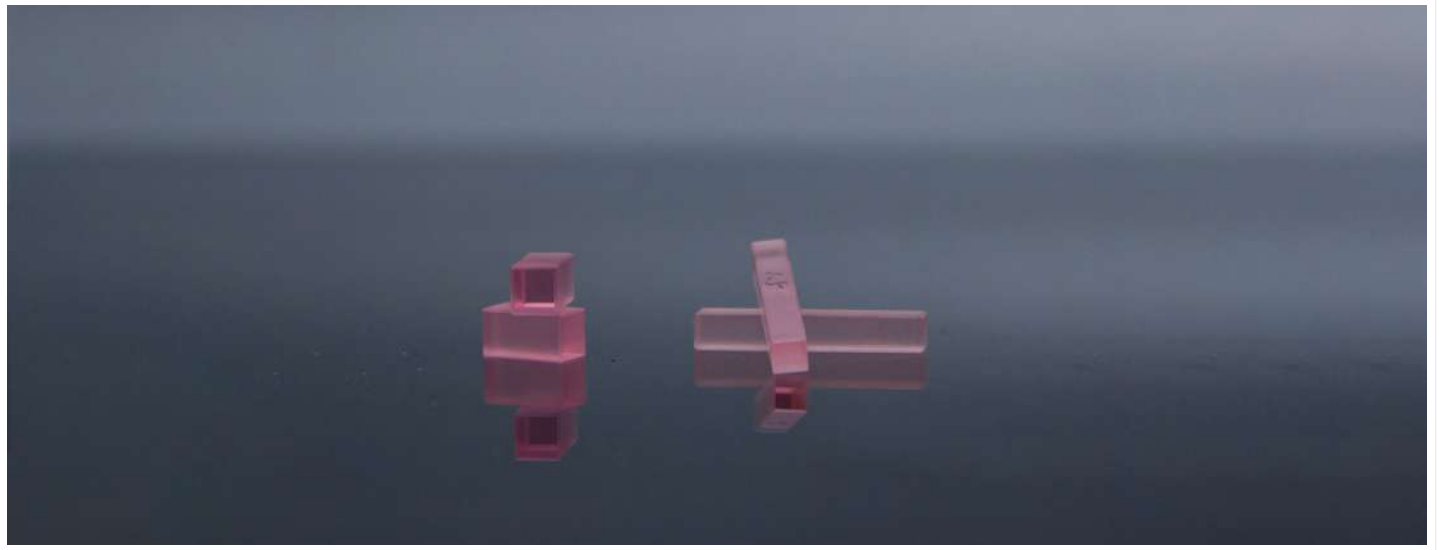


Er:YLF



DESCRIPTION

Er³⁺:YLF crystals are characterized by low phonon frequency, which decreases the probability of non-radiative multi-phonon relaxations, therefore increases luminescence quantum efficiency. Long lifetime of laser emitting levels allow higher energy storage, which is useful for the Q-switch lasing regime. High band-gap along with low phonon energy determines very wide transparency range, which is possibly from VUV to 10 μ m region. Negative Er³⁺:YLF thermo-optic coefficient is an advantage, since it reduces thermal-lensing effect and improves beam shape as well as stability at high average pump power.

APPLICATIONS

- CW and Q-switched ~3 μ m lasers for oral surgery, dentistry, implant dentistry, and otolaryngology
- Up-conversion visible lasers for display technology, medicine (diagnosis and treatment)

FEATURES

- A low phonon frequency
- Long lifetimes of the laser emitting levels
- Negative thermo-optic coefficient
- Custom crystals available upon request
- Wide transparency range (from the VUV to the 10 μ m region)



Er:YLF

PARAMETERS

Material and Specifications

Orientation	A-cut
Parallelism	<10"
Perpendicularity	<10'
Surface Quality	10-5 S-D
Wavefront Distortion	<λ/4 per inch@632.8 nm
Surface Flatness	<λ/10 @632.8 nm
Clear Aperture	>90%
Face Dimensions Tolerance	+0.0/-0.1 mm
Length Tolerance	±0.1mm
Chamfer	<0.1mm@45°

Optical Characteristics

Typical Doping Level	15@.%
Refractive Index (@2070nm)	no=1.442, ne=1.464
Thermo-optic Coefficient (10 ⁻⁶ ·K ⁻¹)	-2(// a), -4.1(// c)
Lifetime of 4I11/2 Erbium Energy Level(ms)	4
Emission Cross Section (10 ⁻²⁰ /cm ²)	1.5@2800nm
Absorption Peak Wavelength	972nm
Absorption Coefficient at Peak Wavelength	28cm ⁻¹
Absorption Bandwidth at Peak Wavelength	~1nm
Laser Wavelength	2810nm

Physical and Chemical Properties

Structure Symmetry	Tetragonal
Lattice Constants	a=5.173, c=10.747 Å@1.5%
Specific mass	3.95g/cm ³
Melting Point	819°C
Thermal Conductivity (W·m ⁻¹ ·K ⁻¹)	~5
Specific Heat(J·g ⁻¹ ·K ⁻¹)	0.79
Thermal Expansion (10 ⁻⁶ ·K ⁻¹)	8
Hardness (kg/mm ² @Mohs)	5
Young's Modulus (108g/cm ²)	7.65

Spectrum

