ONDAX
Filters and Lasers to Bragg About....

Ondax **SureBlock™** Notch Filters and **NoiseBlock™** ASE Filters, based on Ondax's proven Volume Holographic Grating (VHG) technology, enable the observation of very low frequency Raman signals (down to 10 cm^{-1}), providing critical additional information about molecular structures. This compact, robust VHG configuration (Figure 1) provides an inexpensive alternative to cascading spectrometers for capturing low-frequency and anti-Stokes spectra, and can be retrofitted to most existing Raman instruments.

Below are examples of Raman spectra captured on this system. The Sulfur spectra (figure 2) clearly shows both Stokes (red) and Anti-Stokes (blue) shifts with strong suppression of ASE noise around the excitation wavelength. Figure 3 demonstrates the superior low-frequency resolution of this filter combination, showing sharp, identifiable spectra down to about 10 cm^{-1}.

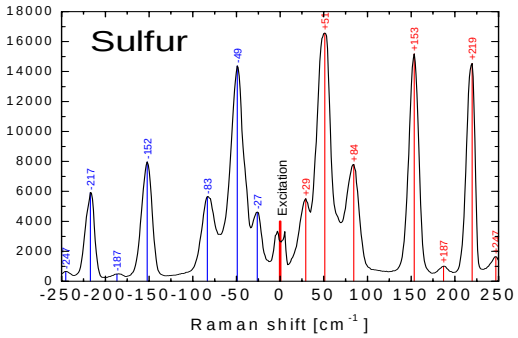


Figure 2: Sulfur Raman Spectra

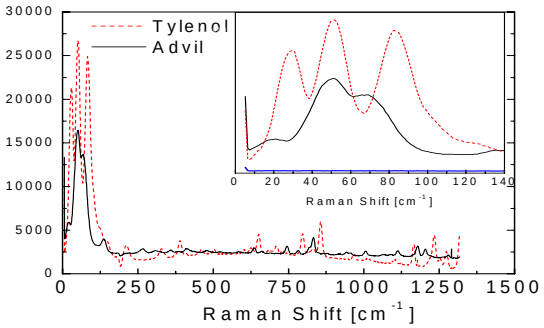


Figure 3: Tylenol and Advil Raman Spectra

Ondax, Inc., located in Monrovia, California is the leading manufacturer of **Volume Holographic Gratings** (VHGs) and wavelength stabilized semiconductor lasers for the industrial, defense, scientific and medical markets. Founded in 2000 by a team from the California Institute of Technology and the University of Bonn, Ondax is the world's largest producer of VHG-based optical components and laser systems. Ondax's technology is protected by more than 20 U.S. and International patents.

Our Products include:

- **PowerLocker® Series** VHG Filters for laser wavelength stabilization
- **SureLock™ Series** wavelength stabilized and single frequency laser
- **SureBlock™ and NoiseBlock™** narrow-band notch and ASE Filters
- **PicoPulse™ Series** pulse compression filters

Wavelengths from U.V. to infrared are available.

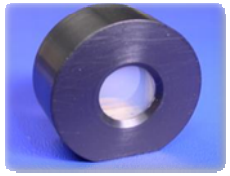
For Immediate Availability and Shipping
Visit our online store at
www.ondax.com

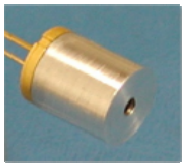
Ondax, Inc.
850 E. Duarte Rd
Monrovia CA 91016
sales@ondax.com
Phone: 626.357.9600

ONDAX
Filters and Lasers to Bragg About....

ONDAX
Filters and Lasers to Bragg About....

Frequency Stabilized Lasers and Components for Raman Spectroscopy





ONDAX
Filters and Lasers to Bragg About....

Raman Instrumentation Laser Sources and Components

Ondax provides a broad range of high-performance Raman lasers and ultra-narrow band ASE suppressor and notch filters that can extend the range of Raman spectrometers:

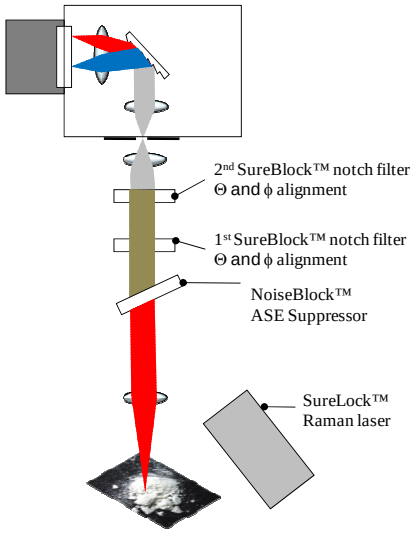
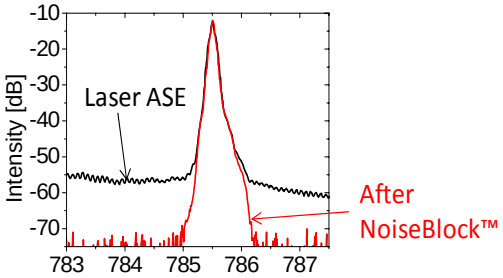


