

Spectral Sensing - Extending the Capabilities of Imaging & Machine Vision

Hyperspectral imaging for optimization of harsh process manufacturing

Management of scarce or expensive raw materials and the ability to manage complex manufacturing reactions through analysis of real-time process data represents a key opportunity to increase manufacturing yields and generate return on assets across a broad range of industries. Whether monitoring tablet uniformity in a pharmaceutical process or assessing the quality of raw ore constituents in a steel manufacturing site, the requirement to cost-effectively collect and utilize process-related data drives the yield and productivity of capital-intensive operations.

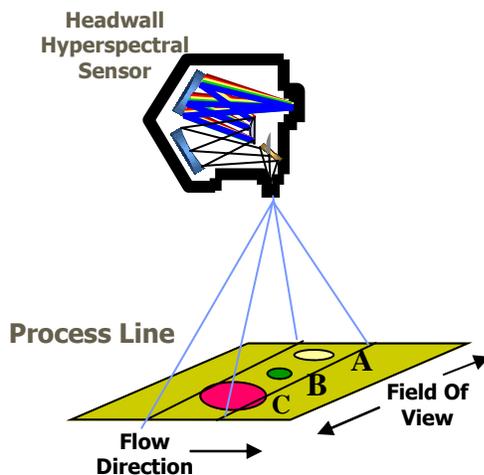
Spectral Imaging solutions for

- ▶ Medical & life sciences
- ▶ Textile
- ▶ Steel & mining
- ▶ Pharmaceutical
- ▶ Pulp, paper & printing
- ▶ Agriculture, food processing

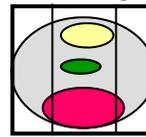
With over 12 years of hyperspectral deployment experience in military and research applications, Headwall Photonics is the leading supplier of hyperspectral imaging solutions offering integrated systems for a wide range of applications and process industries.

Conveyor / Moving Product Web Process Monitoring Microscopy & Medical Imaging

Example -
Pharmaceutical
Manufacturing



Visual image in field of view (FOV)



Spectra for points A, B, C in visual image

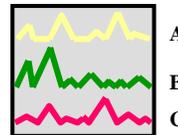
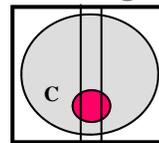
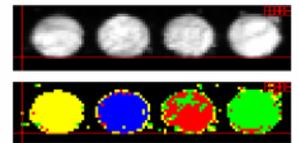


Image at target wavelength λ



Color-rendered hyperspectral image showing materials of similar appearance but differentiated by their unique spectral signatures



Hyperspectral imaging is an established technique for qualifying and quantifying objects of interest through their unique spectral signatures. The advantage of hyperspectral imaging is that hyperspectral sensors can be readily deployed to analyze any moving web of product - such as conveyor-based raw materials to interim products to finished goods. Unlike single point sensors, hyperspectral sensors capture the entire width of in-process material which can be simultaneously measured at hundreds of spatial points along the production line or area of interest.

In partnership, Headwall Photonics and Polytec will address your requirements to provide instrumentation optimized to your applications needs.

	<u>Spectral Range</u>	<u>Detector</u>	<u>Resolution</u>	<u>Aberration-Corrected</u>
Hyperspec-VNIR™	400 - 1000 nm	Silicon	1-2 nm	Yes
Hyperspec-NIR™	900 - 1700 nm	InGaAs	5-7 nm	Yes
Hyperspec-SWIR™	1000 - 2500 nm	MCT	8-10 nm	Yes

