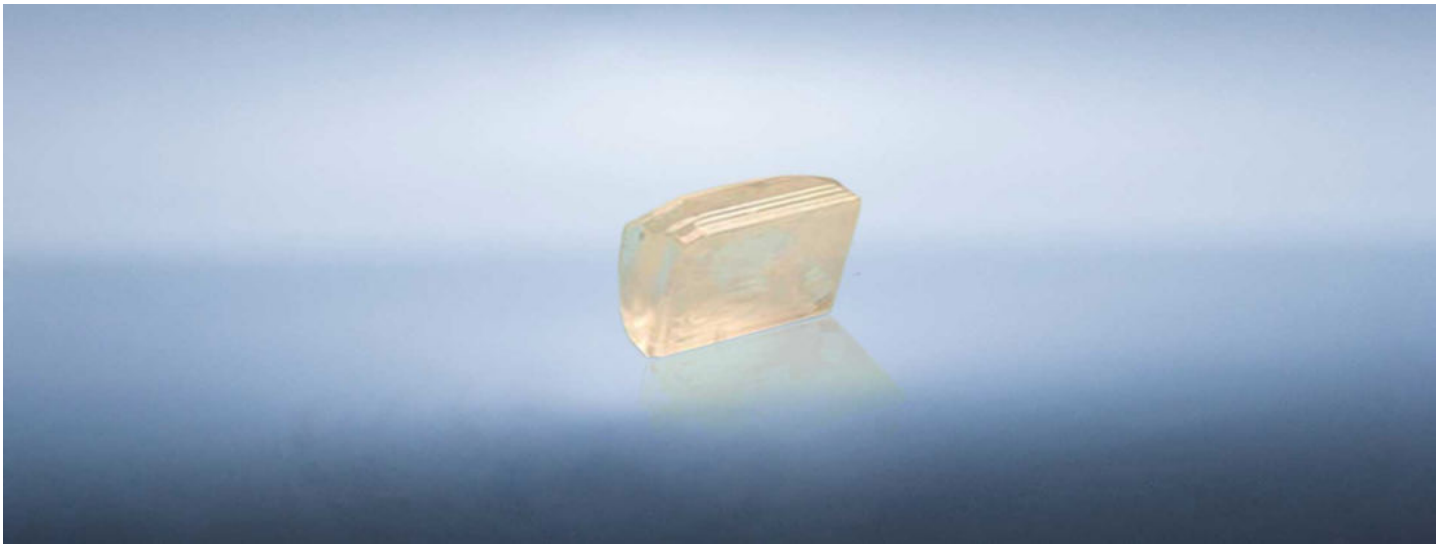
HGTR-KTP



DESCRIPTION

HGTR-KTP (Highly Gray Trace Resistant KTP) crystal, the direct manifestation of gray trace is the appearance of black or gray damage traces inside the crystal, while HGTR-KTP crystal greatly reduces the Ti+3 ion center defect inside the crystal during laser frequency doubling, its nonlinear optical coefficient, high thermal conductivity, small mismatch and small walking away angle, no deliquescence, stable chemical and mechanical properties, is now widely used in Nd:YAG and Nd:YVO4 lasers with 1064-532 nm wavelengths are widely used as frequency doubling crystal materials. In addition, it can also be used to make components for frequency doubling, frequency mixing, electro-optical modulation, optical parametric oscillation and optical waveguide.

FEATURES

- No deliquescence
- High optical quality
- Low half wave voltage
- Large nonlinear coefficient
- High anti ash track performance
- High light damage threshold
- Stable chemical and mechanical properties
- Large range of allowable temperature matching and allowable angle matching

APPLICATIONS

- OPG, OPA and OPO are dimmable in the range of 0.6um-4.5um
- Second harmonic generation and OPO application laser ranging
- Solid state lasers such as Nd doped crystals are mixed to obtain blue light output
- Second harmonic generation of Nd doped crystal laser to obtain green / red light output

HGTR-KTP

PHYSICOCHEMICAL PROPERTIES

attribute	numerical value
chemical formula	HGTR-KTiOPO4
crystal structure	Orthorhombic system, space group pna21 point group
Lattice parameters	a=6.404Å
	b=10.616Å
	c=12.814Å
	Z=8
Mohs hardness	5
density	3.01 g/cm^3
melting point	1172°C
thermal conductivity	13 W/m/K
Coefficient of thermal expansion	a_x=11x10^{-6}/℃
	a_y=9x10^{-6}/℃
	a_z=0.6x10^{-6}/℃

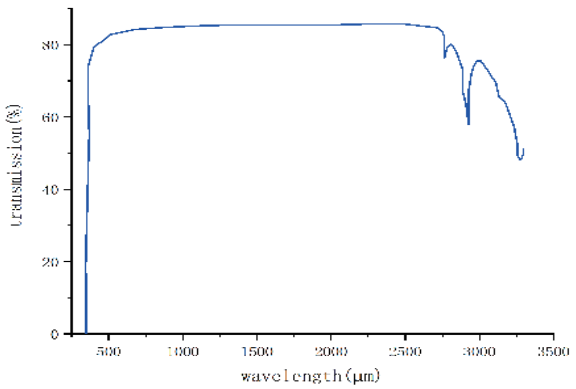
NONLINEAR OPTICAL PROPERTIES

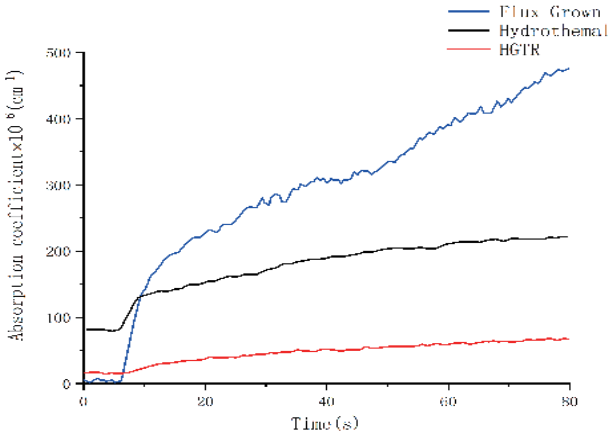
Nonlinear coefficient @1064nm	deff(II)≈(d_{24}-d_{15})sin2φsin2θ-(d_{15}sin2φ
	d_{31}=2.54pm/V
	d_{32}=1.35pm/V
	d_{33}=16.9pm/V
	d_{24}=3.64pm/V
	d_{15}=1.91pm/V
Thermooptic coefficient	dn_x/dT=1.1×10^{-5}/°C
	dn_y/dT=1.3×10^{-5}/°C
	dn_z/dT=1.6×10^{-5}/°C
Damage threshold: [gw/cm]	>0.5 @1064 nm,TEM_{00}, 10ns,10HZ(AR-coated)
	>0.3 @532 nm,TEM_{00}, 10ns,10HZ(AR-coated)

LINEAR OPTICAL PROPERTIES

Transparent range	350-4500 nm
absorption coefficient	<0.1%/cm @1064 nm
	<1%/cm @532 nm
Refractive index	n_x=1.7377, n_y=1.7453, n_z=1.8297 @1064nm
	n_x=1.7780, n_y=1.7886, n_z=1.8887 @532nm
Sellmeier equation (λin μm)	n_x^2=3.0065+0.03901/(λ^2-0.04251)-0.01327λ^2

SPECTRA





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