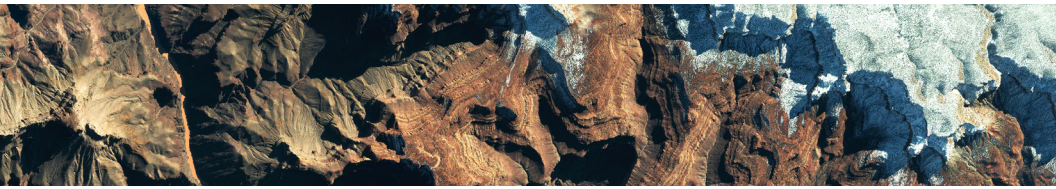
INNOVATIVE SPECTRAL IMAGING

food inspection

precision agriculture



remote sensing

defense & reconnaissance

advanced machine vision

product overview

Headwall

www.headwallphotonics.com

INNOVATIVE SPECTRAL IMAGING

Innovative diffractive optics technology is fundamental to everything Headwall produces. Headwall's own proprietary high-performance diffraction gratings deliver unparalleled, aberration-free imaging performance. Our hyperspectral and Raman instruments are based on all-reflective designs that feature important characteristics such as high SNR, low stray light, very high spatial and spectral resolution, excellent thermal stability, and small-form-factor designs. Headwall combines this advanced optical expertise with collaborative engineering and high-volume manufacturing to move designs from prototype to production rapidly and cost-effectively.

