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Airborne Hyperspectral Imaging Solutions

- Hyperspectral Imaging Sensors
- UAV Integration
- Other Integration Services
- Laboratory Validation
- Flight Planning, Training & Support

Our Airborne Solutions

We provide fully **integrated, cutting-edge, out of the box** airborne hyperspectral imaging solutions from Headwall Photonics, a market-leading US manufacturer of spectral instrumentation. Our fully **data-tested solutions** combine a hyperspectral imaging sensor and choice of GPS/IMU mounted on a high-performance market-leading UAV, with LiDAR and a stabilising gimbal if needed.

With powerful post-processing software capability, fully data-tested solutions and extensive training support available, you won't find a more complete integrated airborne hyperspectral imaging solution!

Hyperspectral Imaging Sensors

Small, lightweight and power efficient, provide a range of hyperspectral imaging sensors, covering the full spectral range.

Importantly, our sensors can be mounted onto small, lightweight drones (e.g. DJI Matrice 600 Pro), which provides the freedom of flying the platform as a small unmanned aircraft as designated under Civil Aviation Authority rules (set at 20kg or less). Our sensor payloads begin at just 0.65Kg.

A Nano-Hyperspec® sensor (400-1000nm).

Performance

- ✓ **Full hyperspectral data coverage;** from 400-2500nm
- ✓ **Complete airborne solution** mounted on a high-performance UAV
  - GPS/IMU (sensor position and orientation)
  - Custom stabilising gimbal
  - Radiometric calibration
  - LiDAR capabilities (optional)
- ✓ **Orthorectification software**

Key Applications

- **Remote Sensing**
- **Agricultural Research & Precision Agriculture**
- **Geology & Mining**
- **Earth Observation & Environmental Monitoring**
- **Infrastructure Survey, Inspection & Maintenance**
- **Military & Defence**
- **Conservation & Heritage**

UAV Integration

Hyperspectral imaging sensors optimised for airborne use can be mounted on an **unmanned aerial vehicle (UAV)**, such as a drone, in order to capture large area spectral images. Depending on the wavelength range chosen, these images create a map of organic materials or even minerals within the survey area and can be used in a variety of **remote sensing** applications.

Headwall's airborne hyperspectral imaging sensors are used aboard a variety of UAV platforms, including the DJI Matrice 600 Pro. Prior to being shipped, your airborne package will be **professionally integrated and tested by the manufacturer**, this includes being put through a range of data-collection and data processing exercises to ensure **optimum performance**.

A Micro-Hyperspec® SWIR sensor (900-2500nm) with GPS/IMU HYPERCORE™ data storage integrated onto a DJI Matrice 600 Pro drone.

Other Integration Services

- **GPS/IMU -** provides geo-localisation information important for hyperspectral image orthorectification post-processing.
- **HYPERCORE™ Data Storage** - a 'data-fusion' hub connecting data streams from each connected airborne instrument.
- **LiDAR** - provides measured distance to the target. Includes software for creating LAS and DEM files (for more accurate orthorectification) as well as fusing hyperspectral and LiDAR data.

Lab Validation

We provide a laboratory-based hyperspectral imaging scanning system used to build a reference spectral library of data for the identification of characterised materials.

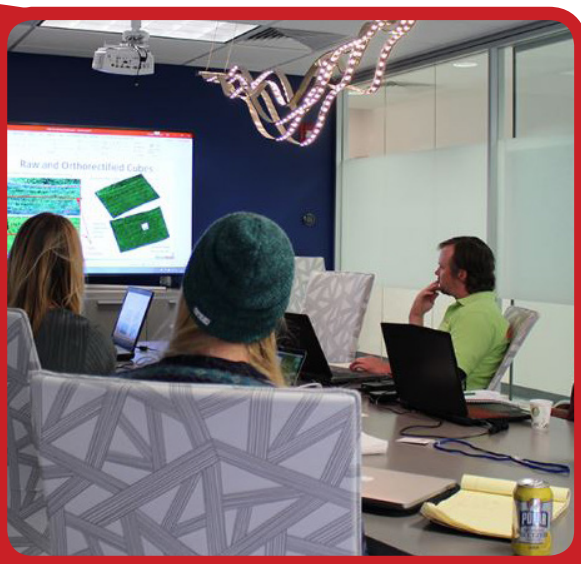
This allows users to create a library of unique spectral fingerprints in a controlled environment for known material/ infections/diseases etc. and once created, these libraries can be used to help with classification of airborne hyperspectral data.

A Micro-Hyperspec® SWIR sensor (900-2500nm) mounted onto a hyperspectral imaging scanning system.

Flight Planning, Training & Support

From the basics of hyperspectral imaging to flight planning and post-processing, we can provide extensive on-site training to suit your requirements. This includes organising UAV flight and classroom training to obtain a CAA approved Unmanned Aircraft Qualification (UAQ) for commercial flying. Please ask for more details.

- **Hyperspectral Basics**
  - Basics of hyperspectral imaging
  - How the sensors work
  - Airborne data collection considerations
- **Flight Planning**
  - Flight planning and setup for data collection
  - UgCS flight planning software
  - Hyperspec III software and sensor setup
- **Post-Processing**
  - Viewing images and spectral data
  - Single and batch radiometric correction
  - Single and batch reflectance conversion
  - Single and batch orthorectification



A user training session at Headwall Photonics' head quarters near Boston, US.

For details on our technical support and service options, please contact us.

For more information on any of our Airborne Hyperspectral Imaging Solutions, or to discuss your requirements, please contact us on 01954 232 776

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