery time	$5 \sim 22 \times 10^{-22} \text{ s}$
Concentrations	(0.05~0.35) wt%
Ground-state absorption cross-section	$7.2 \times 10^{-18} \text{ cm}^2$
Excited-state absorption cross-section	$7.4 \times 10^{-19} \text{ cm}^2$
Emission bandwidth	1000-1450 nm
Central absorption wavelength	1300 nm
Coatings	Standard coating is AR with R < 0.2% (@ 1340 nm)
Absorption coefficient	$1.0 \text{ cm}^{-1} \sim 7.0 \text{ cm}^{-1}$
Damage threshold	$> 500 \text{ MW/cm}^2$



SPECTRA