MARKETS SERVED

Petroleum & pipelines

Satellite Earth Exploration

Advanced Machine Vision

Document Verification

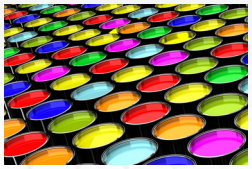
Precision Agriculture

Defense & Reconnaissance

Remote Sensing

Medical Microscopy

Minerals & Mining

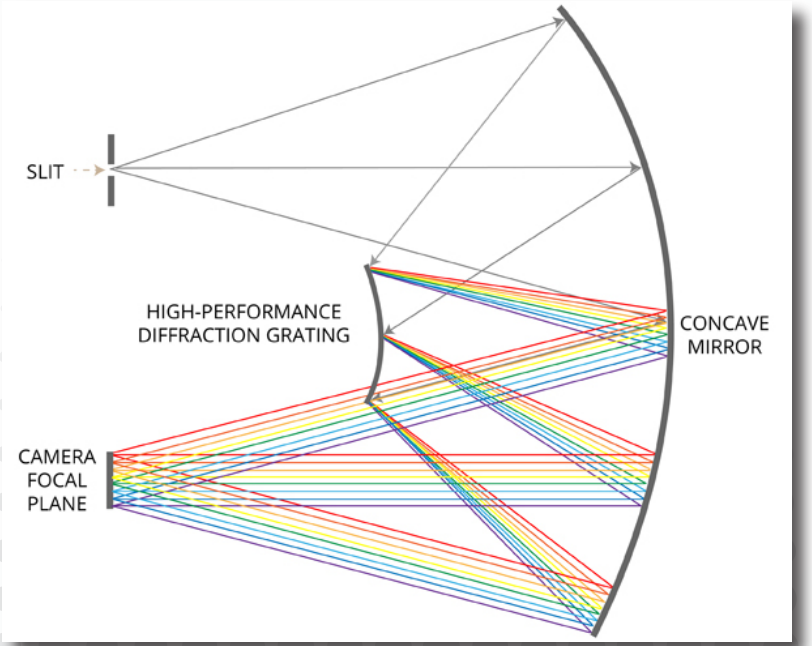


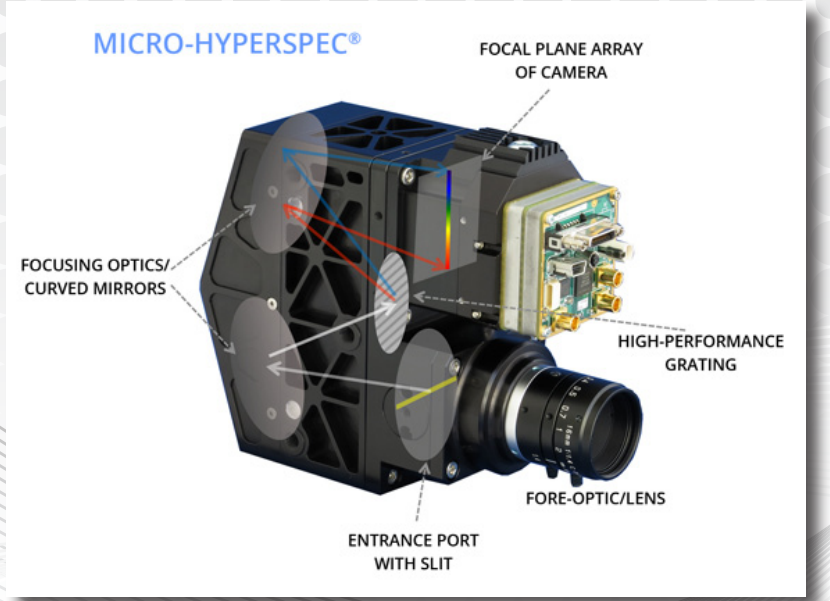
Color Management

Pharmaceuticals

Food Inspection

DIFFRACTIVE OPTICS





REMOTE SENSING

NANO-HYPERSPEC®

- For any airborne application (incl. small UAVs)
- VNIR (400-1000nm)
- Integrated data storage
- ~ 1.4 lb. (3" x 3" x 4.7")

MICRO-HYPERSPEC®

- Small size, weight & power (SWaP)
- Aberration-corrected imaging
- Wide field of view
- Multiple COTS configurations available
- ~ 2 lb.

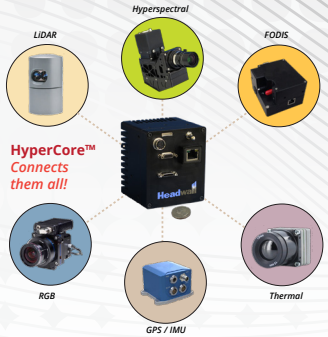
HIGH-EFFICIENCY HYPERSPEC®

- High-performance airborne hyperspectral
- Aberration-corrected imaging
- Wide field of view
- Multiple COTS configurations available
- ~ 7 lb.

Gimbal-mount
(courtesy Advanced
Coherent Technologies)

HyperCore™

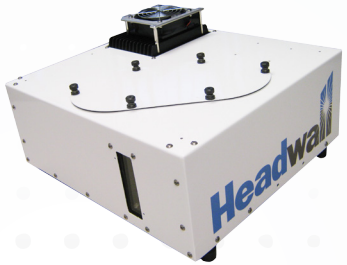
- Data-acquisition for connected sensors
- Provides true '*sensor fusion*'
- 500GB internal storage
- Connects hyperspectral, GPS, LiDAR, and more
- Size in mm: 90 x 76 x 70
- Weight in kg: 0.59



AIRBORNE, GROUND-BASED, LABORATORY

VNIR-SWIR Co-Registered Pixels

- Wideband coverage (400-2500nm)
- Co-registered pixels for image accuracy
- Single VNIR-SWIR datacube
- Small and lightweight package



HYPERSPEC®

- Aberration-corrected imaging
- High spatial and spectral resolution
- Lens-based or multi-channel fiber
- Ideal for a wide range of hyperspectral sensing applications

HIGH RESOLUTION CHLOROPHYLL FLUORESCENCE

- Precise, high-resolution imaging between 754-775nm
- User-selectable 20-30nm increments using drop-in diffraction gratings
- Best-in-class SNR performance
- Smaller and lighter than competitive offerings

HYPERSPEC® INSPECTOR

- High-speed, advanced machine vision
- Aberration-corrected imaging
- Frame rates to 236 fps
- Environmentally protective enclosure

HYPERSPEC® DEPLOYMENT MODES

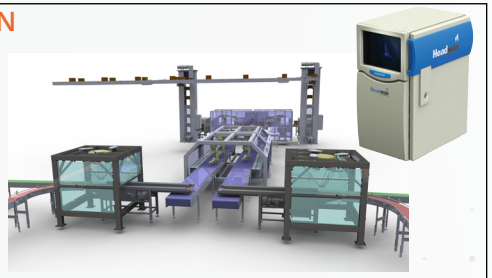
AIRBORNE

Headwall's industry-first partnership with Leica Geosystems presents the remote sensing market with complete airborne solutions that pair a custom UAV with advanced hyperspectral imaging capabilities. The solution includes GPS/IMU, optional LiDAR, and full application software for managing sensor operation and post-processing tasks such as ortho-rectification.

