



BragGrate™ - Notch Filter (BNF)

Ultra Narrow ($<10 \text{ cm}^{-1}$) 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 spectrometer. The filters can withhold cw light powers exceeding 1 kW, temperatures up to 400°C , and are fully 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

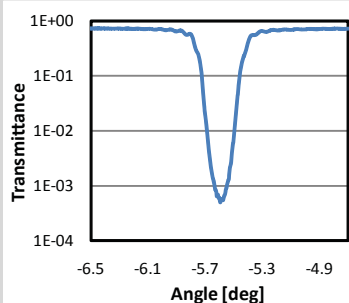
Center Wavelength: 488, 514.5, 532, 632.8, 785, 1064 nm

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

Attenuation: 90; 99%; 99.9% (OD1; OD2; OD3)

Lateral Dimensions: $12.5 \times 12.5 \text{ mm}^2$

Thickness: $\sim 2.5 \text{ mm}$



Transmission spectrum of OD3@488 nm BraggGrate™ 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: 1-70 mrad

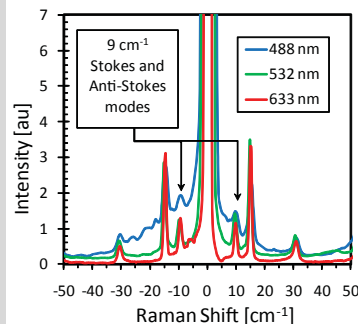
Incident/Diffracted Angles: 0-45 deg

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



OptiGrate Corp is a 10-year old, privately owned company which designs and manufactures a full range of BraggGrate™ holographic optical elements (volume Bragg gratings) in inorganic photosensitive silicate glass. OptiGrate supplies custom built, as well as volume orders of diffractive optical components to hundreds of customers on 5 continents. This technology is protected by a portfolio of issued and pending patents.