

The utilization of hyperspectral imaging for in-line inspection of poultry, fruits, vegetables, and specialty crops holds exceptional potential for increasing the quality and safety of the foods we eat. The technology also offers a significant financial return for food processors by increasing throughput and yield at their facilities.

While machine vision technology has been a standard approach to many food inspection and safety applications, hyperspectral imaging offers the incremental benefit of analyzing the chemical composition of food products. Hyperspectral imaging solutions can be deployed at different process-points, including in-line inspection and in the laboratory. With the overall objective being significant increases in production yields and quality, food products can be analyzed with hyperspectral sensing for disease conditions, ripeness, tenderness, grading, or contamination.

When Hyperspec® imaging sensors are deployed early in the inspection process, food products can be segregated and sorted according to pre-established criteria and routed efficiently along the production line. Optimized for in-line processing, Hyperspec instruments are fully-capable of processing at very high speeds based on spectral regions and wavelengths of interest.

Key advantages of hyperspectral imaging for equipment manufacturers & food producers include:

- Derive the spectral signature for every point within the field of view for material classification
- Color-render the image within the field of view based on an established library of known spectral signatures
- For high volume production, generate wavelength-specific criteria for high speed quality control over the production process line.

Headwall Photonics is a US Department of Agriculture CRADA research and development partner



Agricultural Research

Crop Management

Disease Detection

High Speed, In-Line Inspection

Precision Agriculture

Headwall Photonics offers the broadest range of spectral imaging instrumentation for demanding applications.

Hyperspectral Sensors	Spectral Range
Hyperspec® VIS	380 - 825 nm
Hyperspec® VNIR	400 - 1000 nm
Hyperspec® Extended VNIR	600 - 1600 nm
Hyperspec® NIR	900 - 1700 nm
Hyperspec® SWIR	1000 - 2500 nm
Micro-Hyperspec™ VNIR	400 - 1000 nm
Micro-Hyperspec™ NIR	900 - 1700 nm
High Efficiency Hyperspec® NIR	900 - 1700 nm
High Efficiency Hyperspec® SWIR	1000 - 2500 nm

Hyperspec® Inspector



Information on UV, MWIR, and LWIR Hyperspec® sensors are available upon request.

Raman Imaging Instruments

- Raman Explorer™ 248 nm
- Raman Explorer™ 532 nm
- Raman Explorer™ 532/685 nm dual excitation
- Raman Explorer™ 632.8 nm
- Raman Explorer™ 785 nm
- Raman Explorer™ 830 nm
- Raman Explorer™ 1064 nm
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- Raman Discovery™ 532 nm
- Raman Discovery™ 785 nm



About Headwall Photonics:

Headwall Photonics 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 the development of innovative spectrographs and imaging spectrometers based on optical technologies, Headwall enjoys a market leadership position through the design and manufacture of patented spectral instrumentation that is customized for application-specific performance. Headwall Photonics was formed in 2003 as the result of a management buy-out from Agilent Technologies. **For more information please call 978.353.4100 or email us at information@headwallphotonics.com.**

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