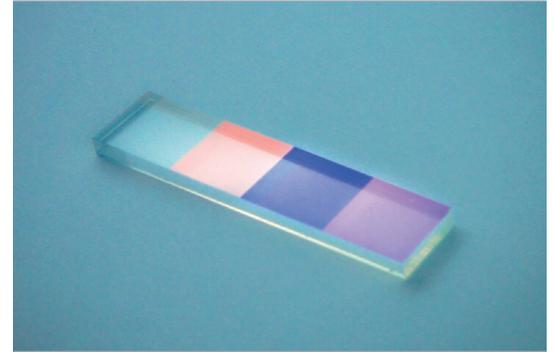


High Precision Order Sorting Filters

High-order suppression in grating-based optical systems

Grating-based optical instruments play a crucial role in a vast range of optical systems. However, the use of diffraction gratings introduces higher diffraction orders that must be addressed. One method to suppress these orders is through a strategic placement of several longpass filters. These filters must have a highly transmitting passband, along with an efficient suppression in the blocking band. Using photolithography, multiple filters with a transition zone of less than 10 μm can be patterned on a single substrate. Additionally, linear variable filters are available for integration into high-end spectrometers. On request, all order sorting filters may be combined with the renowned GelotTM coating for hermitically sealing the detector.



Benefits

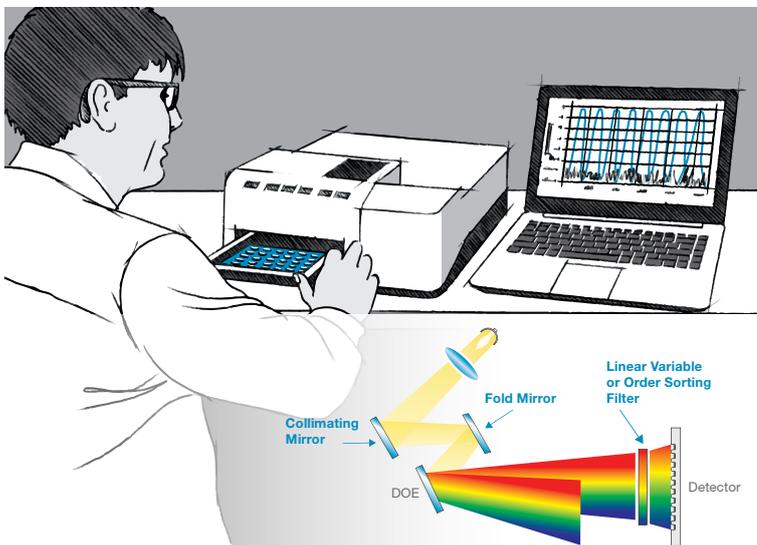
- Customized filter size and design
- Entirely coated, patterned or linear variable filters
- High transmittance in the passband
- Long-term shift-free spectral performance
- Extreme environmental stability
- Compact and cost-effective configuration
- Enables instrument designs with no moving parts for fastest data acquisition

Applications

- «Grating-based» optical devices, e.g. miniature spectrometers
- Sensing, metrology, astronomy

Technical Data

Wavelength	available from UV to NIR range (e.g. 260 nm, 380 nm, 605 nm, 900 nm) or as a continuously variable version (LVF)
Blocking	OD3 – OD8
Transmittance	Tave > 95 % (depending on wavelength range)
Dimensions	per customer request
Parallelism	< 3 arcmin
Surface Defects	e.g. 5 / 1 x 0.1 per ISO 10110-7 or 20-10 per ML-PRF-13830B
Environmental Stability	Temperature - 100 ... + 150 °C Humidity up to 99 %
Transition zone	< 10 μm (conventional OSF) None (Linear variable Filter)



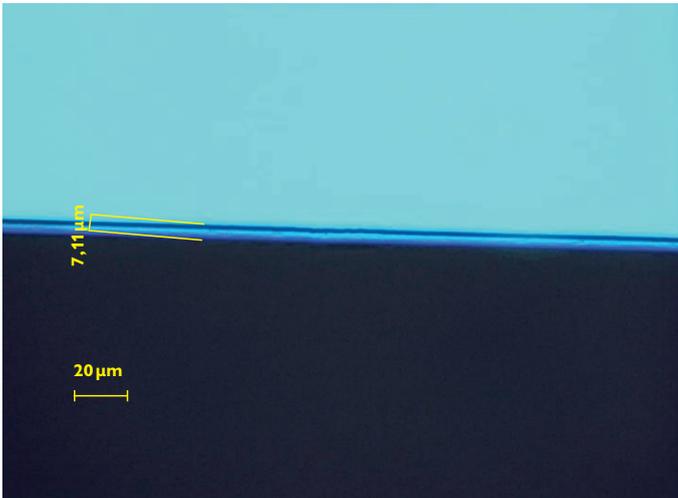


Fig. 1: Using a lithographic approach, a transition region $< 10 \mu\text{m}$ can be achieved between different zones.

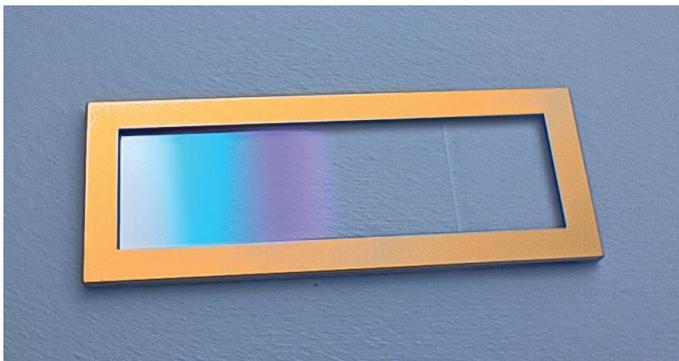


Fig. 2: On request, all filters may be combined with our solderable GelotTM coating for hermetically sealing the detector.

