



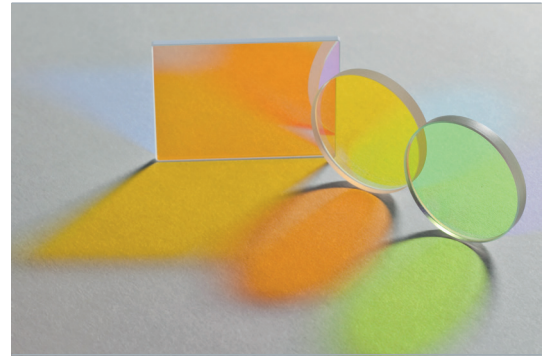
MATERION

// BALZERS OPTICS

Raman Filters

Optical Filters for Raman Spectroscopy

Materion Balzers Optics Raman filters are key components for highly sensitive Raman spectroscopy. Laser blocking filters (longpass, shortpass or notch), laser cleaning filters (narrow bandpass) and dichroic beamsplitters are available for all laser wavelengths between 260 and 1550 nm. The filter performance is realized by all-dielectric hard coatings deposited onto a single substrate. There is a high flexibility for the filter dimensions as required by compact optical set-ups.



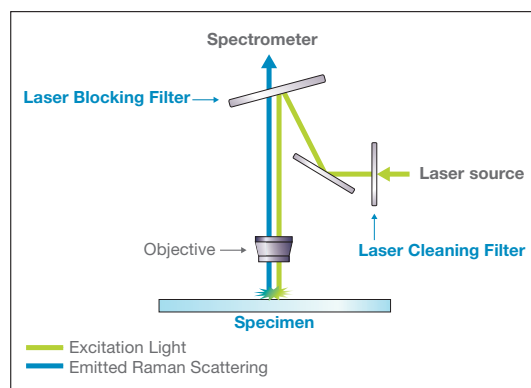
Benefits

- Low loss, flat transmittance range
- OD5 to OD6 blocking
- Steep pass-block transition
- Long-term shift-free spectral performance
- High environmental stability
- Wide flexibility in filter size

Applications

- Raman spectroscopy
- Laser cleaning

Schematic Raman Spectrometer



Technical Data

Wavelength

$\lambda_{\text{laser}} = 260 \dots 1550 \text{ nm}$

Laser Cleaning Filter

FWHM as low as 1.5 nm

$T_{\text{Laser}} > 90 \%$

Broad band blocking OD5 to OD6

Edge Filter

Transition width OD6 – 50 %T as low as 50 cm^{-1}

Flat transmission range, $T > 93 \%$

Blocking of laser wavelength $> \text{OD6}$

Notch Filter

Transition width $\lambda_{\text{laser}} - 50 \%$ T as low as 180 cm^{-1}

High transmission $T_{\text{average}} > 93 \%$

Blocking of laser wavelength $> \text{OD6}$

Beamsplitter

Transition width 90 %R – 90 %T as low as 150 cm^{-1}

Flat transmission range, $T > 93 \%$

$R_{\text{Laser}} > 90 \%$

Angle of Incidence

0° /particular angle between 0° and 8°

45° unpolarized for beamsplitters

Substrate

fused silica or BK7

Dimensions

Standard size $\varnothing 25 \text{ mm}$

Thickness 3 mm

Other dimensions on request

Parallelism

$< 3 \text{ arcmin}$

Surface Defects

$5 / 3 \times 0.1$

Environmental Stability

Temperature $-40 \dots +150^\circ \text{C}$

Humidity up to 99 %

Filter set 532 nm for Raman spectroscopy (measurements)

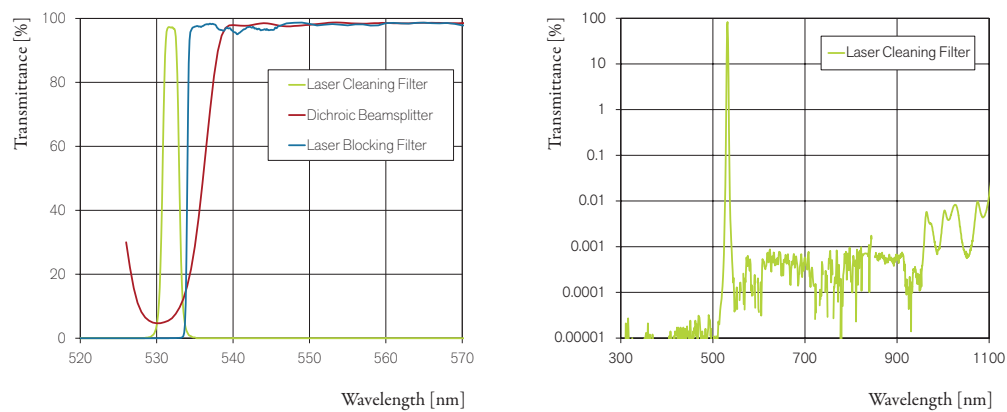


Fig.1: Measured spectra for filter set 532 nm (left), blockband of laser cleaning filter (right).

Edge Filters for Raman spectroscopy (measurements)

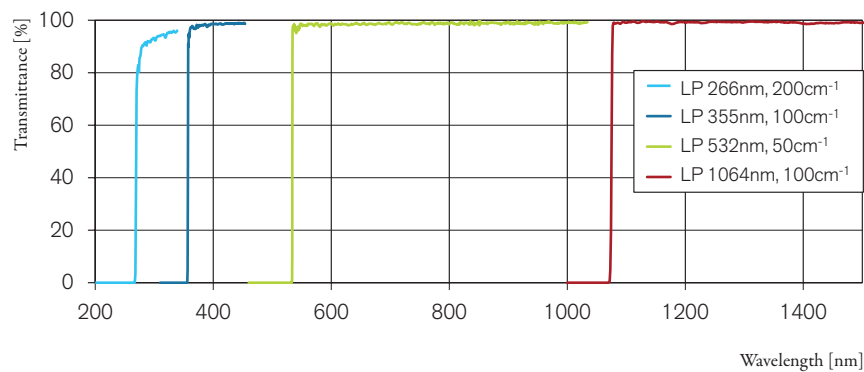


Fig.2: Measured spectra of steep edge laser blocking filters, blocking of laser wavelength >OD6.

Notch Filters for Raman spectroscopy (measurements)

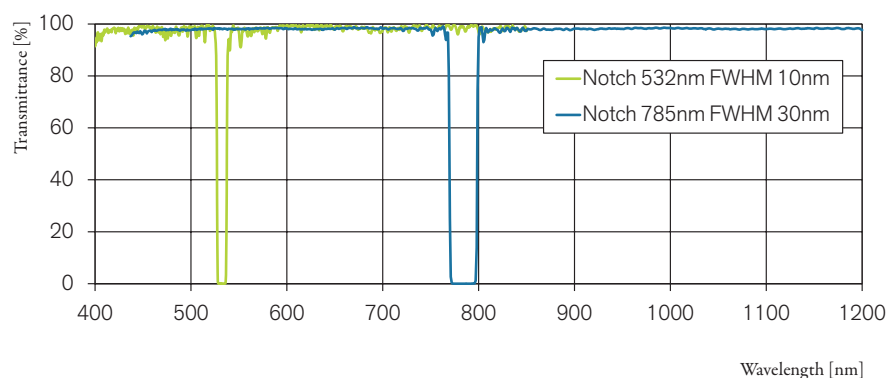


Fig.3: Measured spectra of narrow band notch filters, blocking of laser wavelength >OD6.