

MICROXCAM-384i-HS

Mid-InfraRed HYPERSPECTRAL CAMERA

The MICROXCAM-384i-HS is intended for developers of spectroscopic applications. It is provided as a development kit that includes driver electronics and data acquisition software.

The MICROXCAM-384i-HS is a hyperspectral imager operating over the whole Mid-InfraRed (MIR) spectral range, also known as the molecular fingerprint region, where chemical compounds can be better discriminated than in the Vis-NIR range. The MICROXCAM-384i-HS consists of a tunable Fabry-Pérot interferometer (FPI), an optical lens, and an uncooled infrared camera. The hyperspectral data is obtained by acquiring spatial 2D images at different wavelengths. The FPI is a micro-electro-mechanical-system that provides control of the wavelength through the simple application of a voltage. Thanks to its unique broadband detector technology, the MICROXCAM-384i-HS allows, in a single modular assembly, the selection of different spectral ranges of interest by exchanging the FPI-containing optical module.

APPLICATIONS

- Agriculture
- Food industry
- Cosmetics
- Spectroscopy
- Security
- Mineralogy
- Biomedical
- Pharmaceutical

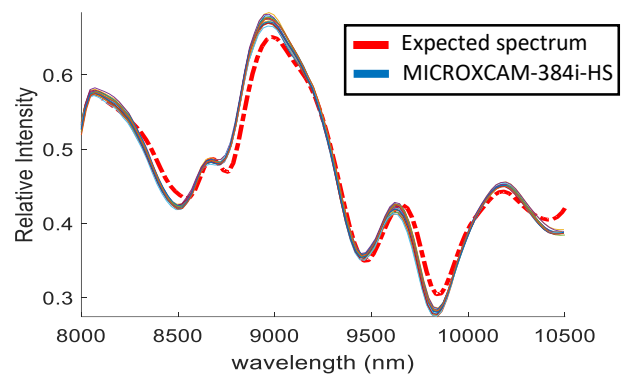
BENEFITS

- 3 – 11 μm waveband
- Small footprint and lightweight
- Programmable parameters

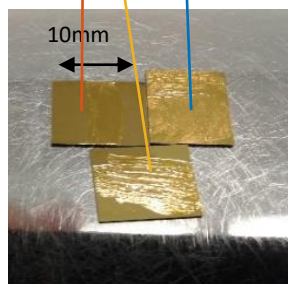
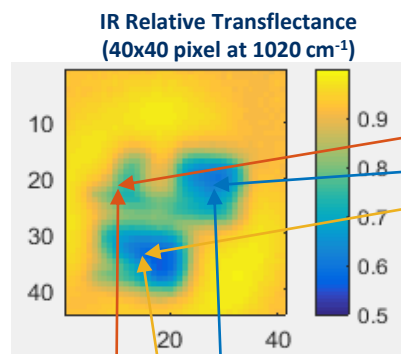


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Polystyrene film

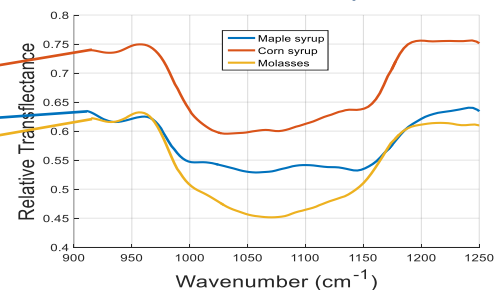


Simultaneous IR spectral transmittance imaging of maple syrup, corn syrup and molasses

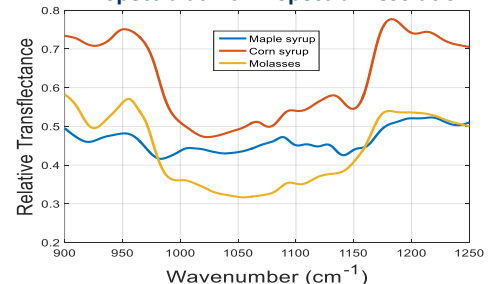


- Corn syrup
- Maple syrup
- Molasses

MICROXCAM-384i-HS Spectra



FTIR Spectra at 4 cm⁻¹ Spectral Resolution





MICROXCAM-384i-HS

MIR HYPERSPECTRAL CAMERA

Preliminary

Preliminary Technical Specifications ¹			
Spectral range	8 – 11 μm	5.5– 8 μm	3.8 – 5 μm (a) and 3.1-4.4 μm (b)
Spectral resolution	Typ: 130-220 nm	Typ. 100 nm-130 nm	(a) Typ. 60 nm-75 nm (b) Typ. 55 nm- 70 nm
Field of View	$\pm 41^\circ$ (100 pixel diameter image) ²		
Focal length	3 mm		
Aperture	2 mm x 2 mm		
Detector	<ul style="list-style-type: none"> • 384 x 288 pixels blackened VOx uncooled microbolometer FPA • 35 μm pixel pitch • 2 to 14 μm uniform responsivity • NEP = 20 pW • NETD = 25 mK, 8 – 12 μm, F/1, 50 fps 		
NESR ($\text{mW}/\text{m}^2 \text{sr } \mu\text{m}$)	<ul style="list-style-type: none"> • 800 at 8 μm • 830 at 9 μm • 690 at 10 μm 	In development	In development
SNR	1 280 (Blackbody source at 1 000 °C)	In development	In development
Camera frame rate	50 fps		
Acquisition time	<ul style="list-style-type: none"> • 0.18 s per wavelength sample (SNR = 1000) • <3 min (full spectral range, 25 nm sampling, SNR = 1000) 	In development	In development
Video output	Gigabit Ethernet, RJ-45 connector		
Supply	24 Vdc Nominal		
Temperature	15 °C to 35 °C		
Power	< 7 W typical		
Mechanical characteristics			
Dimensions	61 mm (H) x 78.5 mm (W) x 101 mm (L) 2.4 in. (H) x 3.1 in. (W) x 3.98 in. (L)		
Weight	420 g / 0.93 lb		

¹ Specifications subject to change without notice.

² Determined by the Fabry-Pérot interferometer

R&D CONTRACTS – PROTOTYPING – PREPRODUCTION SHORT-RUN PRODUCTION – TECHNOLOGY TRANSFERS

INO is a world-class center of expertise in industrial applications for optics and photonics,
and a leading developer and provider of infrared technologies