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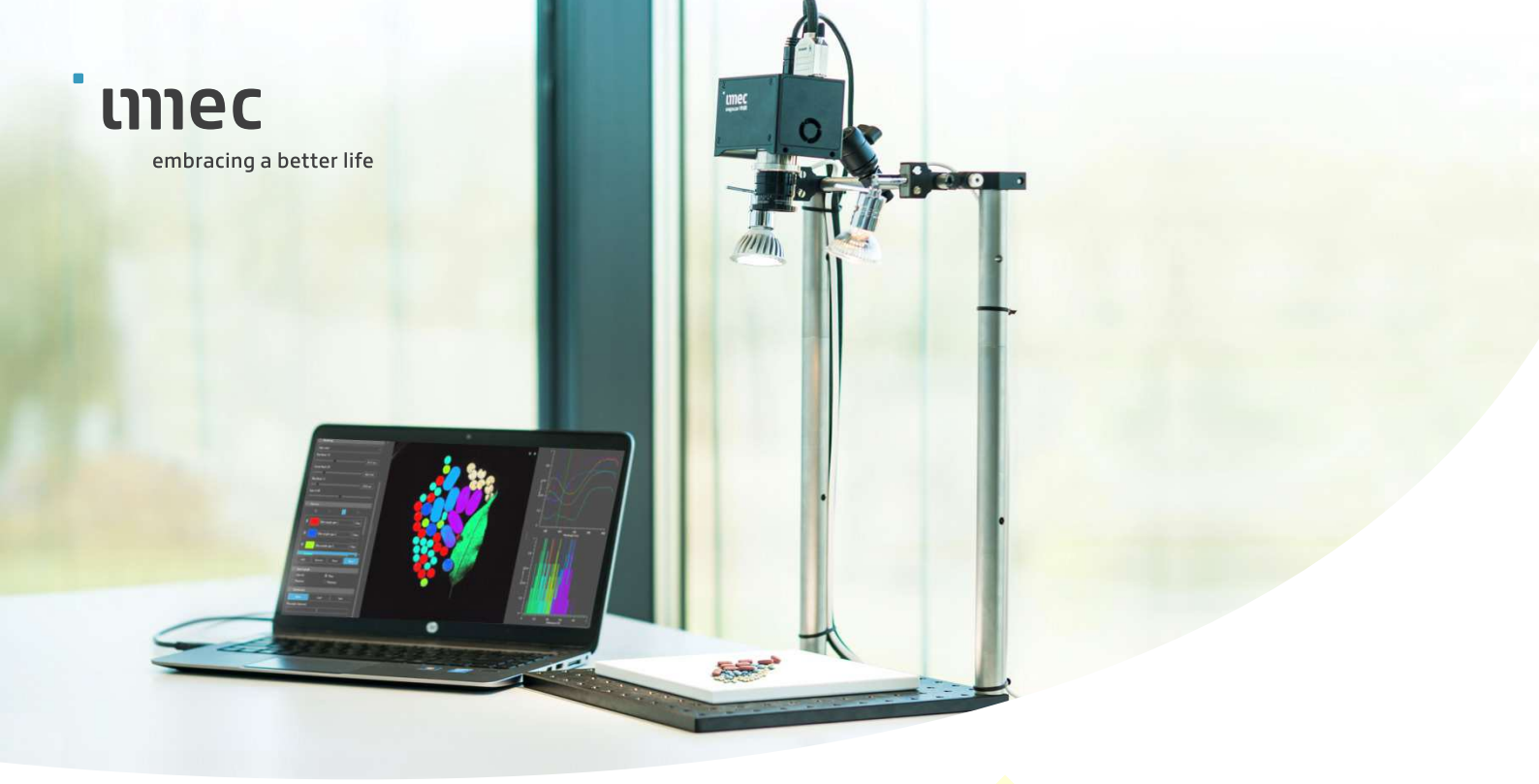
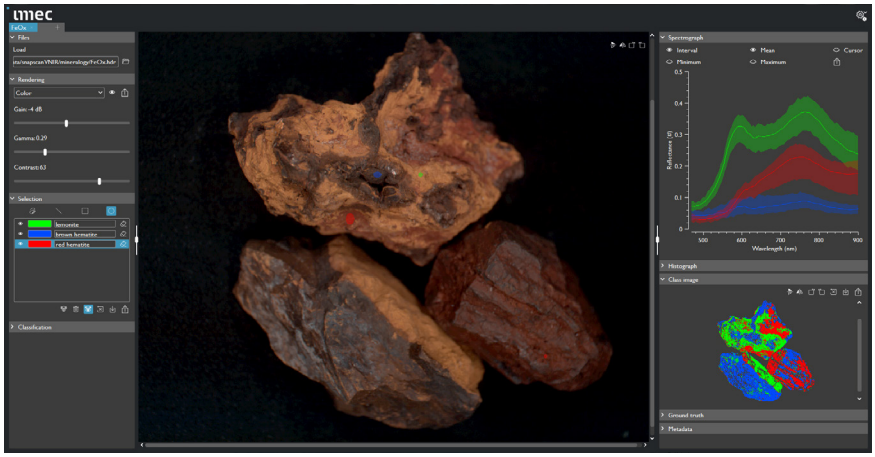


