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Laser rods - Thulium doped

about us

c

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

F

TM:YAG

TM:YAP

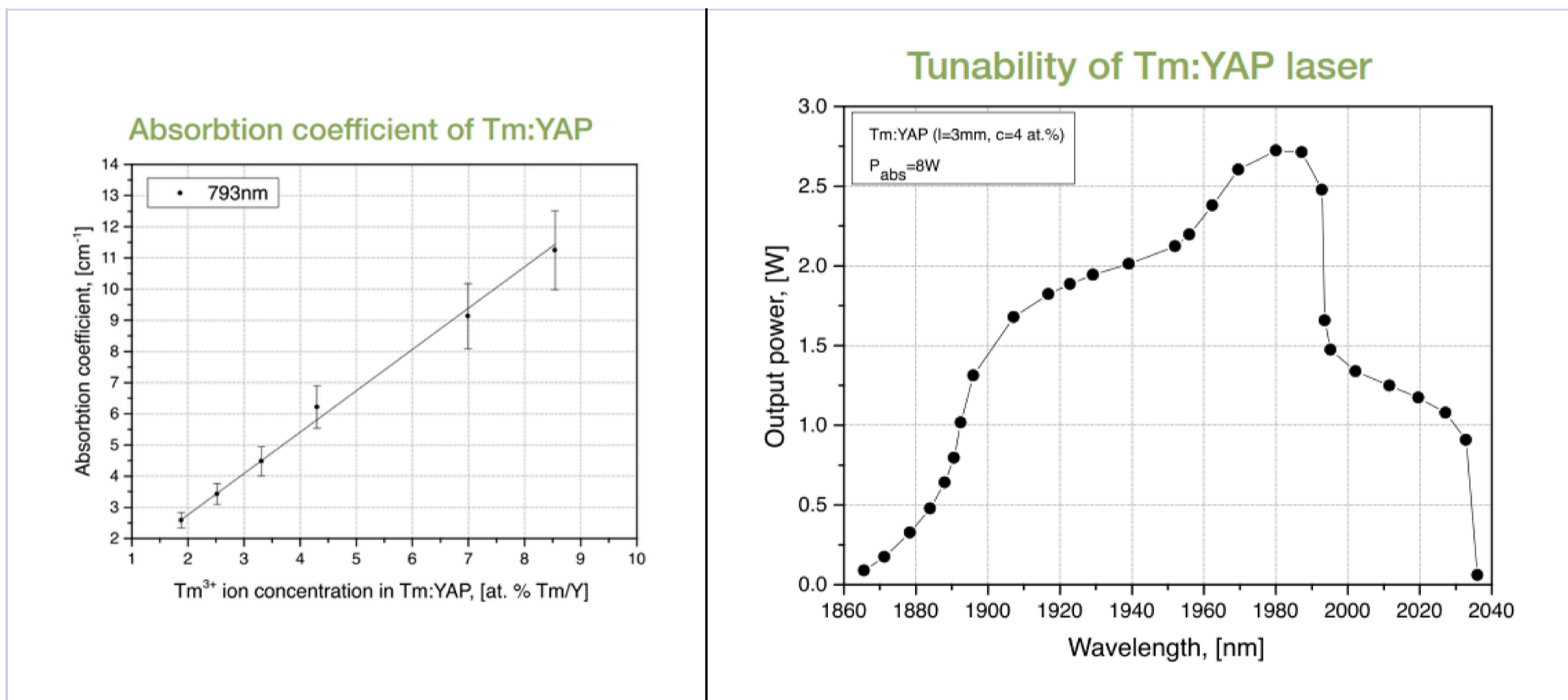
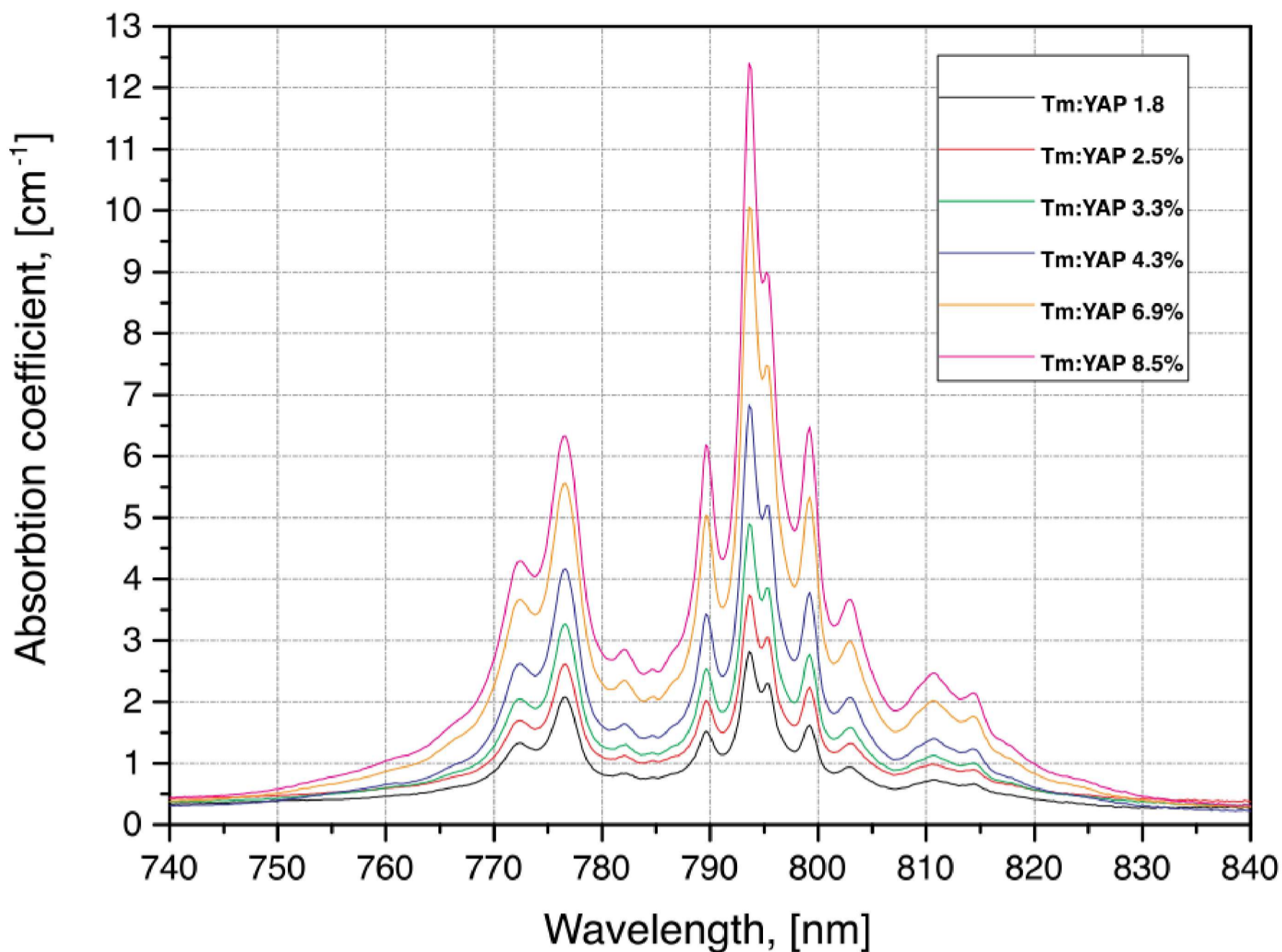
Tm doped crystals embrace several attractive features that nominate them as the material of choice for solid-state laser sources with emission wavelength of around 2 microns.

There is a self-quenching mechanism between the 3H_4 and 3F_4 levels that produces two excitation photons in the upper laser level for one absorbed pump photon. This makes the laser potentially very efficient with high quantum efficiency.

Yttrium aluminium oxide $YAlO_3$ (YAP) is an attractive laser host for thulium due to its natural birefringence combined with good thermal and mechanical properties similar to those of YAG. The emission cross-section of thulium in YAP is twice as high as in YAG and the peak of absorption at 793 nm is suitable for InGaAs diode pumping.

The 4-nm wide absorption peak of Tm:YAP is broader compared to Tm:YAG, resulting in better tolerance to pump diode wavelength variations. Tm:YAP can be tuned from 1870 nm up to 2030 nm with the maximum at 1985 nm.

Absorbption spectrum of Tm:YAP



MATERIAL CHARACTERISTICS	
Crystal structure	orthorhombic - Pbnm
Emission wavelength	tunable from 1870 nm up to 2030 nm
Pump band	793 nm
Thermal conductivity	11 W/m K
Refractive index at 632 nm	1.92 (n _a), 1.93 (n _b), 1.94 (n _c)
Emission cross section at 2013 nm	6 × 10 ⁻²⁰ 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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