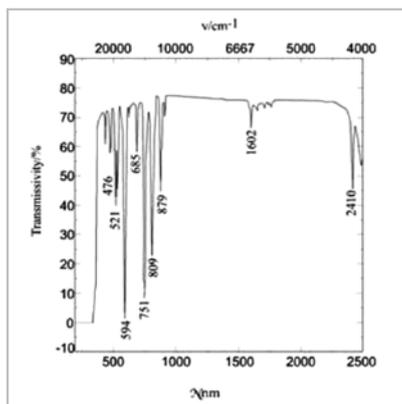


Nd:GdVO₄ Crystal

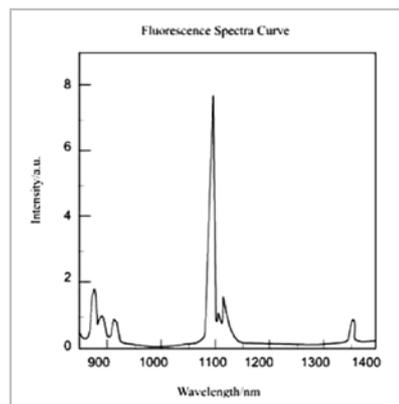
Introduction of Nd:GdVO₄ Crystal

Neodymium doped Gadolinium Orthovanadate single crystal (Nd:GdVO₄ crystal) is an excellent laser crystal for diode pumped laser. Similar to Nd:YVO₄ crystal, Nd:GdVO₄ crystal also exhibits high gain, low threshold, high absorption coefficients at pumping wavelengths and much higher thermal conductivity, it will replace Nd:YVO₄ in high power laser application in the future.

- Low lasing threshold and high slope efficiency
- High absorption coefficients at pumping wavelengths and low dependency on pump wavelength
- Large stimulated emission cross section at laser wavelength
- Good thermal conductivity
- Strongly-polarized laser output and high laser induced damage threshold



Fluorescence Spectra Curve



Absorption Curve of 4% Nd:GdVO₄ (1mm)

Compare Nd:GdVO₄ Optical Properties with Nd:YVO₄ and Nd:YAG

Parameters	Nd:GdVO ₄	Nd:YVO ₄	Nd:YAG
Emission wavelength	1063 nm	1064 nm	1064 nm
Pump wavelength	808.4 nm	808.5 nm	807.5 nm
Gain bandwidth	1.3 nm	0.8 nm	0.6 nm
Stimulated emission cross-section (near 1064 nm)	$7.6 \times 10^{-19} \text{ cm}^2$	$25 \times 10^{-19} \text{ cm}^2$	$2.8 \times 10^{-19} \text{ cm}^2$
Polarization	parallel to c-axis	parallel to c-axis	unpolarized
Upper-state lifetime	95 μs	98 μs	230 μs
Thermal conductivity (<110>)	11.7 Wm ⁻¹ K ⁻¹	5.1 Wm ⁻¹ K ⁻¹	13 Wm ⁻¹ K ⁻¹
Absorption cross-section (near 808 nm)	$5.2 \times 10^{-19} \text{ cm}^2$	$2.7 \times 10^{-19} \text{ cm}^2$	$0.74 \times 10^{-19} \text{ cm}^2$
Absorption bandwidth	4 nm	20 nm	3 nm

Nd:GdVO₄ Physical Properties

Crystal structure	tetragonal
Density	5.47 g/cm ³
Mohs hardness	4 – 5
Space group	I41/amd
Index of refraction	1.972 (at 1064 nm)
Melting point	1780 °C
Specific heat	0.52

