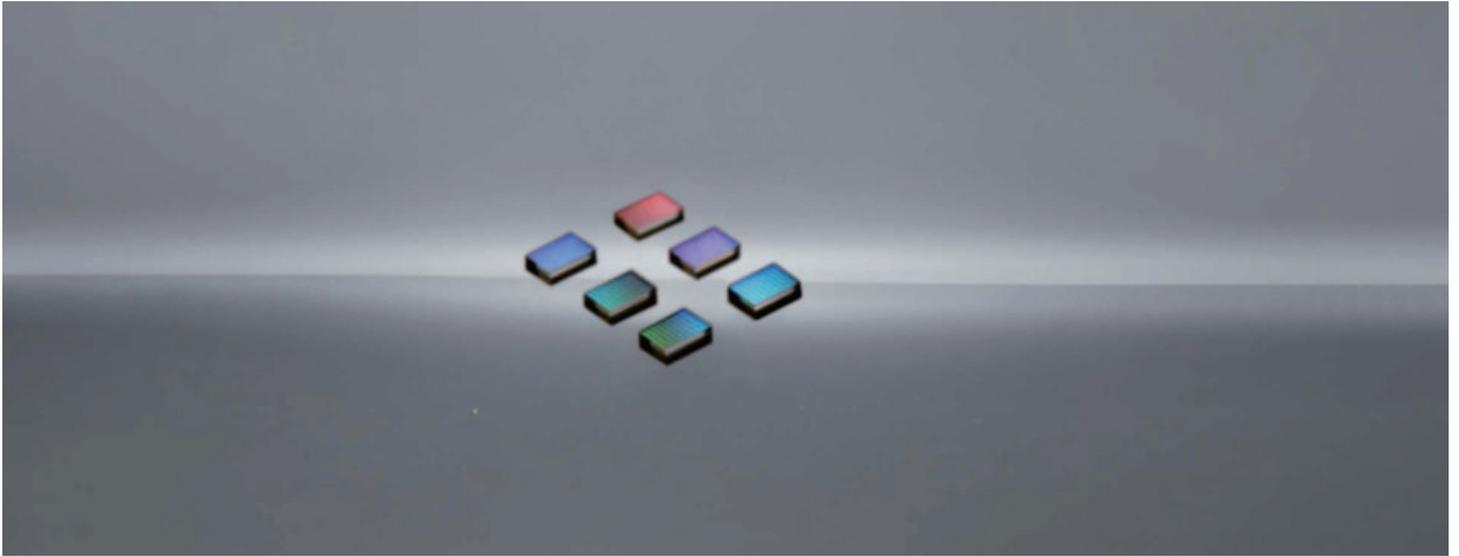


PPLN



DESCRIPTION

PPLN (Periodically Polarized Lithium Niobate) is an efficient wavelength conversion nonlinear crystal, because periodic polarization does not change the optical properties of the crystal, so PPLN has the characteristics of LiNbO_3 , wide transmission range (0.4-4.5 μm), meets the maximum nonlinear coefficient $d_{33}=17.3$ pm/V under quasi-phase matching, has high gain and low loss, covers the near and mid Infrared region, long service life, can be used for frequency doubling, differential frequency, and frequency and optical parametric oscillation and optical parametric amplification, so it is widely used in optical parametric variation oscillator. The OPO process using PPLN can obtain light of 3~4.5 μm wavelength, which can realize the wavelength band that is difficult to achieve efficient output by conventional phase matching, and has a wide application prospect.

FEATURES

- Long service life;
- Wide light transmission range;
- High nonlinear coefficient;
- High damage resistance threshold;
- Can be visible to the middle and far infrared band;
- Can be used for uniform/multi-period/sector QPM structure;
- Can be used for up conversion (SHG/SFG) and down conversion (DFG/OPA/OPG/OPO) mixing configuration.

APPLICATIONS

- Electro-optical effect;
- Optical parametric amplification;
- Quasi-phase frequency conversion;
- Optical parametric oscillation;
- Second harmonic generation (SHG);
- High order harmonic generation (HHG);
- Double, difference and sum of laser frequencies.



