

Holographic Notch and Narrow Notch Filters

Holographic notch filters (HNF) are state-of-the-art volume holograms that provide high laser attenuation in a very narrow bandwidth. They are ideal for laser spectroscopy. In Raman applications it is possible to collect both Stokes and Anti-Stokes data with tens of wavenumbers of the laser line.

HNFs are made by recording interference pattern formed by laser beams in a layer of dichromated gelatin held between two plate glasses. They have a number of advantages over dielectric interference filters that are made by vacuum deposition of several thin discrete layers with different refractive indices. Firstly, HNFs provide the attenuation in the narrower bandwidth without cutting the useful part of the spectrum in the vicinity of laser line. Secondly, they do not generate the secondary reflection band found in dielectric interference filters.



We produce a variety of notch filter types with excellent optical performance. According to parameter's change they can be divided into 4 different types shown below.

Tab.1 Types of notch filters.

	NOTCH-4	NOTCH-6	NARROW NOTCH-4	NARROW NOTCH-6
<i>Laser attenuation:</i> Optical density (averaged over entire clear aperture)	> 4.0	> 6.0	> 4.0	> 6.0
<i>Spectral bandwidth:</i> Wavenumbers between OD 0.3 or 50% transmission points, cm^{-1}	< 500		< 350	
<i>Spectral edgewidth:</i> Wavenumbers between OD 0.3 and 4.0 points, cm^{-1}	< 250		< 120	
<i>Available wavelength range, nm</i>	400-1200	450-1200	450-1200	
<i>Standard wavelengths, nm</i>	441.6, 457.9, 476.7, 488.0, 514.5, 532.0, 568.2, 632.8, 647.1, 752.5, 785.0, 1064.0		488.0, 514.5, 532.0, 568.2, 632.8, 647.1, 752.5, 785.0, 1064.0	
<i>Laser damage threshold:</i> for CW-lasers, W/cm^2 for pulse-laser ($\tau = 10 \text{ ns}$), J/cm^2			10	0.5
<i>Filter clear aperture:</i> Standard aperture, mm Maximal aperture, mm			25.4	70
<i>Environmental stability:</i> Guaranteed durability, years Temperature working range, C Atmosphere humidity stability at 35 C, % Allowed thermal shock, C			1 from -50 to +50	98 ± 60
<i>Materials of substrates:</i>	Optical glass or fused silica			



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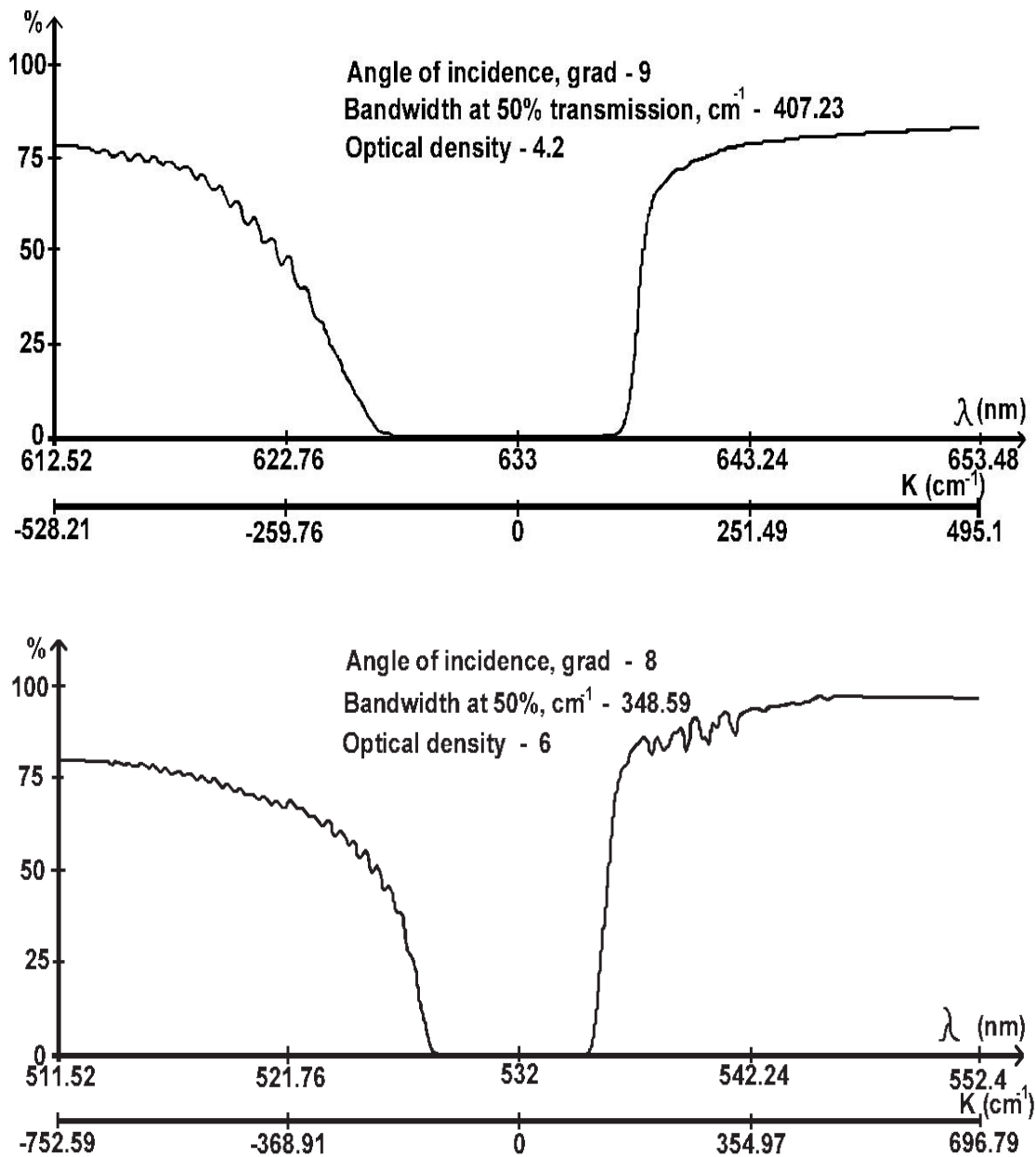


Fig. 1 Typical transmission curves of the Notch-4 filter for 633 nm and Narrow Notch-6 filter for 532 nm.

We believe Tydex's niche is the manufacture of custom made notch filters those are the most competitive against dielectric interference filters in performance and against the standard notch filters of such reference producer like Kaiser regarding the price.

So we recommend you to ask from us even 1 peace of notch filters with the specification differed from Kaiser's standards in terms of *wavelength*, *filter size* and *angle of incidence*.

Please also notice volume discounts for standard filters starting from 3 pcs also can be of interest to you.



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