

Headwall's High Efficiency Laser Tuning gratings are optimized for broad band, mode-hop free laser tuning in external cavity diode lasers.

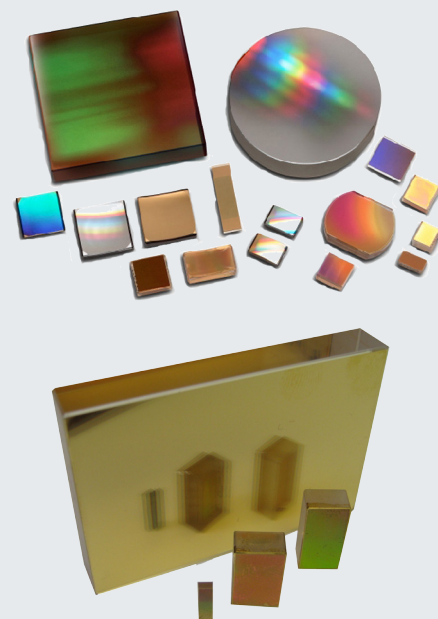
Headwall's high efficiency gratings enable broad tuning ranges and narrow line widths in laser tuning applications across the UV-VIS-NIR spectral regions. Our high efficiency TM polarization designs typically exceed 90% diffraction efficiency over 50 and 100 nm tuning bands. Specialized swept source designs extend to 200 and 500 nm bandwidths of mode-hop free tuning. Diffraction efficiency response is exceedingly flat across the spectral band, which allows our customers to implement a single grating design in multiple laser diode products.

For enhanced thermal stability, laser tuning gratings are fabricated on low expansion glasses (Corning ULE or HPFS). Headwall's gratings are All-Original Holographic Master gratings and never replicated, meaning the first prototype and the 1000th grating will exhibit exactly the same diffraction efficiency, wavefront, insertion loss and environmental stability. Plus, Headwall's diffraction grating products exceed the Telcordia GR-1221 standard for long term environmental survivability performance. For extreme manufacturing or environmental conditions we have a unique high temperature process for thermal environments 150°C and higher.

Through collaborative development, Headwall will optimize the grating performance for your specific cavity geometry and beam requirements. We have experience with designs for single-beam laser products, as well as test & measurement systems for multiple beam arrays, ROADMs, PDL & PDD test systems, and DWDM optical switches. Our laser tuning gratings can be found in laser systems supporting holography, Bose-Einstein and Molecular condensates, laser surgery, Raman and absorption spectroscopy, and microscopy.

Headwall's All-Original gratings perform better than replicated and ion etched silica gratings in high power applications. Holographic originals are the grating of choice for high power fiber lasers and pulsed stretcher/compressors. All-Original gratings can withstand peak power and thermal shock an order of magnitude higher than replicated gratings.

Application-Specific Solutions For Critical Environments



APPLICATIONS

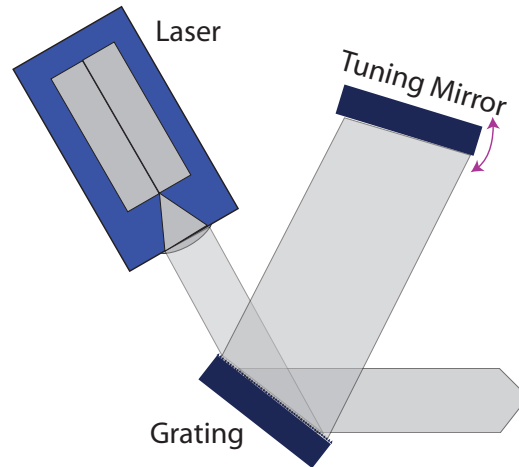
- Swept wavelength lasers
- Holography
- Bose-Einstein and Molecular condensates
- Laser eye surgery
- Microscopy

