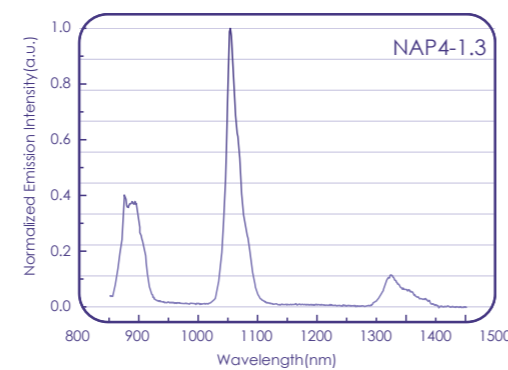
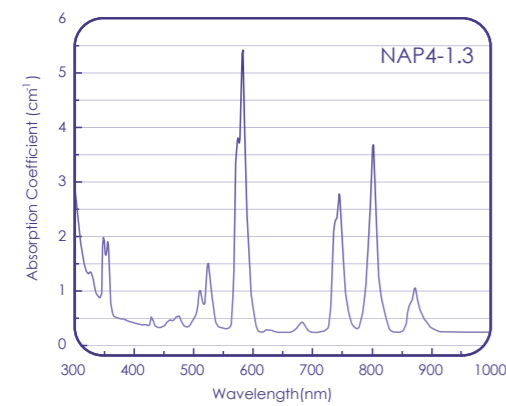
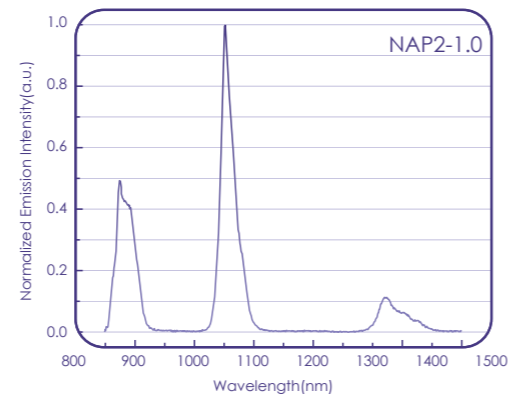
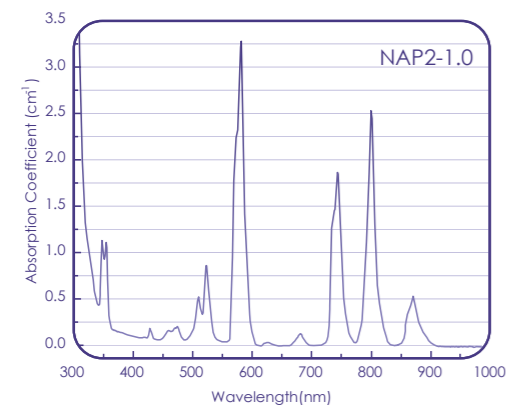


NAP Nd³⁺-doped phosphate glasses for high average power applications

NAP2 and NAP4 Nd³⁺: phosphate glasses are two types of new laser glass with high thermal shock resistance properties, which have higher thermal conductivity, lower coefficient of thermal expansion and modest emission cross section. The NAP2 and NAP4 glass can be used as active materials in laser systems with high repetition rates and high energy, which have broad applications in laser ranger, laser peening and pump laser for OPCPA systems. The glass can be customized with the maximum size of 400mm×400mm×70mm.



	NAP2	NAP4
Laser Specifications		
Cross section for stimulated emission (10 ⁻²⁰ cm ²)	3.6±0.1	3.1±0.1
Lifetime at 1053nm (μsec)	≥360 (Nd ₂ O ₃ : 0.5wt%) ≥350 (Nd ₂ O ₃ : 1.0wt%) ≥330 (Nd ₂ O ₃ : 2.0wt%) ≥310 (Nd ₂ O ₃ : 3.0wt%)	≥370 (Nd ₂ O ₃ : 0.5wt%) ≥360 (Nd ₂ O ₃ : 1.0wt%) ≥330 (Nd ₂ O ₃ : 2.0wt%) ≥310 (Nd ₂ O ₃ : 3.0wt%)
Effective bandwidth(nm) Fluorescence peak wavelength(nm)	25.4 1052	28.5 1052
Absorption coefficient (cm ⁻¹)	≤0.0015 (1053nm) ≤0.25 (400nm) ≤1.5 (3333nm)	≤0.002 (1053nm) ≤0.3 (400nm) ≤1.5 (3333nm)
Optical Specifications		
Non-linear refractive index coeff.n ₂ (×10 ⁻¹³ e.s.u) Refractive index (1053nm) Abbe value dn/dT (10 ⁻⁶ /°C) (20~100°C)	≤1.25 1.537±0.003 67 -0.9	≤1.10 1.515±0.005 67 1.9
Thermal Specifications		
Transformation temp.(°C) Softening temp.(°C) Coeff.of linear thermal expansion (10 ⁻⁷ /K) (50~100°C) Coeff.of linear thermal expansion (10 ⁻⁷ /K) (30~300°C) Thermal coeff. of optical path length (10 ⁻⁶ /K) (50~100°C) Thermal conductivity (25°C) (W/m K) Specific heat (25°C) (J/g K)	500 550 87 95 3.8 0.76 0.757	545 600 63 71 5.0 0.88 0.775
Chemical Specifications		
D _w (H ₂ O 98°C)(mg/(cm ² /day))	0.003	0.002
Other Specifications		
Density(g/cm ³) Young's modulus (G Pa) Poisson's ratio Knoop hardness (kg/cm ²) Fracture toughness (MPa·m ^{1/2})	2.84 58 0.25 382 0.68	2.58 67 0.25 549 0.74

