Er:YAG crystals

Er: YAG is a kind of excellent 2.94 um laser crystal, widely used in laser medical system and other fields. Er: YAG crystal laser is the most important material of 3nm laser, and the slope with high efficiency, can work at room temperature laser, laser wavelength is within the scope of the human eye safety band, etc. 2.94 mm Er: YAG laser has been widely used in medical field surgery, skin beauty, dental treatment.

Er3+:YAG crystal is an attractive laser material for eye-safe emission at wavelengths of 1617 and 1645 nm which can be resonantly diode-pumped into the upper laser manifold at 1470 nm and 1532 nm.

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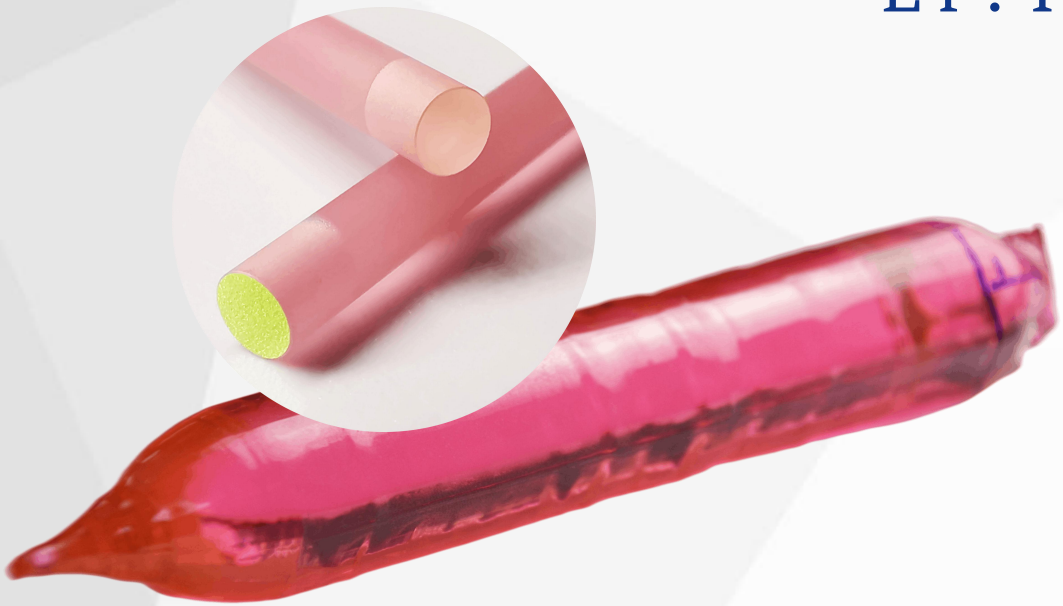

- High slope efficiency
- Operate well at room temperature
- Operate in a relatively eye-safe wavelength range
- Emission spectra at 1617 nm is free from absorption in the atmosphere
- Isotropic crystal (cubic symmetry)

Basic Properties	
Coefficient of Thermal Expansion	6.14 x 10^{-6} K^{-1}
Crystal Structure	Cubic
Thermal Diffusivity	0.041 cm^2 s^{-2}
Thermal Conductivity	11.2 W m^{-1} K^{-1}
Specific Heat (Cp)	0.59 J g^{-1} K^{-1}
Thermal Shock Resistant	800 W m^{-1}
Refractive Index @ 632.8 nm	1.83
dn/dT (Thermal Coefficient of Refractive Index) @ 1064nm	7.8 10^{-6} K^{-1}
Molecular Weight	593.7 g mol^{-1}
Melting Point	1965°C
Density	4.56 g cm^{-3}
MOHS Hardness	8.25
Young's Modulus	335 Gpa
Tensile Strength	2 Gpa
Lattice Constant	a=12.013 Å