KEY BENEFITS

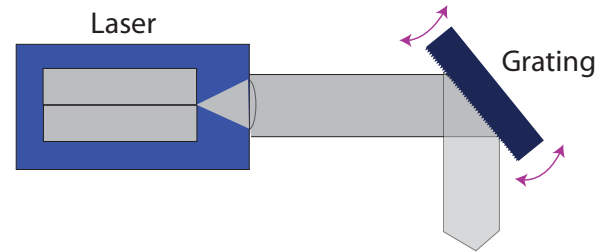
- Rapid prototyping for design evaluation
- Gratings are all-original, not replicates
- Greater than 90% efficiency
- Very low absorption materials
- Exceeds Telcordia GR-1221 standards
- >80° C survivability; to 150° C upon request
- Groove frequencies from 100-4000 gr/mm
- Wavelengths from 200-2300nm

LASER TUNING Littrow Littman-Metcalf	TM (S) Polarization (Typical)
	45% / 45% -1 ST /0 order split (customizable)
	Littrow efficiency > 90%
	Telcordia Compliant (GR-1221). 150° C or higher survivability upon request
Common Specifications	
Wavelengths	from 200-2300nm
Groove Frequencies	100-4000 gr/mm
Coatings	Aluminum and Gold
Flatness	Better than I/10 RMS @ 632.8nm. I/20 typical.
Substrates	ULE (Corning Ultra-Low-Expansion glass)
	HPFS (Corning High-Purity Fused Silica)
Dimensions	Length to 100mm
	Height to 75mm
Groove Perpendicularity	<0.2 deg (default); <0.1 deg (by request)

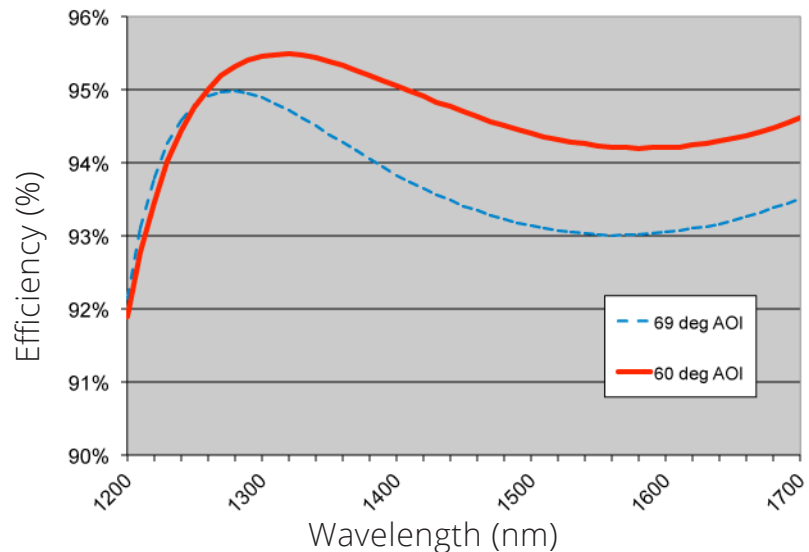
Littman-Metcalf



Littrow



Efficiency v. Wavelength 900 gr/mm AOI 60-69 deg 1200-1700nm



Headwall Photonics is the world's largest manufacturer of 'original' holographic gratings for end-users and OEM customers, targeting the most demanding telecommunication and test & measurement applications.

About Headwall Photonics: Headwall is the leading designer and manufacturer of imaging spectrometers and spectral instrumentation for industrial, commercial, and government markets. Headwall's high performance spectrometers, spectral engines, and holographic diffraction gratings have been selected by OEM and end-user customers around the world for use in critical application environments. As a pioneer in advanced, patented optics technology, Headwall enjoys a market-leading position through the design and manufacture of spectral instrumentation that is customized for application-specific performance.

Information in this document is subject to change without notice. Headwall Photonics, Inc. reserves the right to change or improve its products and specifications and to make changes in content without obligation to notify any person or organization of such changes or improvements. The Hyperspec® name (and all its derivations) is a registered Trademark of Headwall Photonics, Inc.