SNAPSCAN VNIR RANGE HYPERSPECTRAL IMAGING CAMERA

Imec's snapscan VNIR range system is a major breakthrough for hyperspectral imaging application research. Within as little as a few hundred's of milliseconds, high quality hypercube data-sets are created with unmatched signal-to-noise ratio and spatial and spectral resolution. The snapscan demo-kit enables application research of the highest quality, while still being user-friendly. It integrates all key components required: the spectral image sensor, camera, optics, piezo scanning, active cooling system, lighting, tripod mounts, and HSImager: the most advanced hyperspectral imaging software ever developed by imec research teams.

SNAPSHOT HYPERSPECTRAL IMAGING FOR REAL-WORLD APPLICATIONS

After years of research and development, imec now combines the best of its system-level hardware and software expertise in the snapscan: one unique system platform (patent pending) combining the high SNR, spatial and spectral resolution of linescan imaging camera with the fast and convenient way that snapshot HSI cameras acquire hypercube data-sets.



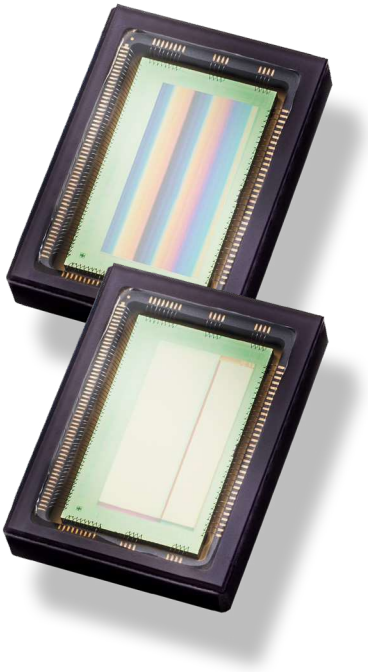
SNAPSCAN hyperspectral imaging VNIR with imec LS 150+ bands in 470 – 900nm range enables robust classification of various different ore oxides minerals with various colors and different chemical composition

KEY BENEFITS

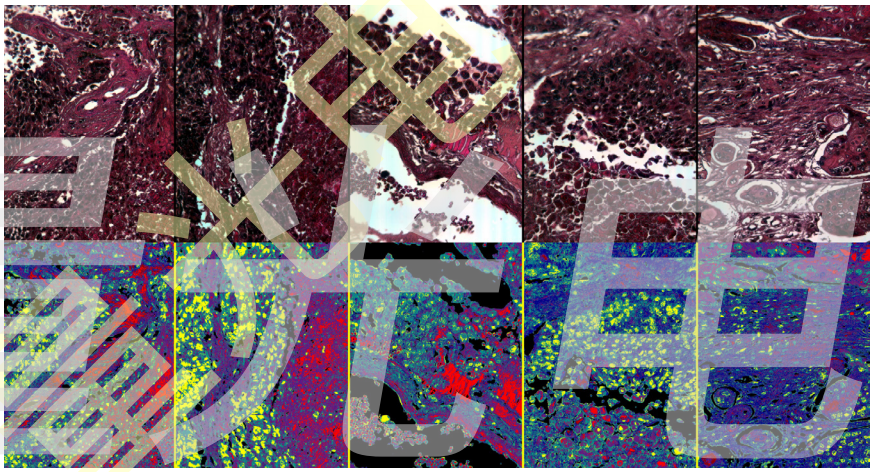
- **Snapshot acquisition** made easy and user-friendly with integrated ultrasonic scanning mechanism directly inside the camera to reach sub-second acquisition times
- **Highest spatial** (up to 7Mpx) & **spectral** (150+bands) **resolutions** possible for snapshot-based hyperspectral imaging in a compact, lightweight and mass-manufacturable design
- **Highest SNR** ever reached with imec on-chip filter technology thanks to active cooling and advanced software features for cube reconstruction and spectral correction

