imec
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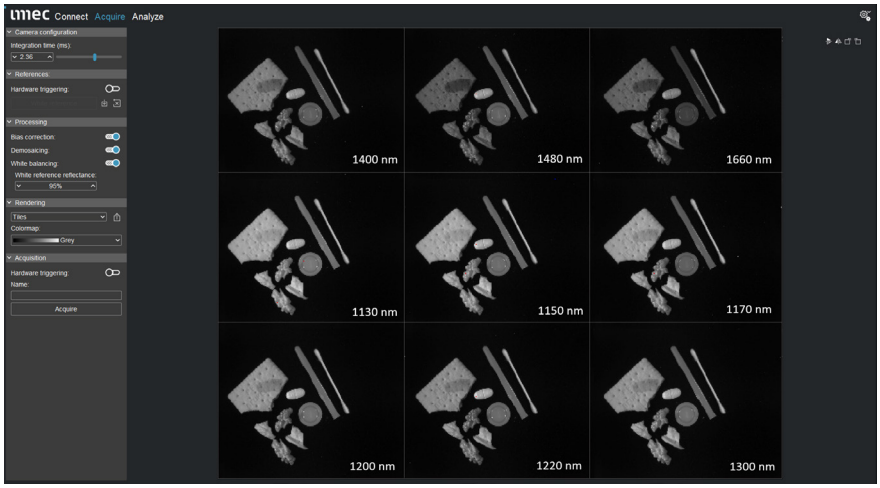
SNAPSHOT MOSAIC SWIR RANGE HYPERSPECTRAL IMAGING CAMERA

Imec snapshot SWIR range hyperspectral imaging camera offers a simple, fast and easy application set-up for your hyperspectral acquisition and analysis of sample materials. Our solution is flexible and designed to enable application development using hyperspectral imaging technology, delivering relevant test data within a few minutes after initial installation. It includes all required components, from imager to camera, lens, interface cables and software and can be easily rebuilt into different configurations.

FOR REAL-TIME, VIDEO-RATE COMMERCIAL APPLICATIONS

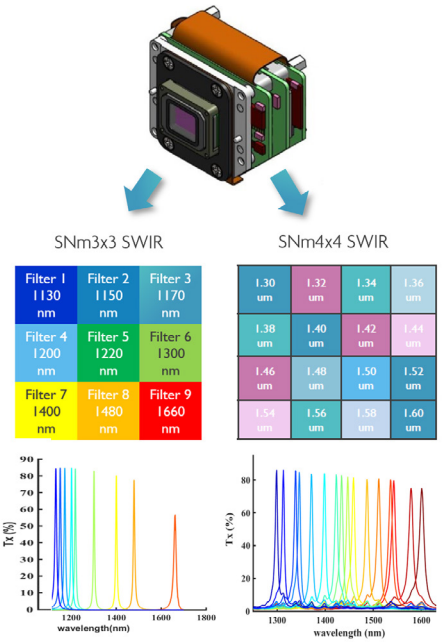
Snapshot mosaic filter based hyperspectral cameras enable real-time, video-rate processing of spectral imaging data. This is key for applications where objects are moving (e.g. sorting some food on a conveyor belt), or where the camera is moving (e.g. when carried on a drone UAV) or simply in static mode to prevent any motion artifacts during long time acquisitions (e.g. respiration movements of tissues in medical imaging, or moving target in security & surveillance applications)



Hyperspectral imaging acquisition software of imec: several objects (dry and wetted cake, plastic PET and PVC, nuts and their shell) are show in the SNm3x3 = 9 spectral colors tiled view. The HSI data-cube can be classified in real-time at 200+ FPS (see next page)

KEY BENEFITS

- **Video-rate** acquisition of hyperspectral imaging data cubes with no motion artifacts, perfectly suited for acquisition of moving objects or scenes
- **Easy set-up** of the complete system
- **Flexible configuration:** quickly modify the set-up once you get more acquainted with the hyperspectral imaging snapshot technology hardware and software



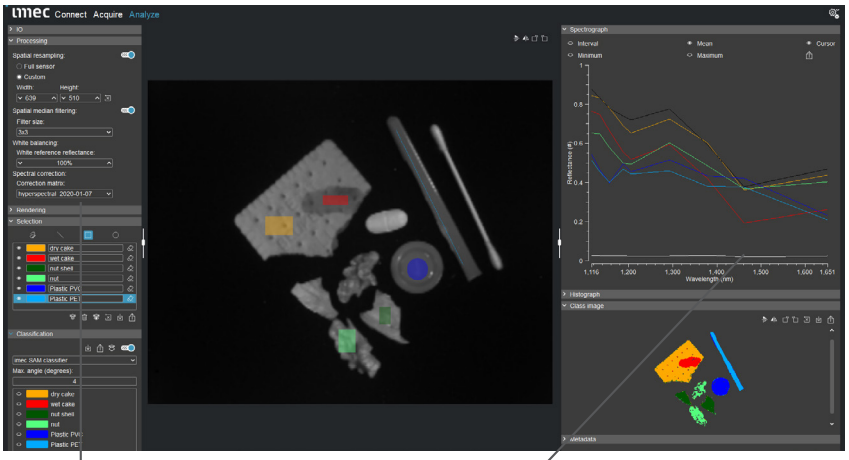
Snapshot mosaic hyperspectral image sensors with 3x3 = 9 colors and 4x4 = 16 spectral bands. Each filter is patterned at pixel level and integrated into the Cardinal 640 InGaAs image sensor from SCD

IMEC HYPERSPECTRAL IMAGER & CAMERA HARDWARE SPECIFICATIONS

Spatial resolution	VGA (640 x 480) total resolution
Spectral resolution	9 bands in 1.1 - 1.7 µm range (SNm3x3 SWIR version) 16 bands in 1.1 - 1.7 µm range (SNm4x4 SWIR version)
Bandwidth per band (FWHM)	~10 - 15 nm
Base imager type	InGaAs based, Cardinal 640 sensor with TEC cooler electronic
Acquisition speed	up to 120 hyperspectral imaging data-cubes per second (USB3.1 interface limited)
Pixel pitch	15 µm pixels
Bit depth	13 bits
Optics	16 / 25 / 35 / 50 mm lenses, F2.8, C-mount
Interface	USB3.0 + GPIO + I/O for triggering
SW acquisition modes	HDR modes (dual or multi-exposures for best SNR per band channel)
Power Consumption	2 Watts at 60 FPS
Dimensions (W x H x D)	65 x 65 x 130 cm
Weight	260 g (without lens)

APPLICATIONS

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



Main control panel

- Camera exposure time, framerate
- Hardware triggering
- Cube / frame export
- Light calibration
- Reflectance calculation
- Superresolution

Visualization panel

- Spectral plot
- Color reconstruction
- False color image
- NDVI
- Live view
- Classification

User interface of imec in house acquisition software, designed for user-friendly hyperspectral imaging operations.

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