

Yb:KGW and Yb:KYW Crystals



Yb-Doped Potassium Gadolinium Tungstate (Yb:KGd(WO₄)₂) and Yb-doped Potassium Itrium Tungstate (Yb:KY(WO₄)₂) single crystals are the new laser crystals for diode or laser pumped solid-state laser applications.

FEATURES

- High absorption coefficient @ 981 nm
- High stimulated emission cross section
- Low laser threshold
- Extremely low quantum defect $\lambda_{\text{pump}}/\lambda_{\text{se}}$
- Broad polarized output at 1023–1060 nm
- High slope efficiency with diode pumping (~ 60%)
- High Yb doping concentration.

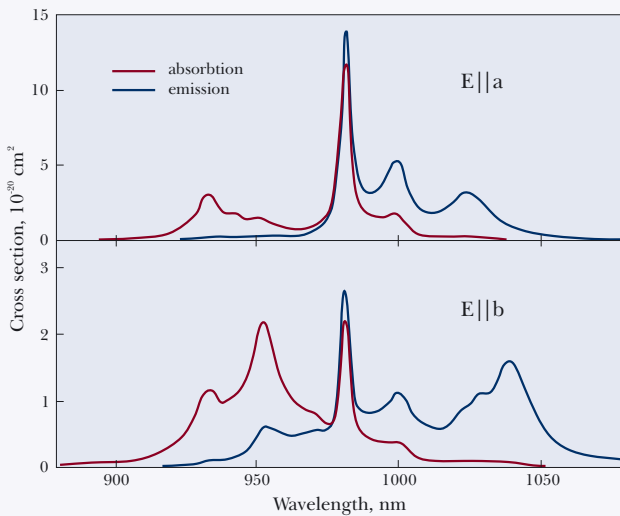
APPLICATIONS

- Yb:KGW and Yb:KYW thin (100–150 μm) crystals are used as lasing materials to generate ultrashort (<100 fs) high power (>22 W) pulses. Standard pumping @ 981 nm, output: 1023–1060 nm
- Yb:KGW and Yb:KYW can be used as ultrashort pulses amplifiers
- Yb:KGW and Yb:KYW are one of the best materials for high power thin disk lasers.

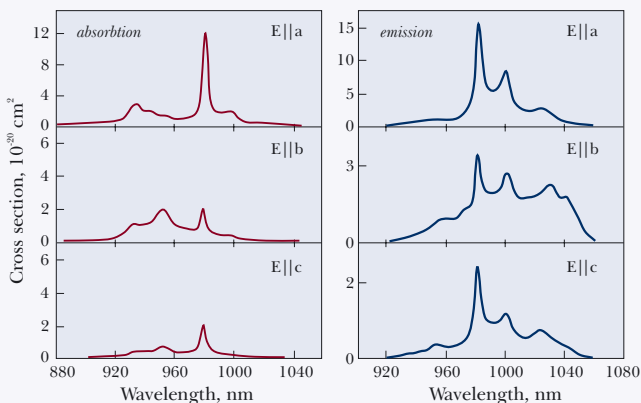
CUSTOM MANUFACTURING CAPABILITIES

- Various shapes (slabs, rods, cubes)
- Different dopant levels
- Diversified coatings
- Attractive prices of introductory quantities to OEMs.

Please contact EKSPLA for further information or detailed quotation.



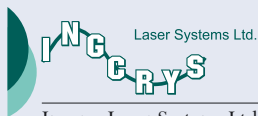
Absorption and emission spectra of Yb(5%):KYW



Absorption and emission spectra of Yb(5%):KGW

PROPERTIES OF Yb:KGW AND Yb:KYW

Name	Yb:KGW	Yb:KYW
Yb ³⁺ concentration	0.5–5%	0.5–100%
Crystal structure	monoclinic	monoclinic
Point group	C2/c	C2/c
Lattice parameters	a=8.095Å, b=10.43Å, c=7.588Å, β=94.43°	a=8.05Å, b=10.35Å, c=7.54Å, β=94°
Thermal expansion	α _a =4×10 ⁻⁶ /°C, α _b =3.6×10 ⁻⁶ /°C, α _c =8.5×10 ⁻⁶ /°C	—
Thermal conductivity	K _a =2.6 W/mK, K _b =3.8 W/mK, K _c =3.4 W/mK	—
Density	7.27 g/cm ³	6.61 g/cm ³
Mohs' hardness	4–5	4–5
Melting temperature	1075 °C	—
Transmission range	0.35–5.5 μm	0.35–5.5 μm
Refractive indices (λ=1.06 μm)	n _g =2.033, n _p =2.037, n _m =1.986	—
dn/dt	0.4×10 ⁻⁶ K ⁻¹	0.4×10 ⁻⁶ K ⁻¹
Laser wavelength	1023–1060 nm	1025–1058 nm
Fluorescence lifetime	0.3 ms	0.3 ms
Stimulated emission cross section (E a)	2.6×10 ⁻²⁰ cm ²	3×10 ⁻²⁰ cm ²
Absorption peak and bandwidth	α _a =26 cm ⁻¹ , λ=981 nm, Δλ=3.7 nm	α _a =40 cm ⁻¹ , λ=981 nm, Δλ=3.5 nm
Absorption cross section	1.2×10 ⁻¹⁹ cm ²	1.33×10 ⁻¹⁹ cm ²
Lasing threshold	35 mW	70 mW
Stark levels energy (in cm ⁻¹) of the ² F _{5/2} manifolds of Yb ³⁺ @ 77K	10682, 10471, 10188	10695, 10476, 10187
Stark levels energy (in cm ⁻¹) of the ² F _{7/2} manifolds of Yb ³⁺ @ 77K	535, 385, 163, 0	568, 407, 169, 0


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