

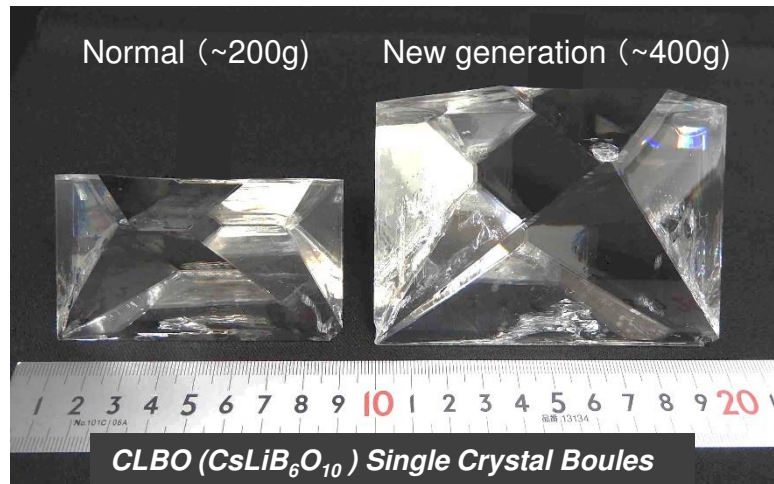
# CLBO



Unrivaled NLO Crystal Grown by Our Cutting-Edge Technology

## Advantages

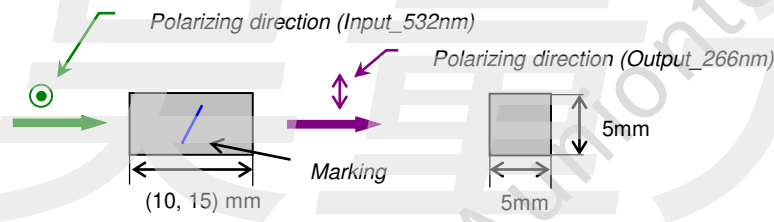
- ✓ Short cut-off at 180nm
- ✓ Large Angle Tolerance
- ✓ Small Walk-off Angle
- ✓ No Saturation for High-Power Generation



## Typical Specifications

### For 266nm

Cut Angle:  $\theta = 62.0$  deg.,  $\phi = 45$  deg.  
Dimensions: 5x5x10mm, Both Surfaces: Optically Polished



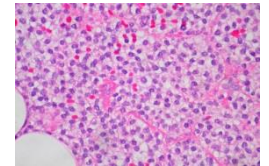
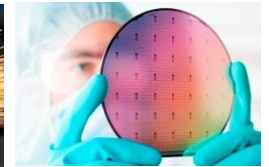
\*Cut angle and dimensions are selectable.

**Large clear aperture up to ~20mm available now!**



## Application

- ✓ Machining
- ✓ Micro Processing
- ✓ Semiconductor Inspection
- ✓ Bio-Medical
- ✓ UV-LIDAR



**The sole official licensee**

Comprehensive set of licensed patents, including material, its application and use

CLBO crystal : JPN #2812427,#2744604 USA #6296784, #5998313 EU #693581, #786542

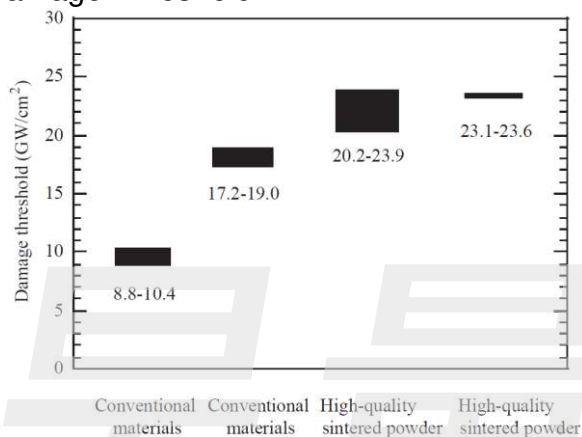
Application : JPN #4911494 USA #794863 CHN #ZL200780006027.X TWN #I408482

# Properties & Sellmeier's Equations

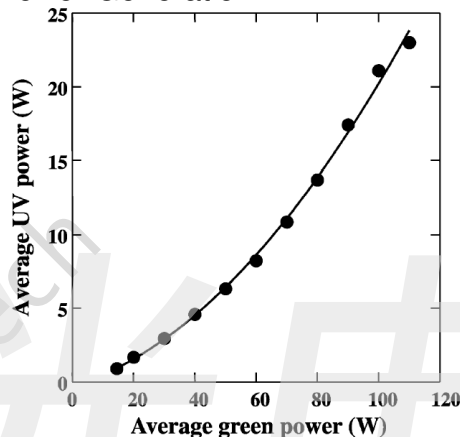
Wavelength (nm)	NLO Crystal	Phase Matching Angle (deg)	deff (pm/V)	Angle Tolerance (mrad · cm)	Walk-off Angle (deg)
1064+532 = 355	CLBO	48.9	0.71	0.92	2.11
	BBO	34.6	2.01	0.24	4.47
532+532 = 266	CLBO	62.0	0.79	0.55	1.84
	BBO	47.7	1.75	0.19	4.89
1064+266 = 213	CLBO	68.3	0.95	0.48	1.66
	BBO	51.1	1.95	0.13	5.51

Remark: PMT = 150 degree-C @CLBO, 27 degree-C @BBO

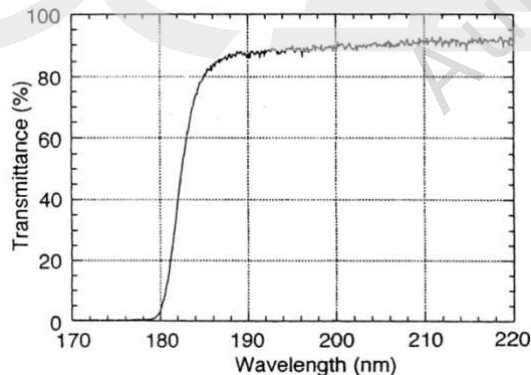
## Damage Threshold



## High Power Generation



## Transmission



## Sellmeier equations

$$n_o^2 = 2.2145 + \frac{0.00890}{\lambda^2 - 0.02051} - 0.01413\lambda^2$$

$$n_e^2 = 2.0588 + \frac{0.00866}{\lambda^2 - 0.01202} - 0.00607\lambda^2$$

(20 degree-C,  $\lambda$  in  $\mu\text{m}$ )

## References

- M.Nishioka, A.Kanoh, M.Yoshimura, Y.Mori, and T.Sasaki, "Growth of CLBO crystals with high laser-damage tolerance", Journal of Crystal Growth 279 (2005) 76-81
- T.Sasaki, Y.Mori, M.Yoshimura, "Progress in the growth of a CsLiB<sub>6</sub>O<sub>10</sub> crystal and its application to ultraviolet light generation", Optical Materials, 23 (2003) 343-351
- N.Umemura and K.Kato, "Ultraviolet generation tunable to 0.185  $\mu\text{m}$  in CsLiB<sub>6</sub>O<sub>10</sub>", Applied Optics, 36 (1997) 6794-6796