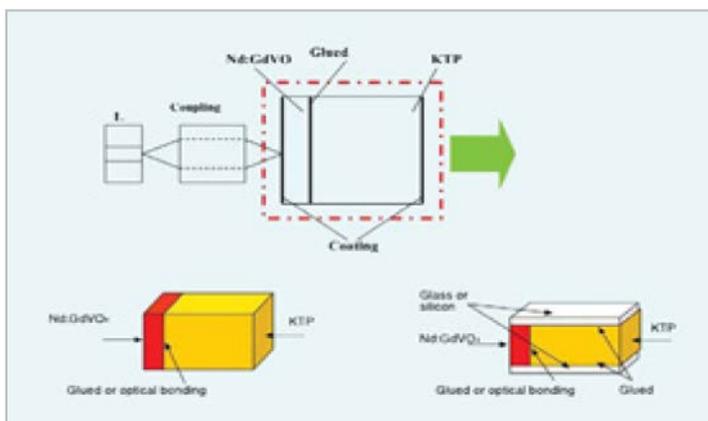
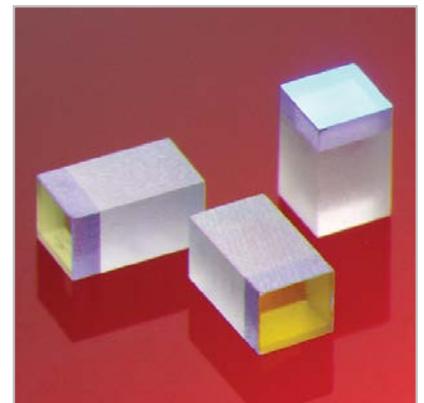
Typical Specification and Tolerance

Nd dopant concentration	0.1% – 4.0%
Orientation	a – cut $\pm 0.5^\circ$
Parallelism	< 10 arc seconds
Perpendicularity	< 5 arc minutes
Dimensional tolerance	< ± 0.1 mm
Angle tolerance	< $\pm 0.5^\circ$
Surface flatness	< $\lambda/10$ at 633 nm
Wavefront distortion	< $\lambda/8$ at 633 nm
Surface quality	10/5
Clear aperture	> 90% central area
Coating	available upon request

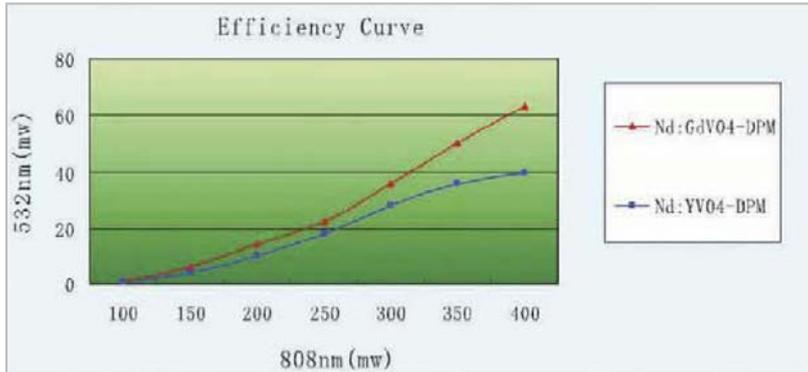
Introduction of Nd:GdVO₄ DPM

Nd:GdVO₄ crystals are excellent laser crystals. They are ideal laser host materials for the Diode Pumped Solid State (DPSS) micro/mini lasers because of their good physical, optical and mechanical properties. They have higher slope efficiency than Nd:YAG crystals and better thermal conductivity and higher power output than Nd:YVO₄ crystals, so they are a good choice for high power output DPSS laser.

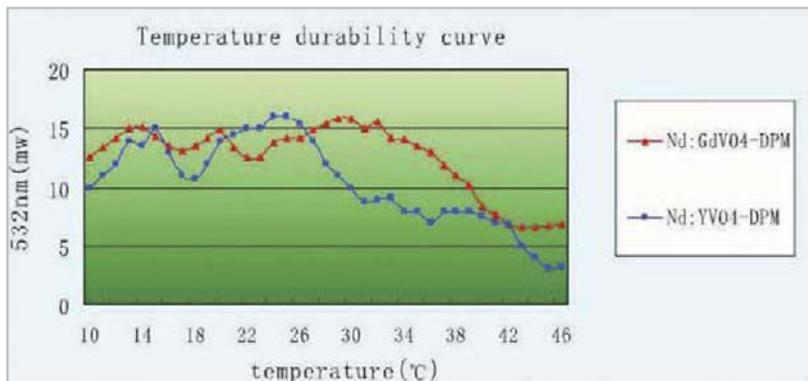
We provide high grade Nd:GdVO₄ DPM with Nd doping from 0.1 atm% to 4.0 atm%. In addition, Nd:GdVO₄ DPM of various sizes and coatings are available upon request.



1. Efficiency Curve



2. Temperature Durability Curve



3. Output vs Pump Central Wavelength

