

BragGrate™ - Notch Filter (BNF)

Ultra Narrow (<math><10\text{ cm}^{-1}</math>) Bandstop Filter for Rayleigh light suppression

Product Description



BragGrate™ Notch Filter (BNF) is a reflecting volume Bragg grating recorded in a bulk of photosensitive silicate glass. BNF reflects light with bandwidth as narrow as 5 cm^{-1} while all other wavelengths pass unaffected with total transmission as good as 95%. BNFs enable measurements of Stokes and Anti-Stokes Raman bands $< 5\text{ cm}^{-1}$ with a single stage monochromator. The filters can withhold cw light powers exceeding 1 kW, temperatures up to 400°C , and are environmentally stable. The central wavelengths can be controlled with accuracy better than 0.1 nm and can be angle tuned as much as 100 nm.

Standard Parameters

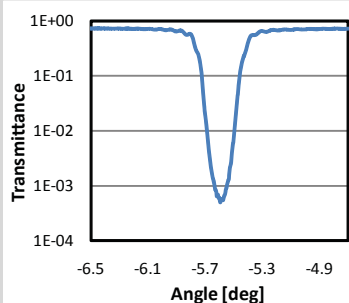
Center Wavelength: 488, 514.5, 532, 632.8, 785, 1064 nm

Spectral Bandwidth (FWHM): $< 10\text{ cm}^{-1}$

Attenuation: 99.9% and 99.99% (OD3; OD4)

Lateral Dimensions: 12.5×12.5 , $11 \times 11\text{ mm}^2$ (90% clear aperture)

Thickness: 2-3 mm



Transmission spectrum of OD3@488 nm BragGrate™ Notch Filter with $12 \times 12\text{ mm}^2$ clear aperture.

Applications

Ultra-low frequency Raman spectroscopy

Specifications

Attenuation: 90-99.99% (OD1-4)

Spectral bandwidth (FWHM): $< 10\text{ cm}^{-1}$

Operating range: 400-2500 nm

BNF thickness: 2-4 mm

Apertures: up to $25 \times 25\text{ mm}^2$

Angular selectivity: 0.1-0.2 deg

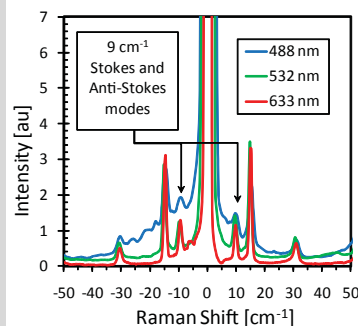
Incident/Diffracted Angles: 0-45 deg

Transmittance: up to 95%

Transmission ripple: $< 1\%$ at $\pm 0.5\text{ nm}$ from laser line (@ 633 nm)

Advantages & Features

- Ultra-narrow rejection bandwidth
- Measurements of both Stokes and anti-Stokes modes
- No degradation in high power light
- Environmentally stable: high temperature operation, no humidity effects
- No polarization dependence



Raman spectra of L-cysteine measured with a single-stage spectrometer and BragGrate™ Notch Filters at 3 different wavelengths. (Courtesy of HORIBA Jobin Yvon)



OptiGrate Corp designs and manufactures a full range of BragGrate™ holographic optical elements (volume Bragg gratings) in inorganic photosensitive silicate glass. OptiGrate pioneered commercial VBG technology and supplied VBG-based diffractive optical components to hundreds of customers on 5 continents. This technology is protected by a portfolio of issued and pending patents.