■ EKSMA社製非線形光学結晶　LBO結晶

Physical and Optical Properties	
Chemical formula	LiB_3O_5
Crystal structure	orthorhombic, mm^2
Optical symmetry	Negative biaxial
Space group	Pna21
Density	2.47 g/cm^3
Mohs hardness	6
Optical homogeneity	$\partial n = 10^{-6}$ cm^{-1}
Transparency region at "0" transmittance level	155 – 3200 nm
Linear absorption coefficient at 1064 nm	< 0.01 % cm^{-1}
Refractive indices:	nx ny nz
at 1064 nm	1.5656 1.5905 1.6055
at 532 nm	1.5785 1.6065 1.6212
at 355 nm	1.5971 1.6275 1.6430
Sellmeier equations (λ, μm)	$nx^2 = 2.4542 + 0.01125 / (\lambda^2 – 0.01135) – 0.01388\ \lambda^2$
	$ny^2 = 2.5390 + 0.01277 / (\lambda^2 – 0.01189) – 0.01849\ \lambda^2 + 4.3025 \times 10^{-5}\lambda^4 - 2.9131 \times 10^{-5}\lambda^6$
	$nz^2 = 2.5865 + 0.01310 / (\lambda^2 – 0.01223) – 0.01862\ \lambda^2 + 4.5778 \times 10^{-5}\lambda^4 - 3.2526 \times 10^{-5}\lambda^6$
Phase matching range Type 1 SHG	554 – 2600 nm
Phase matching range Type 2 SHG	790 – 2150 nm
NCPM SHG temperature dependence:	
Type 1 range 950 – 1300 nm	$T1 = - 1893.3\lambda^4 + 8886.6\lambda^3 – 13019.8\lambda^2 + 5401.5\lambda + 863.9$
Type 1 range 1300 – 1800 nm	$T2 = 878.1\lambda^4 – 6954.5\lambda^3 + 20734.2\lambda^2 – 26378\lambda + 12020$
Type 2 range 1100 – 1500 nm	$T3 = - 21630.6\lambda^4 + 112251\lambda^3 – 220460\lambda^2 + 194153\lambda – 64614.5$
NCPM SHG at 1064 nm Type 1 temperature	149 °C
NCPM SHG at 1319 nm Type 2 temperature	43 °C
Walk-off angle	7 mrad (Type 1 SHG 1064 nm)
Thermal acceptance	6.4 K×cm (Type 1 SHG 1064 nm)
Angular acceptance	6.5 mrad×cm (Type 1 SHG 1064 nm)
	248 mrad×cm (Type 1 NCPM SHG 1064 nm)
Nonlinearity coefficients at 1064nm:	$d_{31} = -(0.98±0.09)$ pm/V
	$d_{32} = (1.05±0.09)$ pm/V
	$d_{33} = (0.05±0.006)$ pm/V
Effective nonlinearity:	
XY plane	$d_{ooe} = d_{32} \cos\varphi$
YZ plane	$d_{oeo} = d_{eoo} = d_{31} \cos\theta$
Expansion coefficients:	$\alpha_x = 10.8 \times 10^{-5}$ K^{-1}
	$\alpha_y = -8.8 \times 10^{-5}$ K^{-1}
	$\alpha_z = 3.4 \times 10^{-5}$ K^{-1}

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