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Technical Parameters	
Dopant concentration	Er: ~50 at%
Orientation	[111] within 5°
Wavefront Distortion	≤0.125λ/inch(@1064nm)
Extinction Ratio	≥25 dB
Rod Sizes	Diameter:3～6mm, Length:50～120 mmUpon request of customer
Dimensional Tolerances	Diameter:+0.00/-0.05mm, Length: ± 0.5mm
Barrel Finish	Ground Finish with 400# Grit or polished
Parallelism	≤10"
Perpendicularity	≤5′
Flatness	λ/10 @632.8nm
Surface Quality	10-5(MIL-O-13830A)
Chamfer	0.15±0.05mm
AR Coating Reflectivity	≤ 0.25% (@2940nm)

Optical and spectral Properties	
Laser Transition	$^4I_{11/2}$ to $^4I_{13/2}$
Laser Wavelength	2940nm
Photon Energy	6.75×10^{-20}J(@2940nm)
Emission Cross Section	3×10^{-20} cm²
Index of Refraction	1.79 @2940nm
Pump Bands	600~800 nm
Laser Transition	$^4I_{11/2}$ to $^4I_{13/2}$

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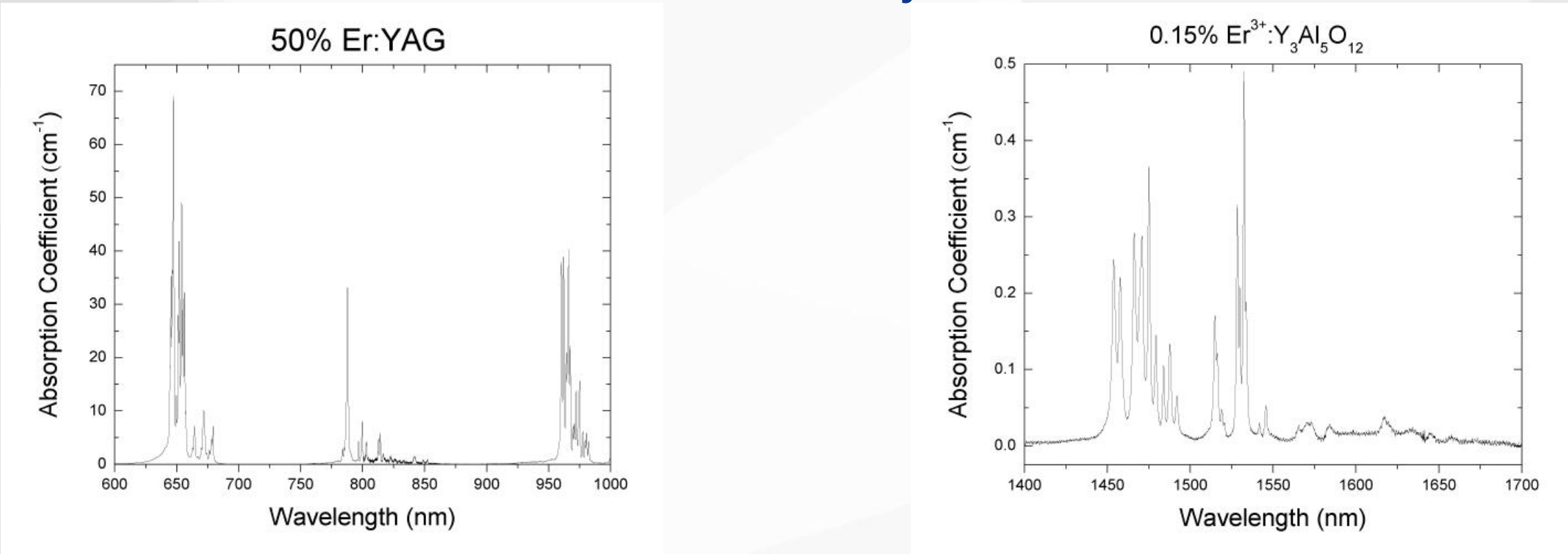

Absorption coefficient of with different Erbium ion doping