PPLN

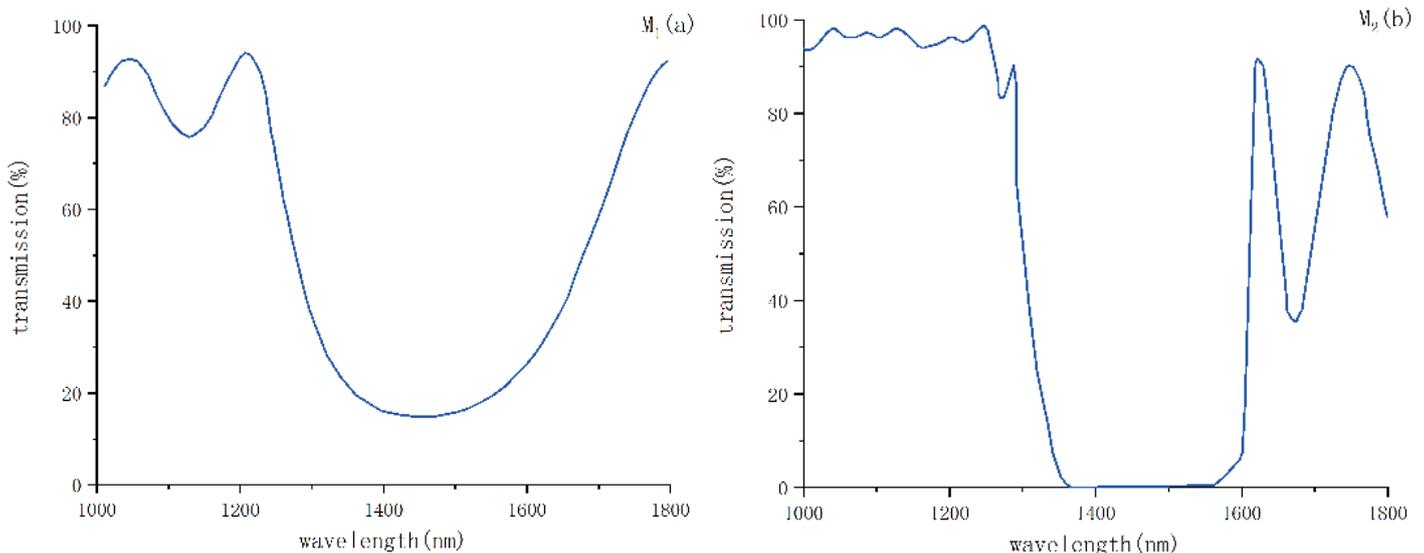
STANDARD REQUIREMENTS

Standard Requirement			
Length	5 ~ 60mm	Cross section	4*1 ~ 20*20mm ²
Transmission wavefront distortion	$\lambda/4$ @ 633nm	Surface Finish	10-5, coating 20-10
Parallelism	< 20 arc sec.	Flatness	$\lambda/8$ @ 633nm
Perpendicularity	< 5 arc sec.	Extinction Ratio	300:1 – 500:1
Damage Threshold	100MW/cm ² 10ns 1064nm 10Hz (PPLN switch)		
	200MW/cm ² 10ns 1064nm 10Hz (MgO: PPLN switch)		
Refractive Index	$n_e^2 = a_1 + b_1 f + (a_2 + b_2 f) / \{\lambda^2 - (a_3 + b_3 f)^2\} + (a_4 + b_4 f) / (\lambda^2 - a_5^2) - a_6 \lambda^2$ $f = (T - 24.5) / (T + 570.82)$		

SELLMEIER EQUATION COEFFICIENTS OF PPLN CRYSTALS DOPED WITH 5% MgO

Parameters	Value	Parameters	Value
a_1	5.756	a_6	1.32×10^{-2}
a_2	0.0983	b_1	2.860×10^{-6}
a_3	0.202	b_2	4.7×10^{-8}
a_4	189.32	b_3	6.113×10^{-8}
a_5	12.52	b_4	1.516×10^{-4}

SPECTRA



PPLN

SPECTRA