SNAPSCAN SYSTEM PRODUCT SPECIFICATION

Spatial resolution	up to 3650 x 2048 px (7Mpx RAW per band)
Spectral resolution	100+ bands (NIR version) or 150+ bands (VNIR version)
Spectral range	600 – 970 nm (NIR version) or 470 – 900 nm (VNIR version)
FWHM	~ 10 – 15 nm (collimated)
Acquisition speed	~ 200ms - 20 seconds, depending on acquisition parameters, lighting and object)
SNR	> 100 - 200, flat SNR over spectral range
SW scanning modes	Digital TDI (x5-8 stages max) Multi-exposures HDR (high-dynamic-range) Digital binning (2x2, 3x3, 4x4) Spectral ROI - Region of Interest (1 to 8 bands max) Spatial ROI - Region of Interest (2048 x custom scanning length)
Dynamic range	8/10 bit
Optics	20/24/35/50 mm lenses – F2.0 – C-mount
Smile & keystone	Software corrected
Interface	USB3.0 + GPIO + I/O for triggering
Cooling	Passive & active cooling (fan based + TEC)
Temperature	35°C to 45°C (operation), 5°C to 50°C (transport)
Mechanical	Integrated mechanical shutter for automatic dark-counts, Tripod mount (¼"-20) + side mounting M5 holes
Dimensions (LxWxH)	10 x 7 x 6.5 cm
Weight	580 g (without optics)



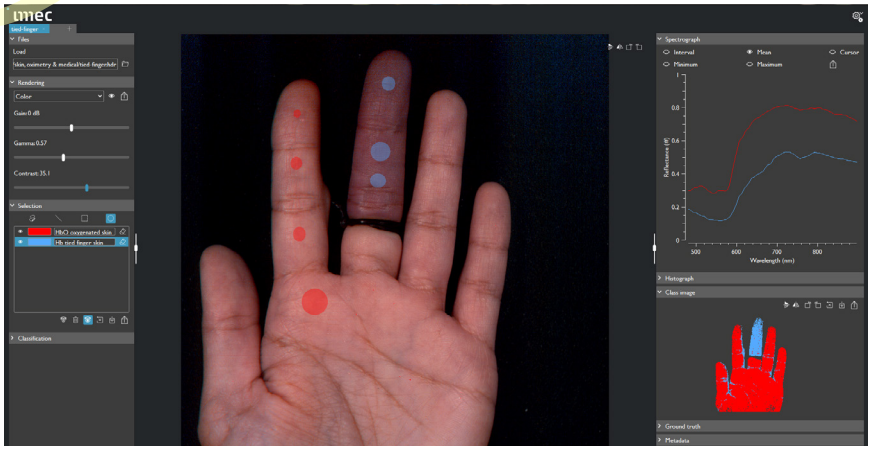
NIR & VNIR Linescan hyperspectral image sensors integrated into the snapscan camera system



Predictive compositional maps (color RGB & classified images) created using hyperspectral data. Lung cancer tissues are in yellow. Courtesy of university of Innsbruck & Hyperspectral Imaging Intelligence Inc

APPLICATIONS

- Digital microscopy for pathology, cytogenetics & research
- Wound healing & diagnostics
- Medical endoscopy
- Medical guided surgery
- Agriculture & robotics
- Industrial machine vision
- Mineral & material characterization
- General application research for hyperspectral imaging in both lab and outdoor environments



4MP hyperspectral data-cube acquisition of hand: true color RGB rendering picture, spectral plots of Hb versus HbO spectra's within oxygenated and deoxygenated skin where finger blood circulation is tied by rubber band

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