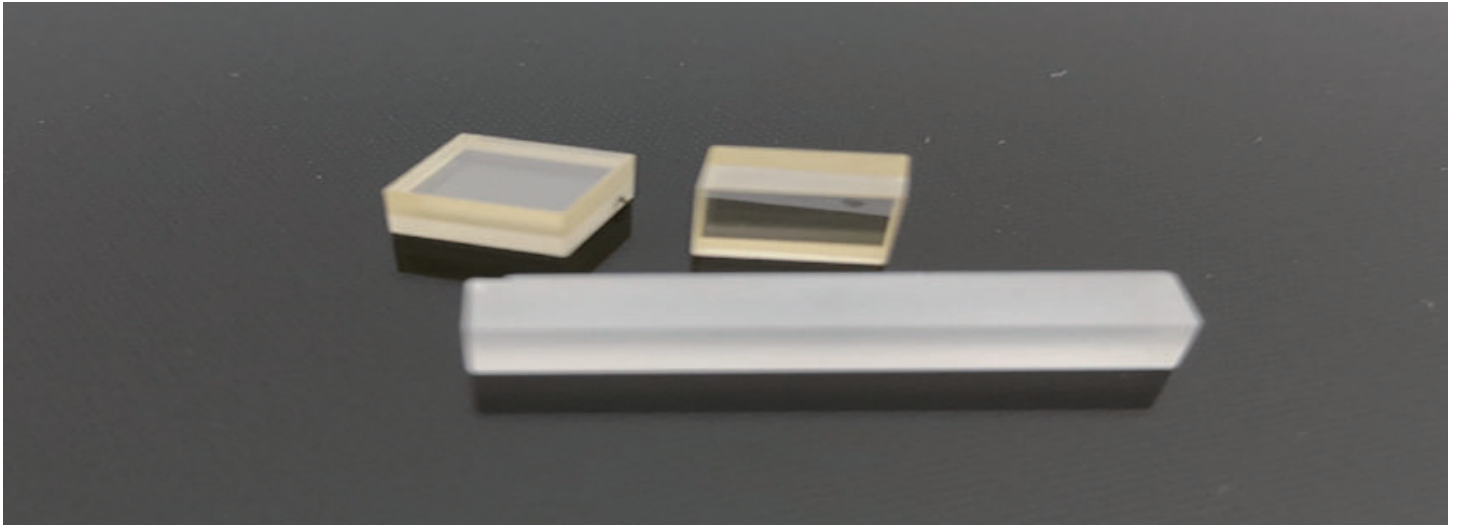


KTA



DESCRIPTION

KTiOAsO_4 (Potassium Arsenate Titanium Oxide) crystal is an excellent nonlinear material, one of KTP crystals, compared with KTP, KTA has a larger nonlinear optical coefficient, wider angle and temperature matching bandwidth; can be pumped with Nd:YAG (1064 nm) laser, can achieve non-critical phase matching; has a lower electrical conductivity and ionic conductivity than KTP crystal. The high thermal conductivity of KTA is suitable for high frequency and high energy mid-infrared output because it does not produce thermal lensing effect during high power laser pumping; the absorption loss of KTA in the spectral range of 3000 nm~5000 nm is much lower than that of KTP crystal.

The absorption loss of KTA is much lower than that of KTP crystal in the spectral range from 3000 nm to 5000 nm (solving the absorption peak problem of KTP crystal near 3.4 μm), and has a relatively high resistance to optical damage, which is widely used in optical parametric oscillators (OPO) in the mid-infrared.

FEATURES

- High damage threshold
- Wide angle and temperature bandwidth
- Low dielectric constant and ionic conductivity
- 3.0-4.0 μm band has less stable absorption performance
- Large nonlinear optical and electro-optical coefficients and high conversion efficiency
- The antireflective film from visible light to 3300nm can be plated
- Large size crystals can be provided, and the maximum size can reach 10x10x30mm³ or 5x5x35mm³

APPLICATIONS

- Optical parametric oscillation (OPO)
- Sum and difference frequency generation (SFG) / (DFG)
- Optical waveguide electro-optic Q-switch and modulation
- Frequency doubling (SHG @ 1083nm-3789nm)



KTA

PHYSICAL AND CHEMICAL PROPERTIES

| attribute | numerical value |
|----------------------|--|
| chemical formula | KTiOAsO ₄ |
| crystal structure | Orthorhombic system, point group mm ² |
| Lattice parameters | a=13.125Å, b=6.5716Å, c=10.786Å |
| melting point | 1130 °C |
| Mohs hardness | Approaching 5 |
| density | 3.454g/cm ³ |
| thermal conductivity | K ₁ :1.8W/m/K; K ₂ : 1.9W/m/K; K ₃ : 2.1W/m/K |

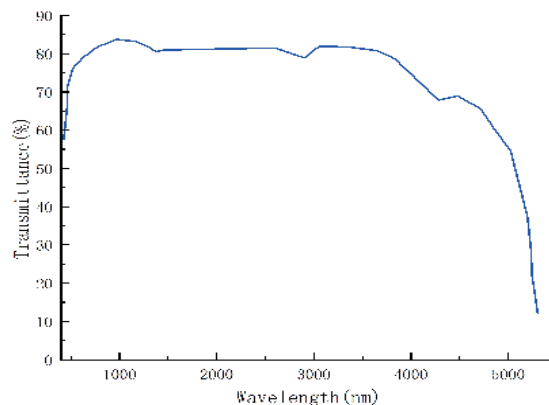
LINEAR OPTICAL PROPERTIES

| | | | | | |
|--|--------------------|---------|---------|---------|---------|
| Transmission range | 350-5300nm | | | | |
| absorption coefficient | @ 1064 nm<0.05%/cm | | | | |
| | @ 1533 nm<0.05%/cm | | | | |
| | @ 3475 nm<5%/cm | | | | |
| Sellmeier equation $n_i^2 = A_i + B_i \lambda^2 / (\lambda^2 - C_i) - D_i \lambda^2$ (λ in μm) | Refractive index | A | B | C | D |
| | n _x | 1.90713 | 1.23522 | 0.19692 | 0.01025 |
| | n _y | 2.15912 | 1.00099 | 0.21844 | 0.01096 |
| | n _z | 2.14768 | 1.29559 | 0.22719 | 0.01436 |

NONLINEAR OPTICAL PROPERTIES

| | |
|---|-------------------------|
| NLO (pm/v) polarizability | d ₃₁ = 2.76 |
| | d ₃₂ = 4.74 |
| | d ₃₃ = 18.5 |
| | d ₁₅ = 2.3 |
| | d ₂₄ = 3.2 |
| Electro optic constant (pm/v) (low frequency) | r ₃₃ = 37.5; |
| | r ₂₃ = 15.4; |
| | r ₁₃ = 11.5 |
| SHG phase matching range | 1083-3789nm |

SPECTRA



KTA

