

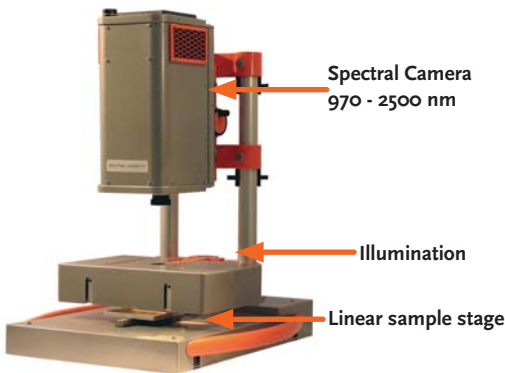
NIR CHEMICAL IMAGING



NIR *hyperspectral imaging*

SPECIM's 900–2500 nm NIR Spectral Cameras provide the most powerful tools available for high speed, high spectral and spatial resolution chemical imaging. These products feature a very reasonable price and are capable of working in broad range of applications. From life science imaging to real time quality assurance and the process analytical technology (PAT) applications.

SisuCHEMA Chemical Imaging workstation



SPECIM's NIR Spectral Cameras integrate an industry standard imaging spectrograph, ImSpector, with a high performance NIR camera. The resulting combination is a push-broom type line imaging Spectral Camera which acquires a line image at 256 contiguous spectral bands simultaneously. Systems are available for the 900-1700nm and 1000-2500nm spectral ranges, and provide the highest performance-to-cost ratio in the market.

HIGH SPEED

For chemical imaging in the laboratory or near production line, the Spectral Camera is integrated with a linear transition stage. While in motion, the sample is acquired line by line resulting in the immediate acquisition of its spectral image.

The push-broom Spectral Cameras have high light throughput and can acquire more than 100 line images per second. The acquisition of a sample image with full range spectral data, is typically possible within a few seconds. This is an order of magnitude faster than spectral imaging by any tuneable filter system.

Applications

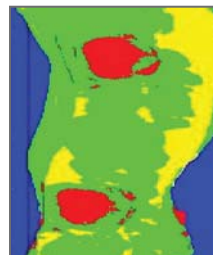
- Chemical imaging for R&D
- Process Analytical Technology
- Pharmaceutical manufacture
- Plastics sorting
- Mineral mapping
- Food and agriculture
- Moisture content distribution



NIR image of identification of drug samples



Pork meat analysis



Drill core analysis

PERFECT SOLUTIONS FOR CHEMICAL IMAGING ON MOVING TARGETS

SPECIM's Spectral Cameras acquire all the spectral bands simultaneously. They are not sensitive to sample movement during imaging, and image analysis is extremely straightforward.

In production line applications, the high speed of the cameras enables continuous 100% inspection of the material or product stream.

FROM MICROSCOPIC TO LARGER SCALE IMAGING

SPECIM offers a selection of hyperspectral fore lenses which are specifically designed for the NIR range 900 – 2500nm. The fore lenses provide with various fields of view, allowing pixel resolution from 30 microns to 1 mm on the sample. This makes it possible to analyze samples of different sizes, like single tablets or seeds to large food stuff and geological samples.

Multiple point NIR spectrometers

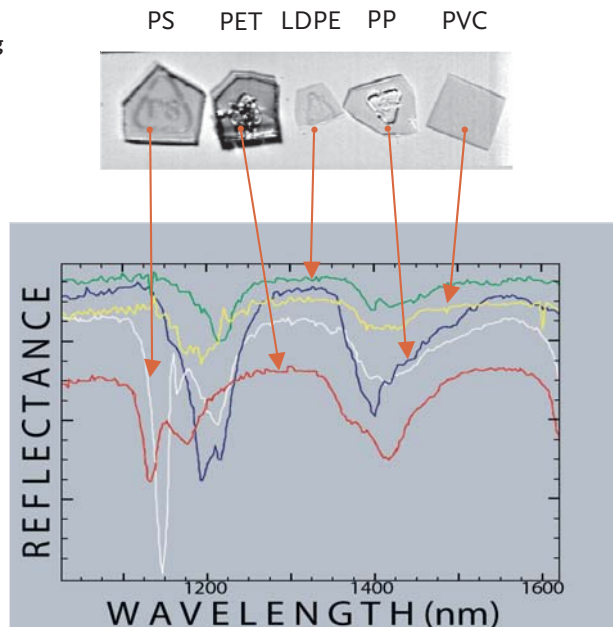
Instead of an imaging fore lens, up to 100 optical fibres can be integrated with the Spectral Cameras. Consequently, the Spectral Camera records the spectrum of the light from each of the fibre optic probes simultaneously. The result is a multiple point spectrometer without a moving multiplexer.