ADVANCED MACHINE VISION

In-Line Inspection

- Seamlessly integrates with robotics
- Outstanding discrimination
- Fast frame rates
- Rugged, environmentally robust



GROUND-BASED

Pan & Tilt • *mast* • *tower* • *vehicle* **Point & Stare**

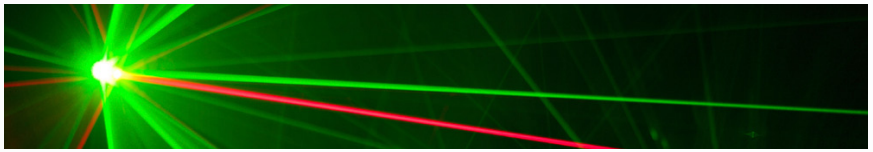
fully motorized, rugged

integrated scanning mirror

STARTER KIT

- Use with Hyperspec® sensors
- Provides hyperspectral analysis of reflective materials
- Illumination kit
- Gantry
- Moving web

RAMAN IMAGING INSTRUMENTS



Headwall's Raman imaging instruments are best in class for a wide range of high-performance applications. Key attributes include:

- Small and compact
- Exceptional SNR
- Short integration time
- Tall entrance slit for high spatial resolution
- Process separate calibration and radiometric reference channels
- Minimized image distortion and channel crosstalk

APPLICATION AREAS

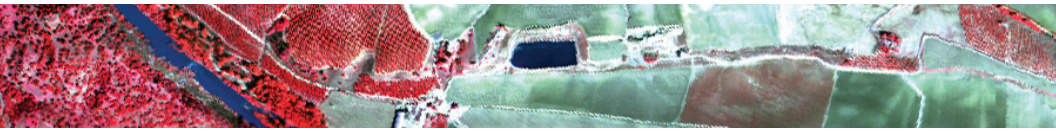
- Deep-sea exploration
- Chemical threat detection
- Petroleum
- Biotechnology
- Temperature measurement
- Medicine
- Material characterization
- Non-invasive analysis

Raman DISCOVERY™

Raman EXPLORER™

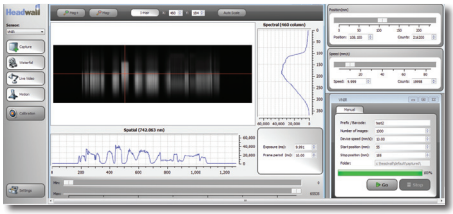
Available Laser Excitation Wavelengths	
248nm	785nm
532nm	830nm
532/655nm dual excitation	1064nm
632.8nm	

DATA PROCESSING & SOFTWARE



Hyperspec® III Software

- Controls the sensor and acquires images at very high frame rate
- Correlation of image data to gps data (airborne)
- Trigger image acquisition from gps coordinates (airborne)
- Real time Waterfall display
- 3-band jpg reference image output
- ENVI compatible data file output



Hyperspec Data Processing Unit

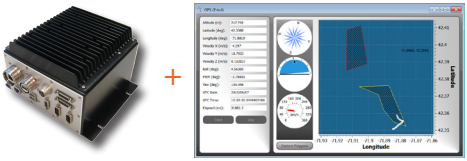
(compatible with Hyperspec® sensors)

- Quad-core processing
- 8GB DDR3 RAM
- 512GB or 1TB solid-state hard drive
- Stream up to 400 fps
- Standard and Compact versions available

Airborne package

- High-speed processing
- Solid-state storage
- Application software
- GPS/INU
- Fan-less design
- Lightweight/compact
- Orthorectification available
- CameraLink & USB

sensor GPS/INU LiDAR



Data Processing Hyperspec® III Software

MAIN FACILITY

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