

electron microscopy

lasers

ionizing radiation detection

phosphors for light conversion

x-ray imaging

coating

sapphire profiles

precision optics

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materials

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career

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F

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

Laser rods - Thulium doped

☑ TM:YAG

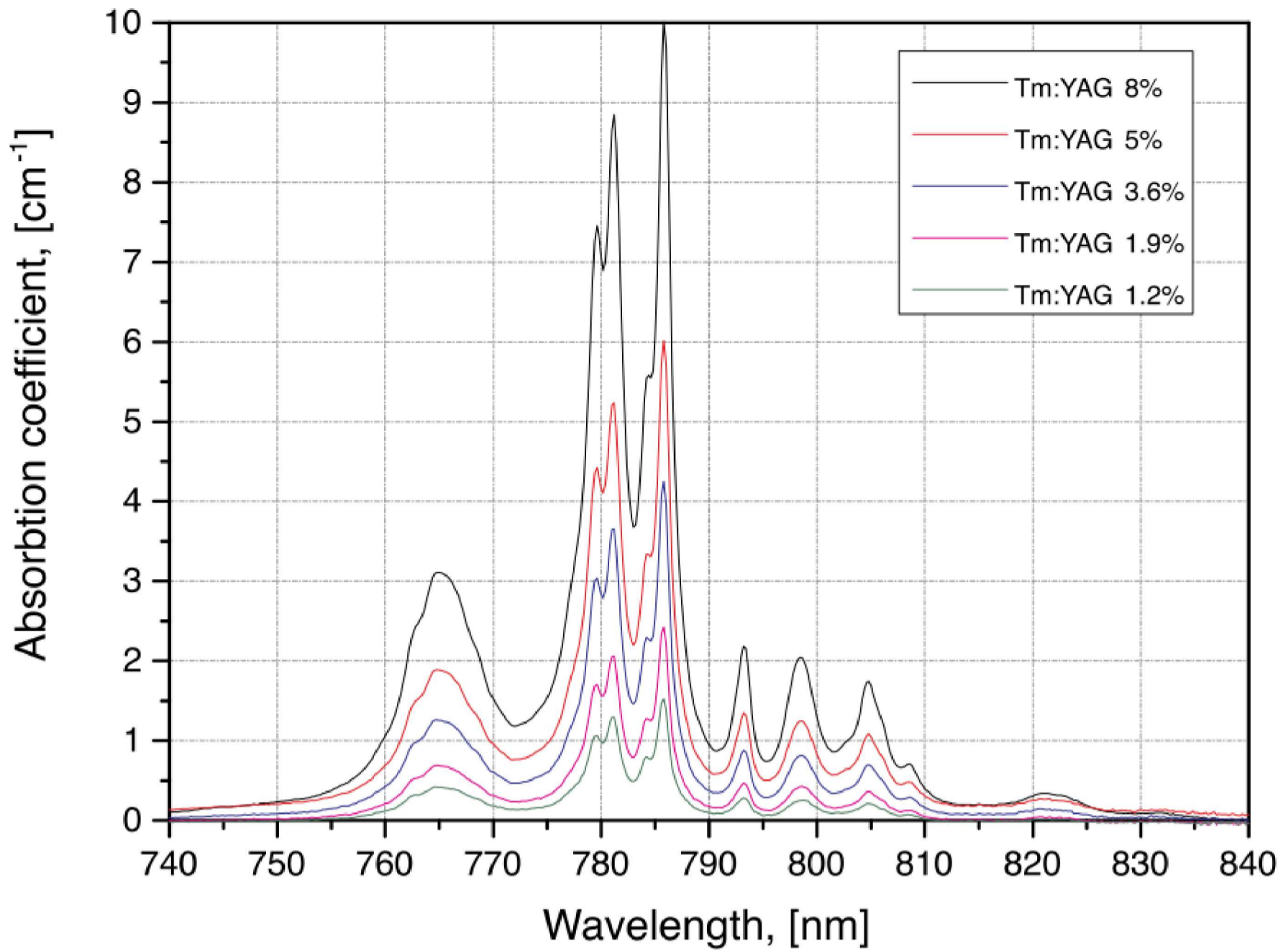
☑ TM:YAP

Tm:YAG finds its application in urology, laser radar and other atmospheric sensing applications due to its operating wavelength at 2013 nm.