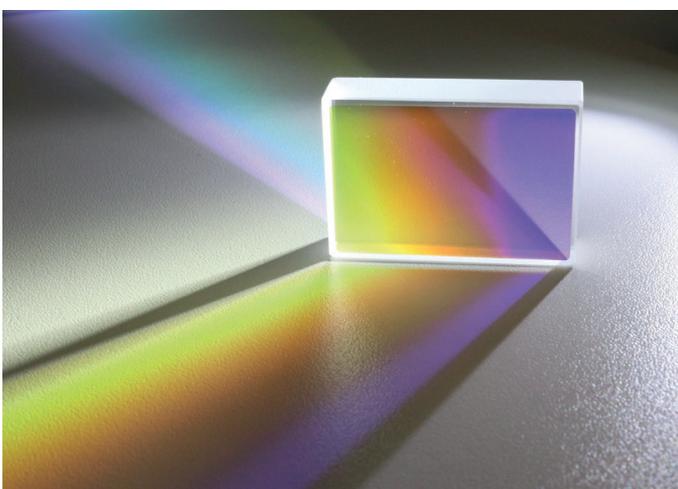


Fig.3: Using a linear variable filter (LVF) instead of a traditional multi-zone filter allows to get rid of all transition regions as the spectral performance varies continuously depending on the lateral position on the filter.

Highly transmitting Order Sorting Filter with broad transmission band

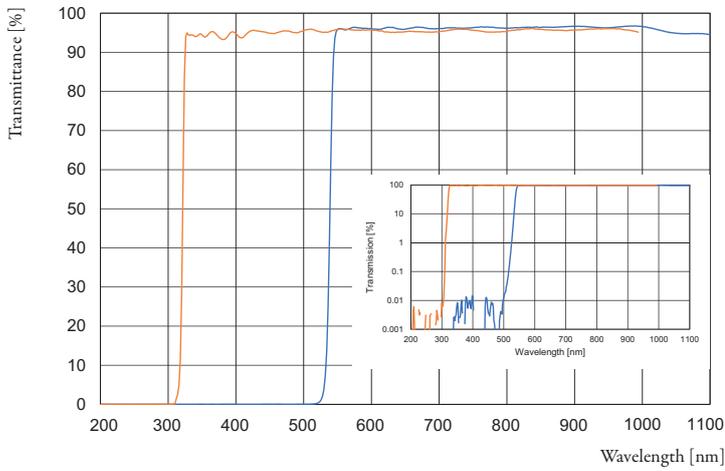


Fig. 4: Measured spectral transmittance of a VIS-Order Sorting Filter with broad transmission bands. Inset: the blocking power is OD4.

High Precision Longpass Filter for IR application

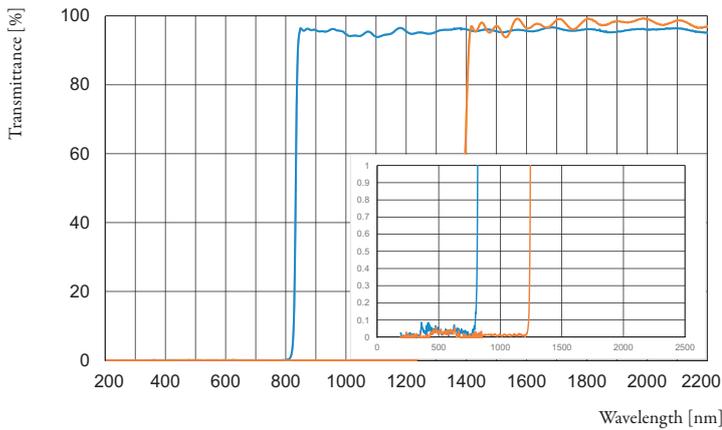


Fig. 5: Measured spectral transmittance of a NIR-Order Sorting Filter. Inset: blocking performance.

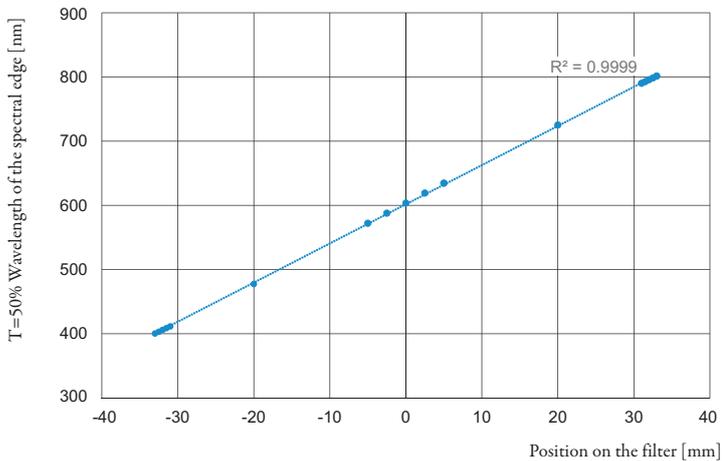


Fig. 6: The spectral performance of an LVF depends linearly on the measurement position.