BIBO

DESCRIPTION

BiB_3O_6 (Bismuth Borate), abbreviated as BIBO, as a new type of nonlinear optical crystal, not only has the characteristics of no deliquescence, stable physical and chemical properties, high threshold of optical damage, large bifolding rate, and sensitive change of phase matching wavelength with angle, but also has the outstanding advantage that the effective nonlinear coefficient deff can reach 3.32 pm/V, which is higher than the BBO and LBO crystals that are commonly used nowadays, and its conversion efficiency can reach nearly 70% in 1064 nm out-of-cavity frequency doubling experiments. BIBO crystals can be used not only as high-efficiency frequency doubling and frequency summing devices, but also have broad application prospects in the field of optical parametric oscillation (OPO).

FEATURES

- Stable physical and chemical properties
- Moderate light transmission band
- High frequency doubling conversion efficiency
- The threshold of light damage resistance is large
- The effective nonlinear optical coefficient is large
- Not easy to deliquesce

  Temperature receiving angle width

  Good internal optical uniformity and less envelope

APPLICATIONS

- For frequency doubling laser
- For visible femtosecond optical parametric oscillator

BIBO

LINEAR AND NONLINEAR OPTICAL PROPERTIES

Light transmission range	286- 2500 nm
absorption coefficient	<0.1%/cm @ 1064nm
Frequency doubling (1064，532)	Matching angle: 168.9° from Z axis in YZ plane
	Deff： 3.0 +/- 0.1 pm/V
	Receiving angle： 2.32 mrad.cm
	Discrete angle： 25.6 mrad
	Receiving temperature: 2.17° C.cm
axial	X∥b, (Z,a)=31.6°,(Y,c)=47.2°

PHYSICAL AND CHEMICAL PROPERTIES

attribute	numerical value
chemical formula	BiB_3O_6
crystal structure	Monoclinic, point group 2
density	5.033 g/cm^3
absorption coefficient	<0.1%/cm @ 1064nm
specific heat	0.5J/g ·K @ 330K
melting point	726℃
Uniformity	10^{-6}/cm
Mohs hardness	5.5
Deliquescence	weak
damage threshold	500 MW/cm^2 @ 1064nm, 10ns
Thermal expansion coefficient of spindle	-26.4 x 10^{-6}/°C
	50.4 x 10^{-6}/°C
	8.5 x 10^{-6}/°C
Lattice parameters	a=7.116Å
	b=4.993Å
	c=6.508Å
	β=105.62°
	Z=2
	anisotropy
Refractive index	1079.5nm: n_1=1.9166 539.75nm: n_1=1.9260
	1079.5nm: n_2=1.7569 539.75nm: n_2=1.7874
	1079.5nm: n_3=1.7835 539.75nm: n_3=1.8190

SPECTRA