

IOG-2 Phosphate Laser Glass

For High Gain Applications

IOG-2 is a potassium-barium-alumino phosphate glass with high erbium and ytterbium cross sections for stimulated emission. Although not as chemically durable as IOG-1, IOG-2 is an excellent candidate for active photonic devices that require high gain.

Optical Properties

n_d	1.518
v_d	66.8
n_{1000nm} (calculated)	1.510
n_{1540m} (calculated)	1.508

Erbium Laser Properties

Emission Maxima, λ (nm)	1533
Emission Cross Section at 1533 nm (10^{-21} cm^2)	8.0
Excited State Lifetime for the 1533 nm Band (ms)	9.0
Max Absorption Cross Section for 980nm Pump Band (10^{-21} cm^2)	2.4

Ytterbium Laser Properties

Emission Maxima, λ (nm)	1000
Emission Cross Section at 1000 nm (10^{-21} cm^2)	5.4
Excited State Lifetime for the 1000 nm Band (ms)	1.5
Max Absorption Cross Section for 980nm Pump Band (10^{-21} cm^2)	14.1

Chemical Properties

Weight Loss in 50°C Water (mg/($\text{cm}^2 \cdot \text{day}$))	0.028
Acid Resistance SR pH=0.3 at 25°C	4.0
Alkali Resistance AR pH=12 at 50°C	4.0
Staining Resistance FR pH=4.6 100h at 25°C	1
Climactic Resistance CR Water Vapor at 40-50°C for 30 h	2

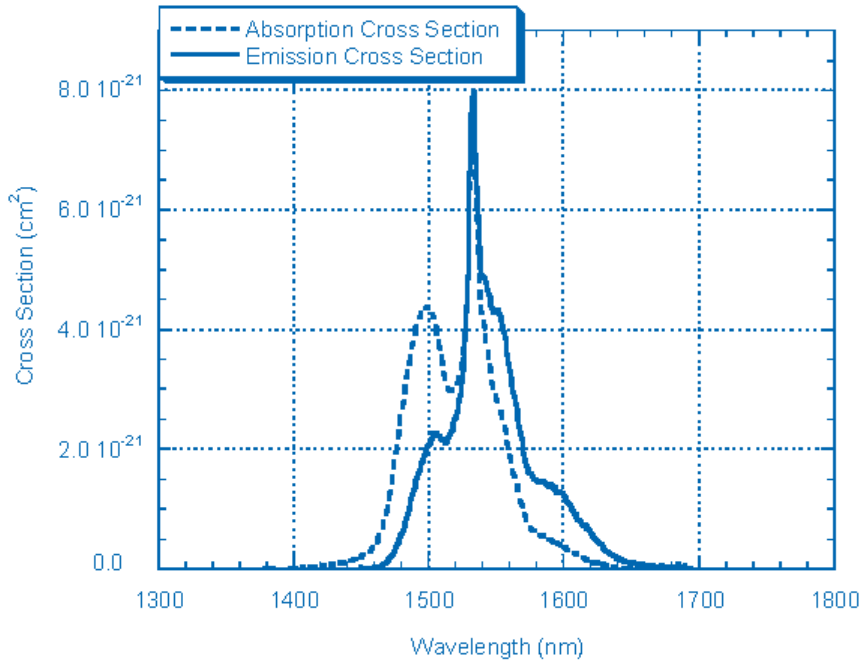
Physical Properties

Density, ρ (g/cm^3)	2.72
Thermal Conductivity (25°C), K ($\text{W}/\text{m} \cdot \text{K}$)	0.57
Young's Modulus, E (GPa)	54
Poisson's Ratio, ν	0.27
Fracture Toughness, K_{Ic} ($\text{MPa} \cdot \text{m}^{1/2}$)	0.47
Knoop Hardness, $HK_{0.1/20}$	340
Heat Capacity (25°C), C_p ($\text{J}/\text{g} \cdot \text{K}$)	0.75
Thermal Diffusivity (25°C), σ ($10^{-7} \text{ m}^2/\text{sec}$)	2.92
Thermal Expansion, $\alpha_{20-300^\circ\text{C}}$ ($10^{-7}/\text{K}$)	145
Thermal Expansion, $\alpha_{20-40^\circ\text{C}}$ ($10^{-7}/\text{K}$)	125
Glass Transformation Temperature, T_g (°C)	375

- Properties will vary slightly with doping content

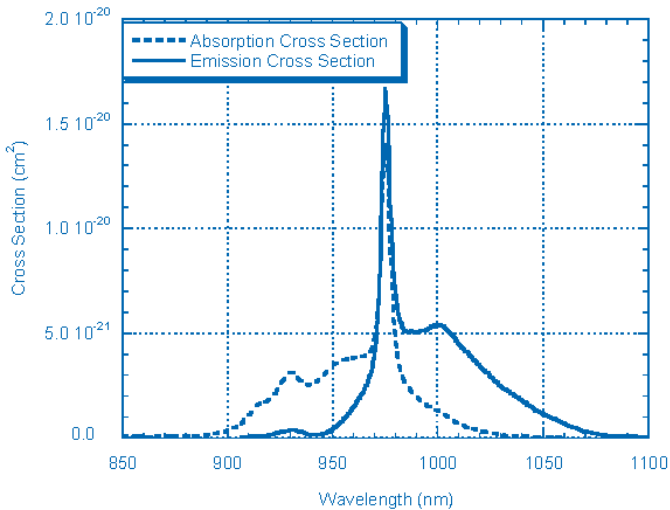
IOG-2 Phosphate Laser Glass

For High Gain Applications

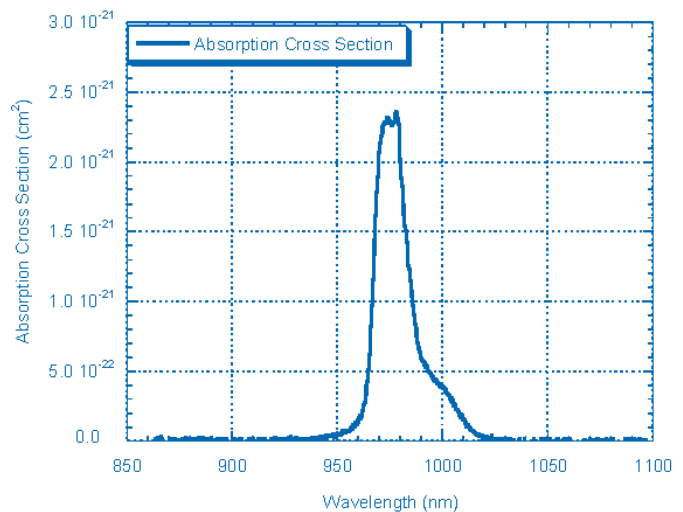


Erbium Absorption and Emission Cross Sections around 1540nm

Ytterbium Absorption and Emission Cross Sections around 980nm



Erbium Absorption Cross Section around 980nm



For more information please contact:

Advanced Optics
SCHOTT AG
Hattenbergstrasse 10
55122 Mainz
Germany

Phone: +49 (0)6131/66-1812
Fax: +49 (0)3641/2888-9047
info.optics@schott.com
www.schott.com/advanced_optics

SCHOTT
glass made of ideas