imec

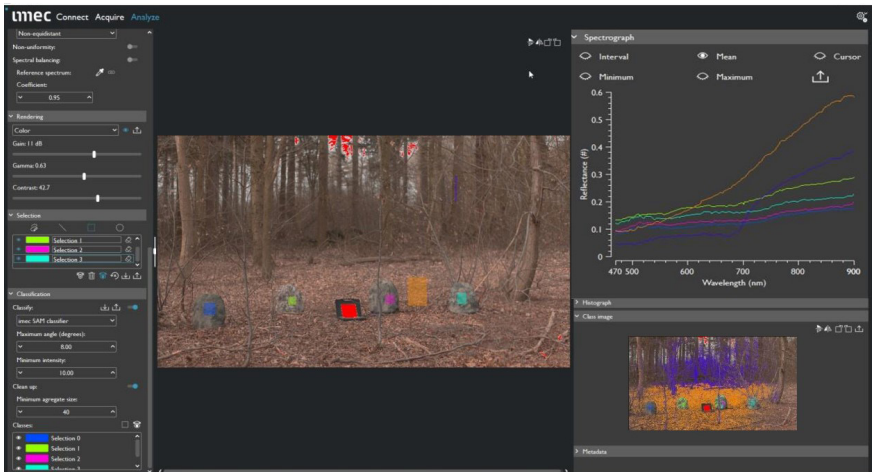
embracing a better life

Multishot RGB & VNIR spectral video imaging camera

Imec's multishot RGB & VNIR prototype spectral camera offers a combined and flexible system for the real-time spectral acquisition of materials and the observation of dynamic processes. The three complementary imaging sensors integrated into a single snapshot camera system allow for the visualization in both RGB and VNIR spectral range. Our solution is designed to enable critical application development and data synchronization. It includes all required components, from imagers to camera, optics, illumination and imec HSI Mosaic software.

Hyperspectral imaging technology for real-time, video-rate applications

The triple sensor snapshot camera architecture enables extended wavelength range coverage while preserving single lens optical path and data cube acquisition at video rates. The camera gives a synchronous multispectral & true-color image acquisition. Key applications are all cases where there is an inherent, uncontrollable dynamic of the scene such as medical applications (e.g. microscopic surgery) and anomaly detection (e.g. pollution monitoring).



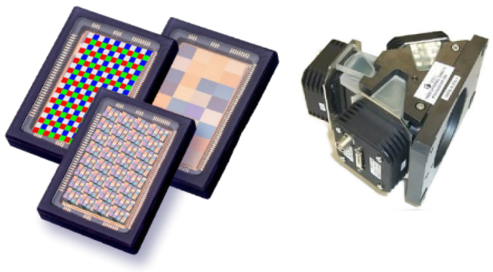
Object tracking data acquires with imec's HSI Mosaic software. Detection of camouflage objects including firefighter uniforms and civilian clothing.

Key benefits

- **High resolution** RGB with high spectral resolution multispectral data overlay (large spectral range in VNIR & 5MP RGB)
- **Video-rate** with acquisition of spectral imaging data cubes with no motion artifacts, perfectly suited for acquisition of moving objects or scenes.
- **Easy set-up**, with all standard components
- **Ready-to-use solution**, with full software for image acquisition, cube pre-processing, visualization and classification

Customized solutions:

Customizable design to match filter band selection with the final application requirements is provided. Imec's triple sensor camera can be a platform for different configurations.



Imec's imaging sensors integrated inside the triple sensor camera with one optical element

Multishot camera evaluation kit

- RBG & VNIR imaging mosaic camera
- Lens
- Full lab setup including illumination
- HSI Mosaic software with permanent user license

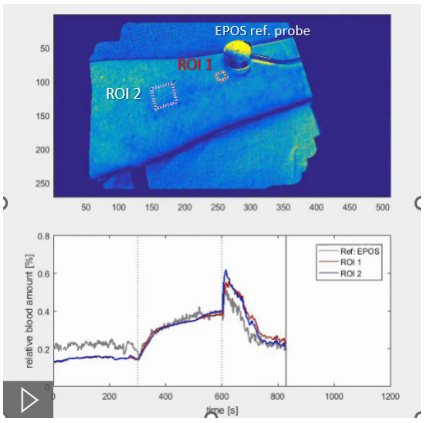
Applications

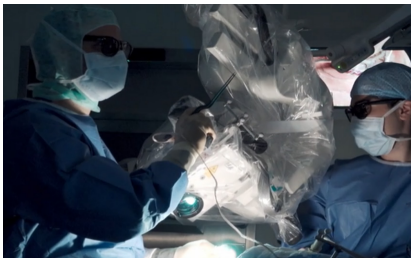
- **Assisted surgery**
  - Robotic surgery
  - Microscopic surgery
  - Oxygen saturation
  - Endoscopy
  - Exosopy
- **In-field anomaly detection**
  - Environmental monitoring
  - Security & surveillance
  - Mining & mineralogy
  - Forensics
- **Advanced machine vision**
  - Quality inspection
  - Sorting & recycling
  - Food inspection

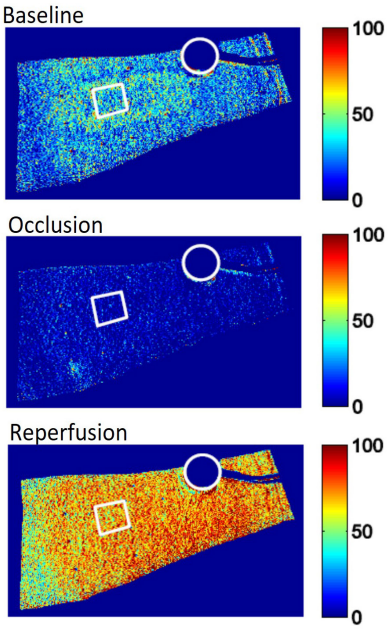
Multishot camera specifications

	Hyperspectral channels	RGB channel
Spatial resolution	2044 x 1088	2464 x 2056
Spectral resolution	31 bands in 460 - 860 nm (VIS & RedNIR)	3 bands (RGB)
Bandwidth per band (FWHM)	~10-15 nm (collimated)	Standard RGB
Base imager type	AMS CMV2000 CMOS (global shutter sensor)	Sony IMX250 CMOS (global shutter sensor)
Pixel pitch	5.5 µm	3.45 µm
Bit depth	10 bit	12bit
	Multishot camera	
Acquisition speed	18 fps (all sensors enabled)	
Optics	F-mount	
Interface	Micro USB 3.0 + HW trigger in/out connector	
Software	HSI Mosaic software for raw image acquisition, data pre-processing, multispectral cube visualization and classification	
Power Consumption	8.5 Watt	
Dimensions (WxHxD)	12 x 12 x 15 mm	
Weight	2.22 kg (without optics)	
Included accessories	USB 3.0 cable	

Medical spectral imaging applications







- courtesy of Linkoping university

Snapshot RGB & spectral real-time video enables view of blood amount and oxygen saturation for the identification of microcirculation in the arm. Data are taken from Linkoping university which successfully evaluated the potential of the multispectral sensor in the arterial occlusion protocol to estimate these measurements with high temporal and spatial resolution to look at microcirculation of blood in tissue.

HSI SALES
www.imechyperspectral.com
hsi.sales@imec.be

This leaflet is carbon neutral printed.