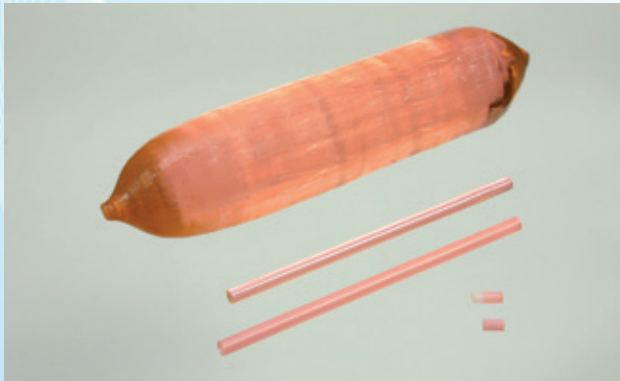


# Laser Crystals

## Er:YAG and Er:YAP



YAG and YAP crystals highly substituted with erbium ions provide laser emission at 2.94  $\mu\text{m}$  and 2,73  $\mu\text{m}$  respectively. Commonly used in aesthetic laser surgery and dental applications due to intense absorption of this wavelength in water.

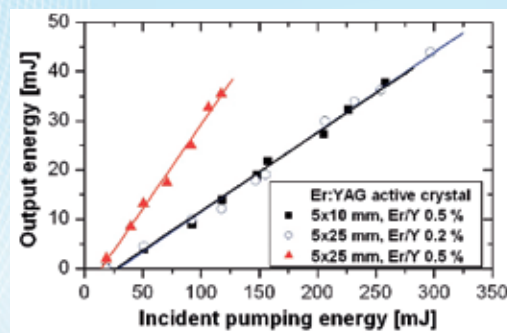
Low doped Er:YAG and Er:YAP can also be operated on the  $^4I_{13/2} \rightarrow ^4I_{15/2}$  transition, then emitting around 1.6  $\mu\text{m}$ . Efficient operation can be achieved by in-band pumping with an erbium-doped fiber laser or semiconductor diodes emitting at 1.53  $\mu\text{m}$ .

	<i>Er:YAP</i>	<i>Er:YAG</i>
Host	Yttrium Aluminium Perovskite (YAIO <sub>3</sub> )	Yttrium Aluminium Garnet (Y <sub>3</sub> Al <sub>5</sub> O <sub>12</sub> )
Dopant	Er <sup>3+</sup>	Er <sup>3+</sup>
Dopant concentration	1 - 50 at.% Er/Y	1 - 50 at.% Er/Y
Laser wavelength	$^4S_{3/2} \rightarrow ^4I_{9/2}$ 1.66 $\mu\text{m}$ $^4I_{11/2} \rightarrow ^4I_{13/2}$ 2.73 $\mu\text{m}$	$^4S_{3/2} \rightarrow ^4I_{9/2}$ 1.64 $\mu\text{m}$ $^4I_{11/2} \rightarrow ^4I_{13/2}$ 2.94 $\mu\text{m}$

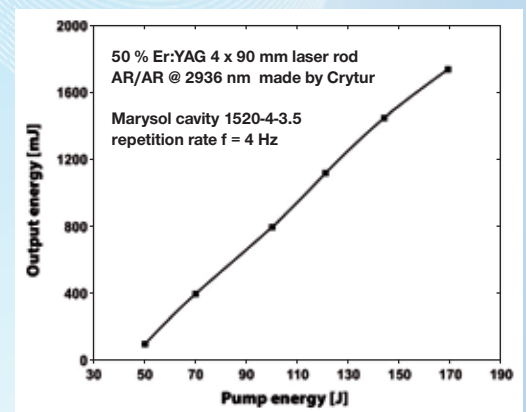
Our standard production includes:

- Low doping for eye safe lasers: 0.1 – 5 at. % of Er/Y
- High doping for medical lasers 50 at. % of Er/Y
- Rod diameters from 2 mm up to 5 mm
- Rod lengths of up to 120 mm
- Barrel surface fine ground or polished
- Ion assisted AR coatings

Application examples:



Er:YAG 1645 nm laser, resonantly pumped by Er:glass



Er:YAG 2936 nm laser