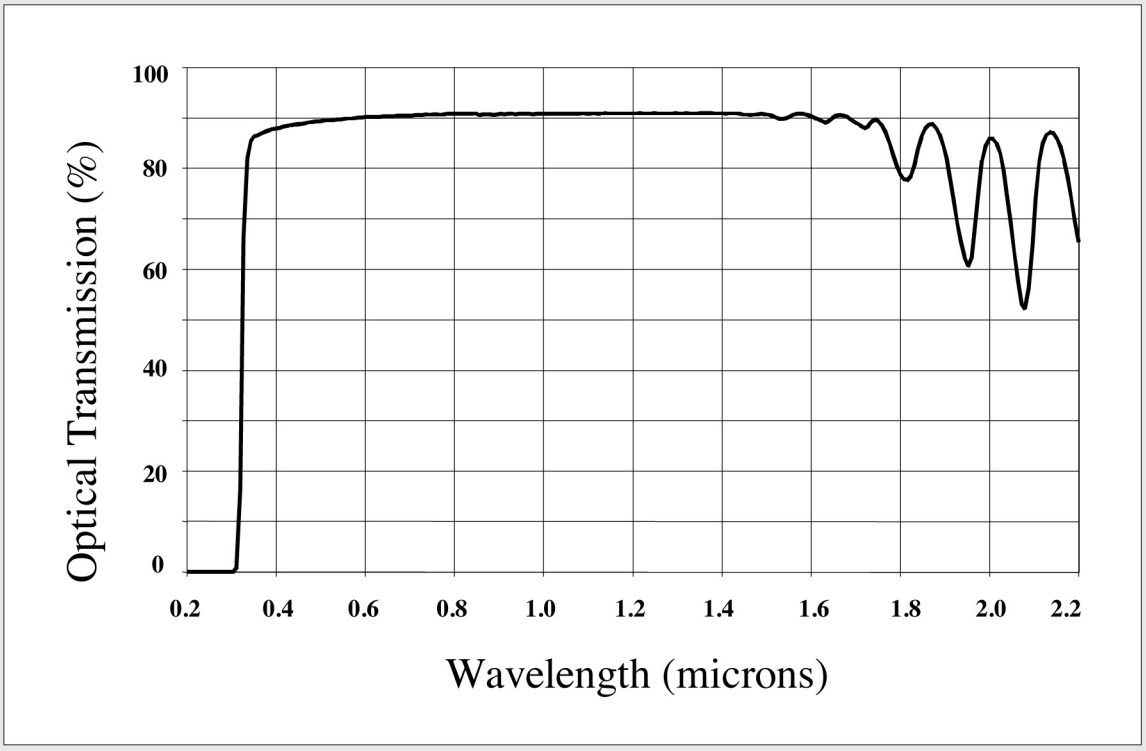
Inradoptics

Barium Nitrate

Barium nitrate single crystals have excellent properties for use as Raman shifters:

- Excellent optical transmission from 350 to 1800 nm.
- Large Raman shift of 1047cm^{-1} toward longer wavelengths.
- High quantum conversion efficiency for first and second Stokes components.
- Very promising for intra-cavity solid state Raman lasers.
- Efficient means to generate 1.53 μm eye-safe wavelengths.



Optical transmission of polished $Ba(NO_3)_2$ single crystal, Z cut, 24.3 mm thick.

PHYSICAL AND OPTICAL PROPERTIES

Chemical Formula	$Ba(NO_3)_2$
Crystal Symmetry and Class	cubic, P23
Lattice Constant	8.11 Å
Density	3.244 g/cm^3
Mohs Hardness	2.5 - 3
Refractive Index[1], λ =0.5461 μm	1.5756
λ =1.06 μm	1.5551
Laser Damage[1] (uncoated (110) surfaces, λ = 0.53 μm, 50 nsec)	10-17 J/cm^2
Vibrational Raman Mode[2]	1047 cm^{-1}

ORDERING INFORMATION

All crystal growth, fabrication, polishing, coating and testing of $Ba(NO_3)_2$ is done at INRAD; you can, therefore, be assured of complete traceability and satisfaction with every crystal that you purchase.

Orientation, Finishing and Coating

Crystals are normally oriented with the laser path along the <110> axis.

Orientation accuracy is typically 3-5 arc-minutes. The entrance and exit faces can be flat and parallel or cut at a Brewster's angle (/ \ or / /). Parallelism of faces is generally held to 3-5 arc-minutes, but tighter parallelism or larger wedge can be supplied if desired. Transmitted wavefront is typically λ/6 on 50 mm long crystals. Crystals can be provided with a protective dielectric coating that protects the polished surfaces from fogging due to ambient moisture. Protective coatings also reduce the Fresnel reflective losses.

Sizes

Cross sections up to 10 mm x 10 mm and lengths up to 75 mm can be supplied.

Request a quote at:
www.inradoptics.com/rfq-single-crystal-components

LITERATURE CITED
1. V.N. Voitsekhovskii, S.N. Karpukhun, V.E. Yakobson, J. Opt. Technol. 62, 11 (1995).
2. P.G. Zverev, J.T. Murray, R.C. Powell, R.J. Reeves. T.T. Basiev, Opt. Comm. 97, 59 (1993).