

# Potassium Titanyl Arsenate(KTiOAsO<sub>4</sub>, KTA)

## Introduction

Potassium Titanyl Arsenate (KTiOAsO<sub>4</sub>), or KTA crystal, is an excellent nonlinear optical crystal for Optical Parametric Oscillation (OPO) application. It has better non-linear optical and electro-optical coefficients, significantly reduced absorption in the 2.0-5.0 μm region, broad angular and temperature bandwidth, low dielectric constants. And its low ionic conductivities result in higher damage threshold compared with KTP .

## CASTECH offers KTA

- Crystal length from 0.1mm to 30mm and size up to 10x10x30mm
- AR-coating from visible to 3300nm
- Re-polishing, re-coating service
- Fast delivery(10 working days for polished only, 15 working days for AR-coated)

**Table 1. Basic properties**

Crystal Structure	Orthorhombic, point group mm2,
Lattice Parameter	a=13.125Å, b=6.5716Å, c=10.786Å
Melting Point	1130 °C
Mohs Hardness	near 5
Density	3.454g/cm <sup>3</sup>
Thermal Conductivity	K1:1.8W/m/K; K2: 1.9W/m/K; K3: 2.1W/m/K

**Table 2. Optical and Nonlinear Optical Properties**

Transparency Range	350-5300nm				
Absorption Coefficients	@ 1064 nm <0.05 %/cm @ 1533 nm <0.05 %/cm @ 3475 nm <5%/cm				
NLO Susceptibilities (pm/V)	d <sub>31</sub> = 2.76, d <sub>32</sub> = 4.74, d <sub>33</sub> = 18.5 , d <sub>15</sub> = 2.3, d <sub>24</sub> = 3.2				
Sellmeier Equation N <sub>i</sub> <sup>2</sup> =A <sub>i</sub> +B <sub>i</sub> λ <sup>2</sup> /(λ <sup>2</sup> -C <sub>i</sub> <sup>2</sup> )-D <sub>i</sub> λ <sup>2</sup> (λ in μm)	index	A	B	C	D
	n <sub>x</sub>	1.90713	1.23522	0.19692	0.01025
	n <sub>y</sub>	2.15912	1.00099	0.21844	0.01096
	n <sub>z</sub>	2.14768	1.29559	1.22719	0.01436
Electro-optical Constants (pm/V) (low frequency)	r <sub>33</sub> =37.5; r <sub>23</sub> =15.4; r <sub>13</sub> =11.5				
SHG Phase Matchable Range	1083-3789nm				