Figure 1: Low frequency Raman system

NoiseBlock™ ASE Filters

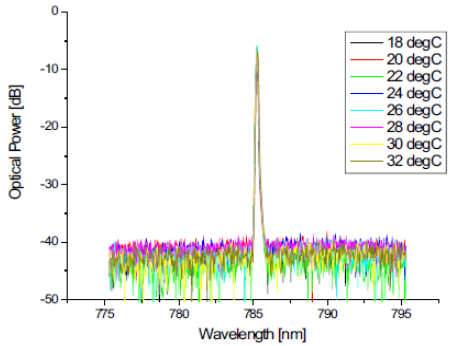
With semiconductor laser Raman sources (such as 780nm, 785nm, and 830nm), the amplified spontaneous emission (ASE) is broadband and needs to be filtered out to match the 50% (FWHM) bandwidth of the notch filter. Ondax provides **NoiseBlock™** ASE suppressors filters from 400nm to 2500nm to perform this critical function.



SureLock™ Wavelength Stabilized Raman Lasers

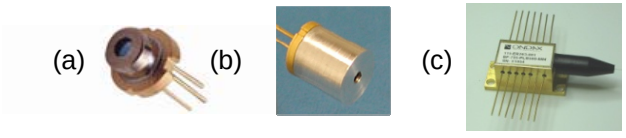
Ondax ***SureLock™*** Lasers are wavelength-locked by the Ondax ***PowerLocker®*** Volume Holographic Grating (VHG), which provides optical feedback to ensure precise, stable wavelength and power over time. VHGs enhance laser diode performance by increasing spectral brightness, locking emission wavelength and increasing long-term stability.

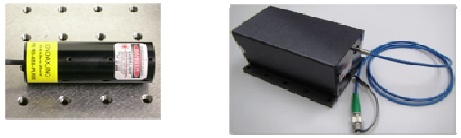
SureLock™ lasers are available with single frequency and power up to 170 mW or a narrowband spectral width (~0.15 nm) at high powers (up to 600 mW).



SureLock Wavelength Stability vs. Temperature

Packaging options: (a) TO-can, (b) collimated cylindrical package, (c) fiber coupled butterfly, (d) free space collimated module including thermal control and current driver, (e) fiber coupled module including thermal control and current driver.





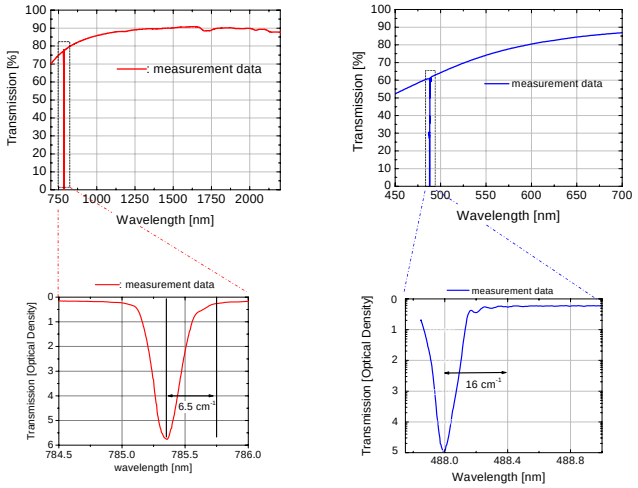
(d) (e)

SureBlock™ Notch Filters

Notch filters are used to attenuate the backscattered light from the laser illuminating a sample, while letting the faint Raman spectrally shifted signature pass through. The ultra-narrow bandwidth of Ondax SureBlock notch filters allow the very low-frequency (~10 cm^{-1}) Raman signals – which are very near the excitation laser frequency – to be resolved..

SureBlock™ notch filters are also "bulk filters," meaning they do not suffer degradation common to other notch filter technologies, delivering virtually unlimited lifetime. With an inherently compact footprint, they provide high transmission efficiency, and are available at standard Raman illumination laser wavelengths such as 488nm, 532nm, 632.8nm, 785nm, or any specified wavelength from 400nm to 1600nm.

	488 nm	532 nm	632.8 nm	78X nm
FWHM (50%) Notch Bandwidth	0.4 nm 16 cm^{-1}	0.45 nm 16 cm^{-1}	0.6 nm 15 cm^{-1}	0.8 nm 13 cm^{-1}
Optical Density @ Laser Line	4.5	4.5	4.5	4.5
Transmission Efficiency (%)	65%	70%	75%	85%



SureBlock Notch Filter Performance