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Crytur delivers high quality laser rods based on proprietary crystals and in-house processing and coating

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# Laser rods - Erbium doped

## ER:YAG

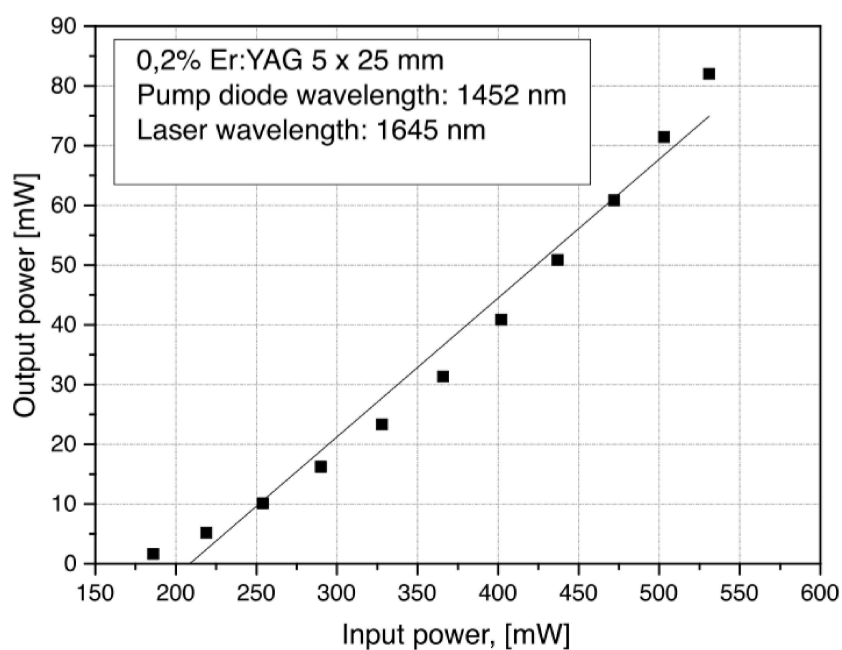
## ER:YAP

Er:YAG crystals with high doping concentration of  $Er^{3+}$  ions are typically used for lasing at 2936 nm.

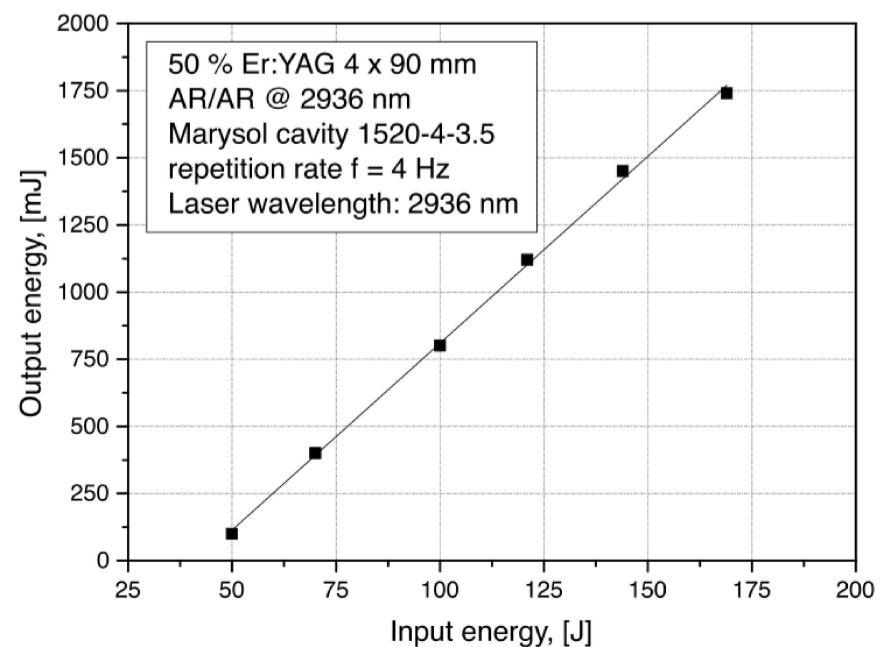
The main feature of this wavelength is high absorption in water and hydroxyapatite. Thus Er:YAG crystals are mostly applicable for construction of the dental surgery and aesthetic surgery lasers.

Low-doped Er:YAG laser crystals are used for producing of the eye-safe radiation at 1645 nm by in-band pumping with semiconductor laser diodes at 1,5 microns. The advantage of such a scheme is low thermal load corresponding to low quantum defect.

Generation characteristic of 0.2% Er:YAG



Generation characteristic of 50% Er:YAG



MATERIAL CHARACTERISTICS		
Crystal structure	cubic - Ia3d	
Laser wavelengths	$^4S_{3/2} \rightarrow ^4I_{9/2}$	1645 nm
	$^4I_{11/2} \rightarrow ^4I_{13/2}$	2936 nm
Pump bands	0.6-0.8 $\mu\text{m}$	1.53 $\mu\text{m}$
Thermal conductivity	11 W/m K	
Refractive index at 632 nm	1.83	
Temperature dependence of refractive index	$7.8 \cdot 10^{-6}/\text{K}$	
Fluorescence lifetime	230 $\mu\text{s}$	
Emission cross section at 2940nm	$3 \times 10^{-20} \text{ cm}^2$	
DESIGN		
Rod diameter	2 – 5 mm	
Rod length	Up to 120 mm	
Er doping concentration	0.2% - 50% at.	
Polishing	Barrel surface fine ground or polished. Perpendicular or wedged ends. Polishing according to DIN and MIL standards.	
Coatings	Ion assisted	



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