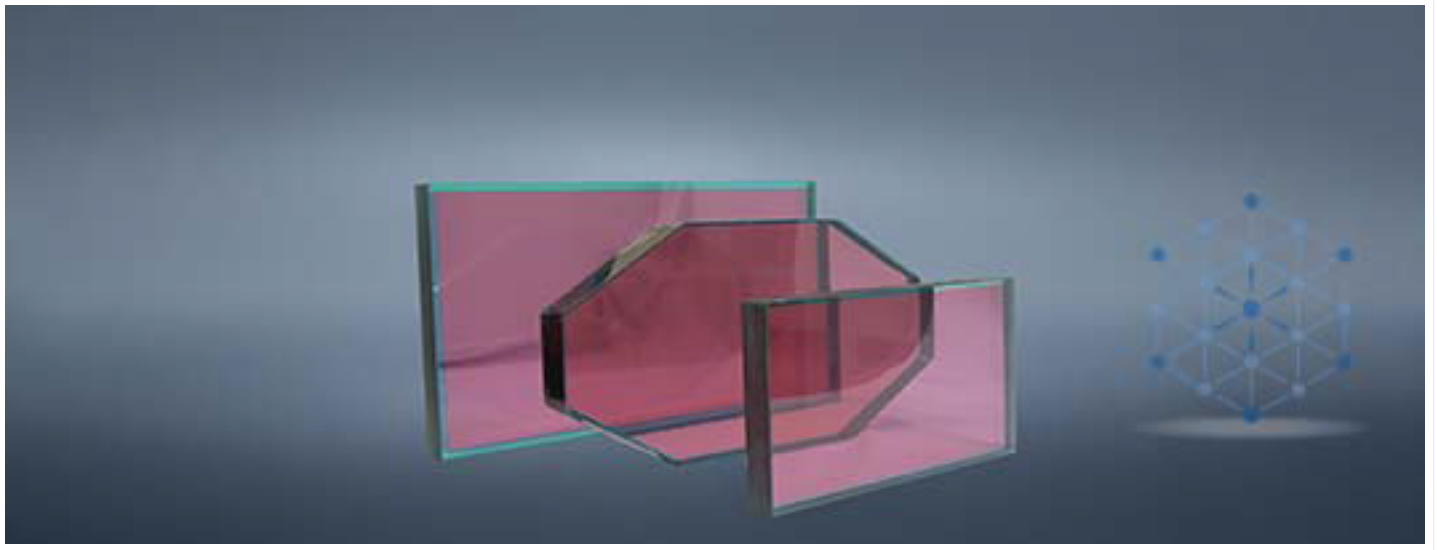


N₃₁ Nd:Glass



DESCRIPTION

N₃₁ phosphate glass is specially developed for high power laser facility. N₃₁ is a good material which has the characteristics of high energy storage, large excitation cross section and long fluorescence lifetime. It is also easy to prepare glass with large size and good optical uniformity, so it is widely used in high-power laser systems. At present, it has been successfully applied in Shen Guang II and Shen Guang III systems.

APPLICATIONS

- **High-power Laser Systems**
Mainly used for inertial confinement fusion physics experimental research, can provide nearly 200,000 joules, 60TW ultraviolet radiation source
- **Ultrashort Pulse Laser**
Used for nonlinear laser microscopies, practical, fiber-based, high-power, wideband sources and practical optical frequency comb system
- **Waveguide Amplifier**
Used for femtosecond laser writing method, optical communication

FEATURES

- High energy storage
- Large excitation cross section
- Long fluorescence lifetime
- Low coefficient of nonlinearity
- High damage threshold

PARAMETERS

Optical Specifications

Property	Value
Non-linear refractive index coeff. $n_2 (\times 10^{-13} \text{e.s.u})$	≤ 1.2
Refractive index(1053nm)	1.535 ± 0.003
Abbe value	65.6
$d_n/d_t (10^{-6}/^\circ\text{C}) (20 \sim 100^\circ\text{C})$	-4.3

