![imec logo]

imec

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SNAPSHOT TILED HYPERSPECTRAL IMAGING CAMERA

Are you looking for a hyperspectral evaluation camera? With a simple, fast and easy set-up for your hyperspectral data acquisition and analysis of sample materials? Imec's solution is explicitly designed to enable fast application development, delivering relevant test data within minutes after initial installation. It includes all required components, from spectral imager to camera, optics, software and can be easily rebuilt into various configurations.

HYPERSPECTRAL TECHNOLOGY FOR REAL-WORLD APPLICATIONS

Hyperspectral cameras, unlike traditional cameras, divide the light spectrum in many small wavelength bands. That way, they can capture the spectral fingerprint of any object, a unique spectral curve signature giving very detailed information about its exact constitution.

This latest generation of snapshot tiled sensor to camera architecture enables the highest possible spectral signal quality and HSI cube acquisition at video rates. It is a result of imec's expertise at processing hyperspectral filters and designing high-quality optical systems.

HYPERSPECTRAL EVALUATION SYSTEM

In contrast to linescan systems, which need a translational movement to capture and register hyperspectral bands of an object, our camera requires no scanning movement. A snapshot tiled design, it captures HSI cubes at video-rates with the highest possible spectral signal quality compared to snapshot mosaic designs where pixel to pixel level cross-talk needs to be corrected in software.

The evaluation camera includes:

- imec snapshot 32 tiled hyperspectral image sensor
- USB3.0 camera electronics based on XIMEA xiQ
- Optical duplicator lens array GEN2
- Standard C-mount lens (35mm) with mountable cut-off/blocking filters
- Reflectance tile
- Cable interface and storage box
- Hyperspectral image acquisition software to generate highest quality HSI data-cubes which are spatially registered and corrected as well as reflectance calculated

Snapshot tiled 32-band hyperspectral imager sensor from imec
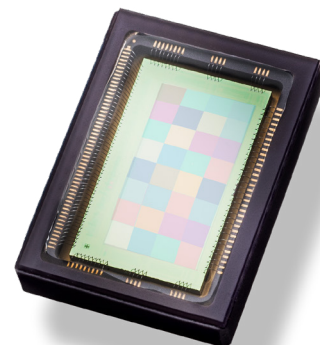
KEY BENEFITS

- **Easy set-up** of system
- **Ready-to-use** solution: instantly collect hyperspectral data from your samples and determine spectral band differentiators
- **Flexible configuration:** quickly modify the set-up once you have a better understanding of the technology
- **Video-rate speed** acquisition of hyperspectral imaging data cubes

POTENTIAL APPLICATIONS

- Optical sorting in machine vision
- Chemical analysis of material composition
- Food safety & inspection
- Medical & healthcare
- Pharmaceutical manufacturing
- Semiconductor & photovoltaic
- Security & surveillance
- Waste recycling
- Human-machine interface
- Mineralogy & mining
- and more...

HYPERSPECTRAL SOFTWARE FEATURES

- **License available** to demo-kit customers and partners
- **Support** including installation, training and Q&A (remotely and on-site)
- **Source-code** available for OEM integration of cube registration, reflectance calculation and spatial/spectral corrections

HYPERSPECTRAL HARDWARE SPECIFICATION

Acquisition mode	Snapshot tiled sensor with its optical duplicator
Wavelength range	600-875nm or 675-975nm
Number of spectral bands	32
Bandwidth per band (FWHM)	< 10 nm, collimated
Imager type	CMOS imager, CMOSIS CMV2000 based
Imager size	2.2 MPixel
Spatial resolution	256x256pixels per band
Frame rate	Up to 120 hyperspectral cubes per second
Pixel pitch	5.5 µm
Bit depth	8 and 10 bit
Dimensions	40x40x150mm
Weight	150g with duplicator & lens
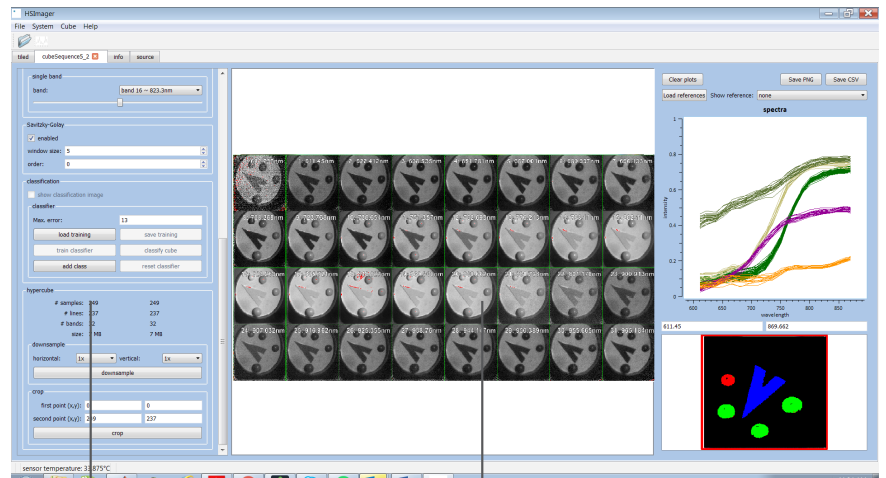
Main control pane

- Camera (fps, t)

- Cube/frame dump

- Refectance calculation

Visualization panel

- Saturated pixels

- False color image

- Spectral plotting

imec's in-house HSI software is designed for user-friendly hyperspectral imaging operations with integrated camera controls and visualization of captured objects