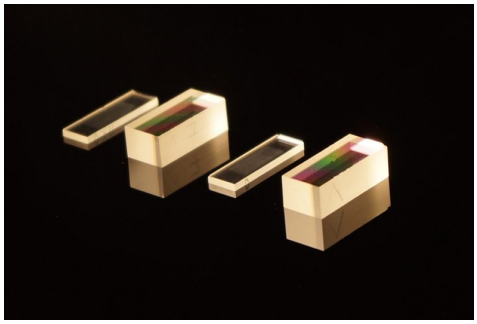
PPKTP (Periodically Poled KTiOPO4) Crystal for SPDC and SHG, up to 30 mm

Model WQ-NLC-PPKTP · waveqvanta.com/products/ppktp-periodically-poled-ktp-crystal



Periodically poled potassium titanyl phosphate (PPKTP) is a ferroelectric nonlinear crystal with a periodically reversed domain structure for quasi-phase-matching (QPM). QPM uses the largest nonlinear coefficient, d33 = 16.9 pm/V, without spatial walk-off and allows phase matching across the crystal's transparency range. WaveQuanta supplies PPKTP made to order for SPDC, SHG, SFG, DFG/OPO and backward-wave OPO designs.

Key features

- Quasi-phase-matched interaction using d33 = 16.9 pm/V, with no spatial walk-off
- Designs for process wavelengths from 390 nm to 3400 nm, with poling periods from 400 nm
- Crystal lengths from 1 mm up to 30 mm
- Optical apertures up to 4 × 4 mm^2 on request
- Bandwidth, temperature setpoint and output polarizations can be engineered for the application
- Aperiodic poling available for SPDC with high spectral purity
- Optional AR and HR coatings
- For a quote, specify process wavelengths, input/output polarizations, crystal length, aperture and coatings

Specifications

Material	Periodically poled KTiOPO4 (PPKTP)
Phase-Matching Method	Quasi-phase-matching (QPM); periodic or aperiodic poling
Nonlinear Coefficient	d33 = 16.9 pm/V
Process Wavelength Range	390–3400 nm
Poling Period	From 400 nm
Crystal Length (X)	1–30 mm
Crystal Width (Y)	1–7 mm
Thickness (Z)	1–4 mm
Grating Width (W)	1–4 mm
Optical Aperture (W × Z)	Up to 4 × 4 mm^2
Coatings	Optional AR and HR coatings

Standard sizes

Size	Cut / orientation	Surface / coating	Mount
1 × 5 × 19 mm (crystal 1 × 6 × 19.6 mm)	Type II, period 9.96 µm	Blank	Unmounted
1 × 1.5 × 2 mm (crystal 1 × 4.5 × 2 mm)	—	AR/AR @ 1025–1060 nm (R < 0.2%) + 2000–2500 nm (R < 1.5%)	Unmounted
1 × 2 × 10 mm	Period 9 µm	S1: HR @ 532 + 1064 nm (R > 99.9%); S2: AR @ 532 + 1064 nm (R < 0.1%)	Unmounted

Values are typical and subject to change. Custom sizes, cut angles and coatings are available on request.

Size	Cut / orientation	Surface / coating	Mount
1 × 2 × 4 mm	Type II, period 46.2 µm	S1: AR @ 750–800 nm (R < 0.5%) + 1500–1600 nm (R < 0.5%); S2: AR @ 750–800 nm (R < 3%)	Unmounted
1 × 2 × 10 mm	Type 0, period 3.17 µm	AR/AR @ 795 + 397 nm	Unmounted
2 × 2 × 10 mm	Period 4.15 µm	S1: AR @ 852 nm (R ≤ 1%); S2: AR @ 852 + 426 nm (R ≤ 1%)	Unmounted
2 × 2 × 18 mm	Period 4.15 µm	S1: AR @ 852 nm (R ≤ 1%); S2: AR @ 852 + 426 nm (R ≤ 1%)	Unmounted

Typical applications

- Spontaneous parametric down-conversion (SPDC) for entangled photon pairs, squeezed states, quantum key distribution and ghost imaging
- Second harmonic generation, e.g. green light from lasers around 1 µm
- Sum-frequency generation for upconversion detection, spectroscopy, biomedical imaging and sensing
- Difference-frequency generation, OPOs and OPAs for spectroscopy, sensing and communications
- Backward-wave OPOs (BWOPO) using counter-propagating interactions in compact designs