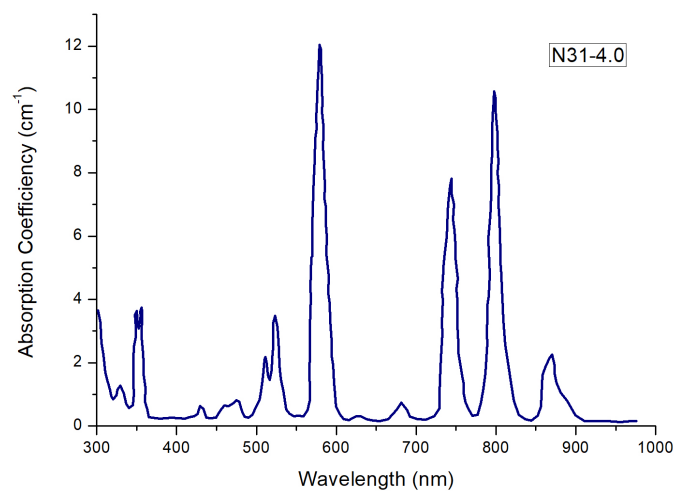


N₃₁ Nd:Glass

Laser Specifications

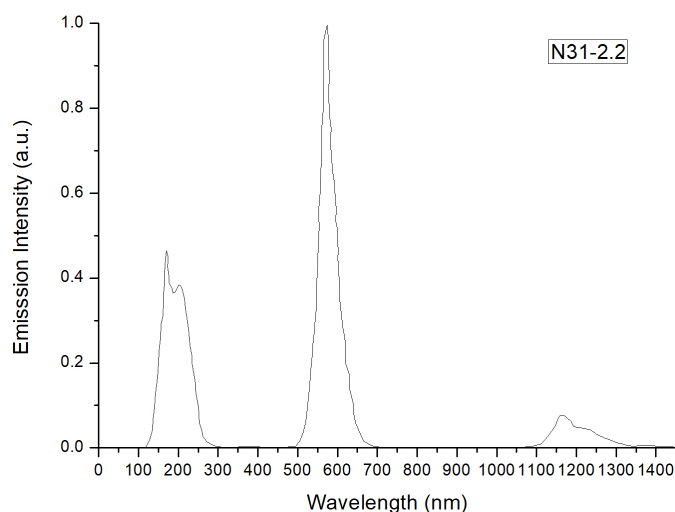
Property	Value
Nd ₂ O ₃ (wt%)	3.5
Nd ³⁺ conc. (10 ²⁰ ions/cm ³)	0.2% ~3% (as customers request)
Cross section for stimulated emission (10 ⁻²⁰ cm ²)	3.8±0.1
Lifetime at 1053nm (μsec)	≥ 370 (Nd ₂ O ₃ :0.5wt%)
	≥ 360 (Nd ₂ O ₃ :1.2wt%)
	≥ 315 (Nd ₂ O ₃ :3.5wt%)
	≥ 310 (Nd ₂ O ₃ :4.2wt%)
Effective bandwidth (nm)	25.4
Fluorescence peak wavelength (nm)	1053
Absorption coefficient (cm ⁻¹)	≤ 0.0015 (1053nm)
	≤ 0.25 (400nm)
	≤ 1.5 (3333nm)

SPECTRA



Thermal Specifications

Property	Value
Transformation temp. (°C)	445
Softening temp. (°C)	485
Coeff. of linear thermal expansion (10 ⁻⁷ /K) (30~100 °C)	116
Thermal coeff. Of optical path length (10 ⁻⁶ /K) (50~100 °C)	1.4
Thermal conductive (25 °C) (W/Mk)	0.59
Specific heat (25 °C) (J/Gk)	0.75



Other Specification

Property	Value
Density (g/cm ³)	2.87
Young's modulus (Gpa)	58.3
Poisson's ratio	0.26
Knoop hardness (kg/cm ²)	404
Fracture toughness (Mpa.m ^{1/2})	0.58

*The homogeneity is about 2×10⁻⁶