The simultaneous analysis of multiple spots in NIR greatly increases the speed in Process Analytical Technology applications. A perfect example is the revolutionary moisture profiler developed by Metso Automation for paper manufacturing, where moisture measurements at 100 points across the paper web, at 60 profiles per second, thus producing a real time moisture map for the control of the paper machine.



100-channel fiber optical spectrometer

Chemical imaging in plastic sorting: each pixel is associated with spectral information to identify and sort the pieces.



NIR Spectral Camera Performance Guide

SPECTRAL CAMERA	NIR	SWIR
Wavelength coverage	900 - 1700 nm	970 - 2500 nm
Spectral bands	256	256
Spectral sampling/ pixel	3.3 nm	6.3 nm
Detector type	InGaAs	MCT
Spatial resolution	320 or 640 pixels	320 pixels
Image rate	60, 100, 350Hz	100, 250Hz
Camera interface	USB2, CL, LVDS	LVDS, CL
Cooling	Thermo-electric	4+1 stage thermoelectric

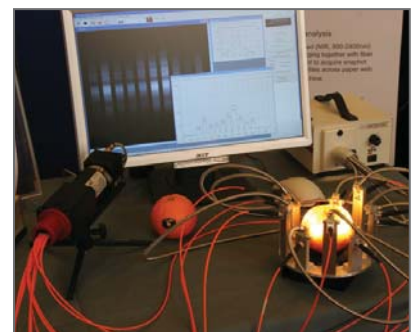
For complete specifications, see our Spectral Camera data sheets.

SpectralDAQ - software

SPECIM Spectral Cameras are supported by the SpectralDAQ software package. SpectralDAQ includes the following functionalities

- Configuration of camera parameters
- Real time image visualization
- Real time Image acquisition and datacube compilation

The datacube is saved in an ENVI compatible format which allows further processing by several commercial software packages for Hyperspectral data processing. Furthermore, many of our partners and clients provide software packages, which support the acquisition and processing data from SPECIM Spectral Cameras.

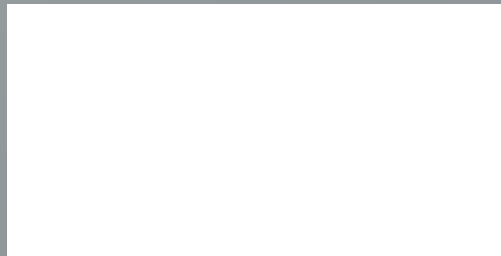


Fiber optical analysis of a sample in multiple spots simultaneously

SPECIM IS A WORLD LEADING COMPANY for hyperspectral imaging instruments, from UV through VNIR and SWIR up to LWIR (long wave infrared).

We provide ImSpector imaging spectrographs, Spectral Cameras and hyperspectral imaging solutions to a rapidly increasing number of industrial OEM customers and a large scientific clientele. SPECIM'S AISA family of airborne hyperspectral sensors provides market leading solutions for remote sensing, from small UAV systems to full featured commercial, research and military remote sensing tools.

Our hyperspectral products are known for the highest performance at the lowest budget in the market. They are used in an increasing range of demanding applications like color, Process Analytical Technology (PAT), life sciences, chemical imaging, pharmaceutical, military and security.



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