

spectral camera **SWIR**



SPECIM launches a new fully redesigned and re-engineered hyperspectral SWIR camera with break-through features. It has more spatial pixels (384) and still achieves much faster image rates up to 400 frames per second using CameraLink connection. To assure indoor/outdoor usage in varying conditions it now has rugged weather-proof IP54 casing and temperature stabilized optics but still uses less power than before, only 50W nominal.

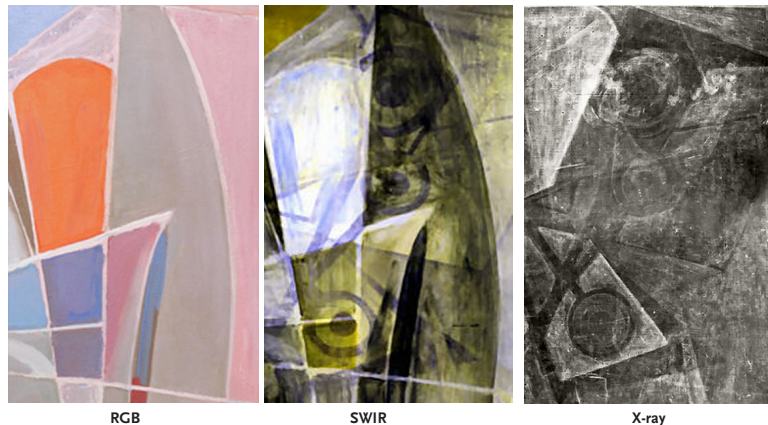
APPLICATIONS

- Chemical and Material Sorting
- Pharmaceutical manufacture
- Recycling
- Mineral mapping
- Food and agriculture
- Moisture content distribution
- Art research and archiving
- Forensics
- Airborne

High-speed hyperspectral camera in the range 1 000 - 2 500 nm. With its temperature stabilized optics, it provides the stability and sensitivity required in today's most challenging near-infrared chemical imaging applications, from pharmaceutical quality assurance to food and agriculture analysis. The camera meets the highest requirements in lab industry, field and air.

SCANNING WORK OF ART

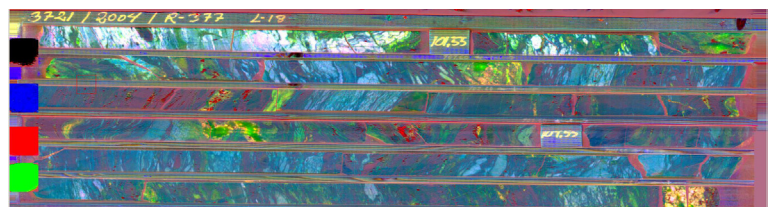
Spectral Camera SWIR image (in the middle) revealed far more information from the underlying work than RGB or X-rays.



Courtesy of Agata Warszewska-Kolodziej, The National Museum of Wroclaw, Poland

SCANNING DRILL CORES

Spectral Camera SWIR images this set of drill cores samples in less than 11 seconds with 1.3 x 1.3 mm pixel resolution.



Drill core image processed by Finnish Geological Survey

Performance Specifications

SPECTRAL CAMERA SWIR		
Optical characteristics		
Spectral range	1 000 - 2 500 nm	
Spectral resolution FWHM	12 nm (30 µm slit)	
Spectral sampling	5,6 nm	
Spatial resolution	rms spot radius < 15 µm	
F/#	F/2.0	
Slit width	30 µm (50 or 80 µm optional)	
Effective slit length	9,2 mm	
Electrical characteristics		
Detector	Cryogenically cooled MCT detector	
Spatial pixels	384	
Spectral bands	288	
Pixel size	24 x 24 µm	
Detector cooling	Stirling, 4 000 h MTTF	
Optics temperature stabilization	Yes	
Camera output	16-bit CL	
Signal-to-noise ratio	900:1 (at max. signal level)	
Data cable	Length 5 meters	
Frame grabber	National Instruments NI 1427	
Camera control	USB / RS232	
Frame rate	400 fps (maximum full frame)	
Exposure time range	0.1 - 20 ms	
Power consumption	Nominal < 50 W	
Input voltage	Wide 24 V	
Mechanical characteristics		
Size (L x W x H)	Sensor	Power supply & Control unit
	470 x 176 x 178 mm	300 x 190 x 130 mm
Weight	approx. 11 kg	approx. 5 kg
Body	Anodized aluminium with mounting screw holes	
Lens mount	Standard C-mount	
User adjustments	None	
Shutter	Electro-mechanical shutter for dark image acquisition	
Environmental characteristics		
Storage	- 20 ... +50 °C	
Operating	+ 5 ... +40 °C, non-condensing	
SpectralDAQ support	Yes	
SDK Support	Yes	
Mounting	Standard camera 1/4" thread, for other mounting options, ask for drawing	
Accessories	Lenses, radiometric calibration, white calibration tile, scanner stages	

ACCESSORIES

SPECIM provides various accessories for the Spectral Cameras to broaden their applicability.

Fore objective lenses, specifically designed for optimized performance in 900-2500 nm.

Lens	Focal length	FOV
OLES 15	15 mm	34 degrees
OLES 22,5	22,5 mm	23 degrees
OLES 30	30 mm	17 degrees
OLES 56	56 mm	9 degrees
OLES Macro	1:1 imaging	

Fiber optics with collection lenses or SMA connectors: from 4 to 110 input channels in one spectrometer without a moving multiplexer.

Various scanning systems: mirror scanner on rotary stage for scanning static target and outdoor scenes, and X-stage sample mover for desktop and microscope applications.

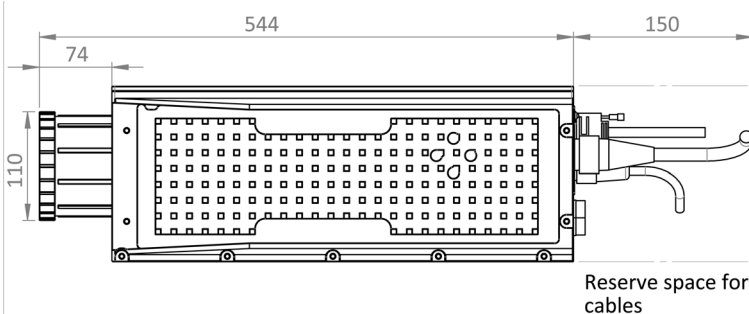
ACQUISITION SOFTWARE

SPECIM Spectral Camera SWIR is supported by SpectralDAQ software, which allows:

- data acquisition and saving data in the hard disk
- to set camera parameters
- image visualization in real time
- to control scanner systems

Datacubes are saved in non-proprietary ENVI, Matlab and R compatible format that allows further image processing with several commercial software packages. SPECIM can also provide SDK for quick and efficient application development.

Side view



Bottom view

