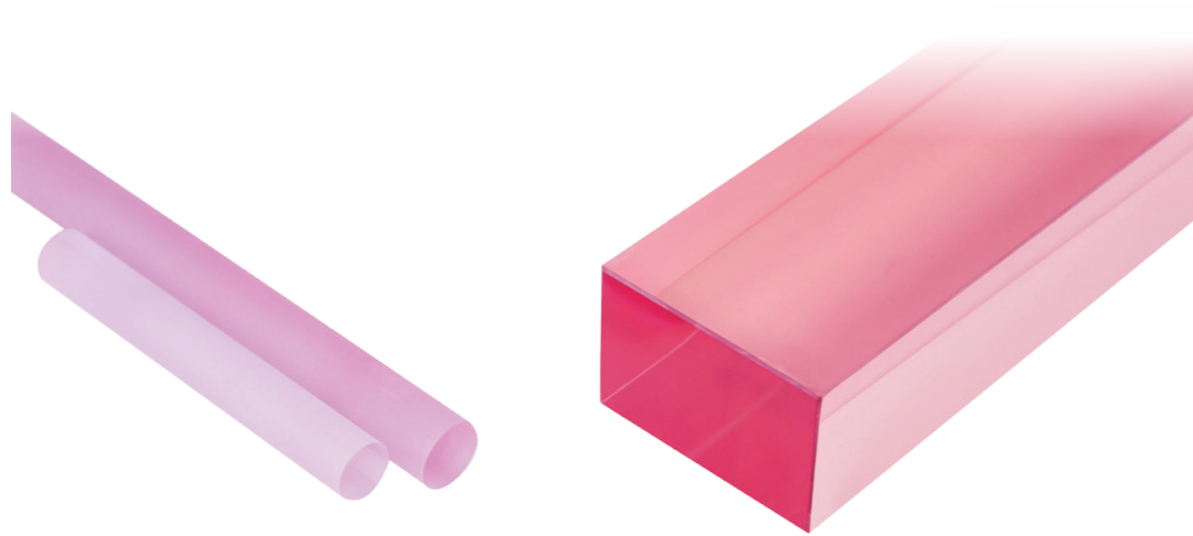
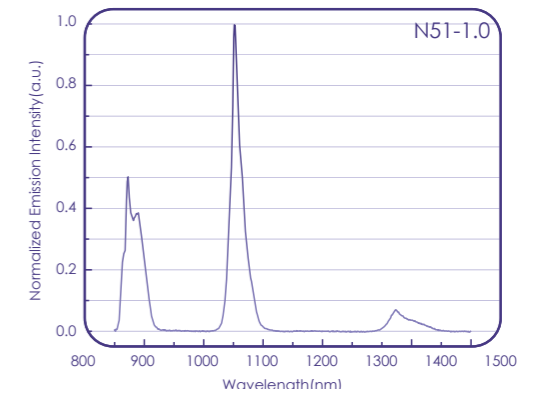
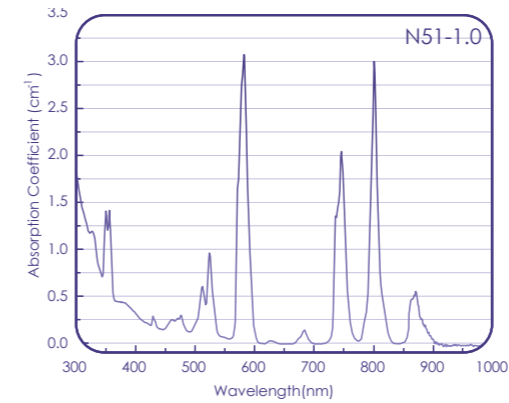


N51 Nd³⁺-doped phosphate glass for high energy applications



N51 phosphate glass with high stimulated emission cross section and lower nonlinear refractive index is specially developed for high power laser facility. Glass slab up to 900mm×500mm×70mm is available at SIOM.



Laser Specifications

Nd₂O₃ (wt%)
Nd³⁺ conc. (10²⁰ions/cm³)
Cross section for stimulated emission (10⁻²⁰cm²)

4.0
3.9±0.1
4.3±0.1

Lifetime at 1053nm (μsec)

≥375 (Nd₂O₃ : 0.5wt%)
≥365 (Nd₂O₃ : 1.2wt%)
≥320 (Nd₂O₃ : 3.5wt%)
≥315 (Nd₂O₃ : 4.2wt%)

Effective bandwidth(nm)
Fluorescence peak wavelength(nm)

24.5
1053

Absorption coefficient (cm⁻¹)

≤0.0015 (1053nm)
≤0.25 (400nm)
≤1.5 (3333nm)

Optical Specifications

Non-linear refractive index coeff.n₂(×10⁻¹³e.s.u)
Refractive index (1053nm)
Abbe value
dn/dT (10⁻⁶/°C) (20~100°C)

≤1.04
1.505±0.003
68.2
-9.0

Thermal Specifications

Transformation temp.(°C)
Softening temp.(°C)
Coeff.of linear thermal expansion (10⁻⁷/K) (30~100°C)
Coeff.of linear thermal expansion (10⁻⁷/K) (30~300°C)
Thermal coeff. of optical path length (10⁻⁶/K) (50~100°C)

408
448
141
160
-1.9

Chemical Specifications

D_w (H₂O 98°C)(mg/(cm²/day))

2.2

Other Specifications

Density(g/cm³)
Young's modulus (G Pa)
Poisson's ratio
Knoop hardness (kg/cm²)
Fracture toughness (MPa·m^{1/2})

2.70
45.2
0.26
302
0.66