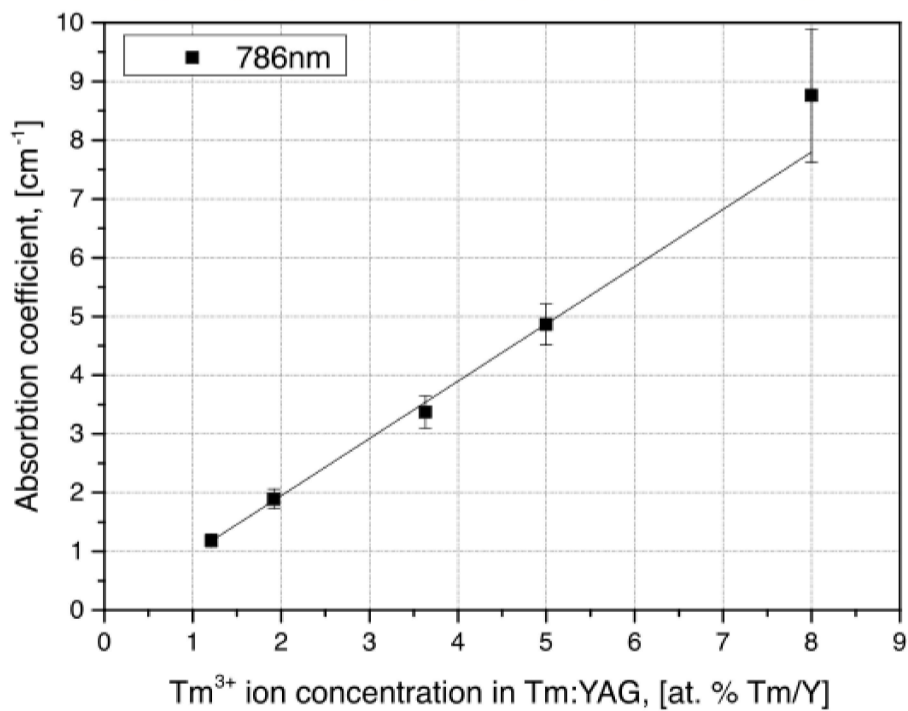
The absorption band peaking at 786 nm is suitable for pumping by semiconductor diodes. Tm:YAG has a long fluorescence lifetime, which is appreciated for the high-energy Q-switched operation.

The efficient cross-relaxation with neighboring Tm ions produces two excitation photons in upper laser level for one absorbed pump photon. It provides high quantum efficiency and reduces thermal loads.

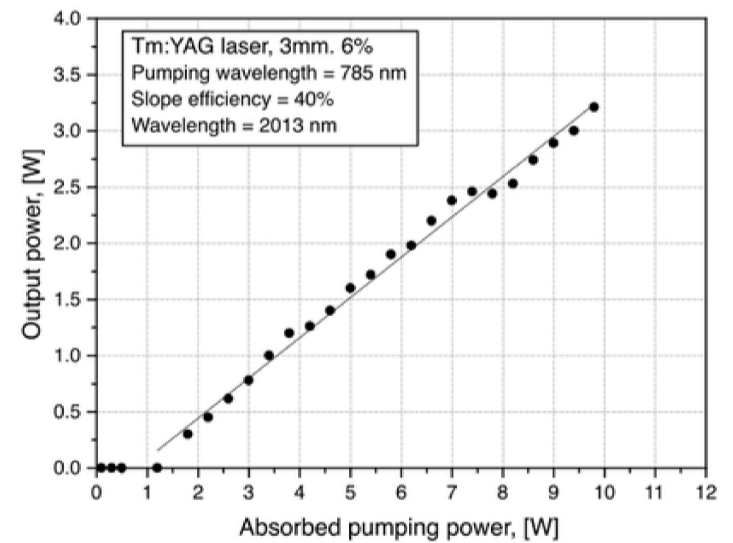
Absorption spectrum of Tm:YAG



Absorption coefficient of Tm:YAG



Generation characteristic of Tm:YAG laser



MATERIAL CHARACTERISTICS

Crystal structure	cubic - Ia3d
Emission wavelength	2013 nm
Pump band	786 nm
Thermal conductivity	11 W/m K
Refractive index at 632 nm	1.83

Temperature dependence of refractive index	$7.3 \cdot 10^{-6}/K$
Emission cross section at 2013 nm	$2.9 \times 10^{-20} \text{ cm}^2$
DESIGN	
Rod diameter	2 – 7 mm
Rod length	Up to 100 mm
Tm doping concentration	1% - 8% at.
Polishing	Barrel surface fine ground or polished. Perpendicular or wedged ends. Polishing according to DIN and MIL standards.
Coatings	Ion assisted mirrors, output couplers, antireflections



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