



# SNAPSCAN HYPERSPPECTRAL IMAGING CAMERA

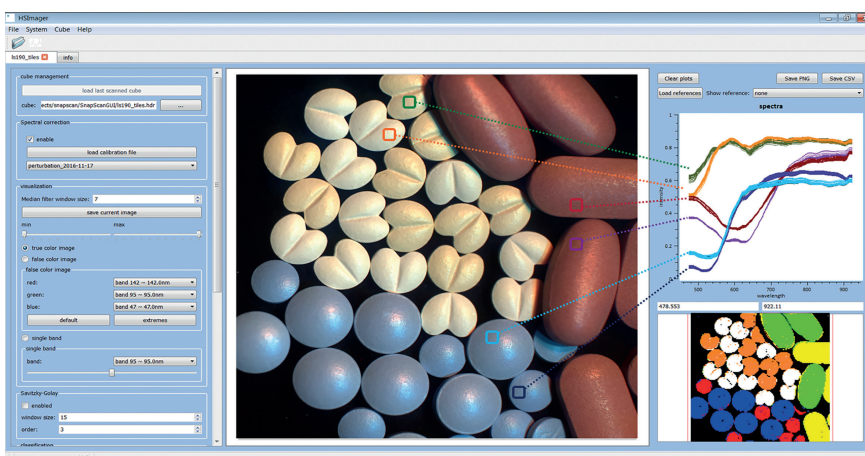
Imec's snapscan system is a major breakthrough for hyperspectral imaging application research. Within seconds, high quality hypercube data-sets are created with unmatched signal-to-noise ratio and spatial and spectral resolution. The snapscan demo-kit enables application research of the highest quality, 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 HSIImager, the most advanced hyperspectral imaging software ever developed by imec research teams.

## SNAPSHOT HYPERSPPECTRAL 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) blending the high SNR, spatial and spectral resolution of linescan hyperspectral imaging with the fast and convenient way that snapshot HSI cameras acquire hypercube data-sets.

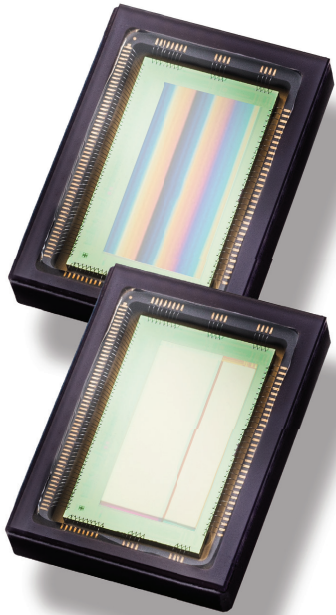
## KEY BENEFITS

- **Snapshot acquisition** made easy and user-friendly with integrated scanning mechanism directly inside the camera
- **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



RGB true color rendering with imec snapscan hyperspectral imaging software with spectra plotted out and classification of a sample of various pharmaceutical pills

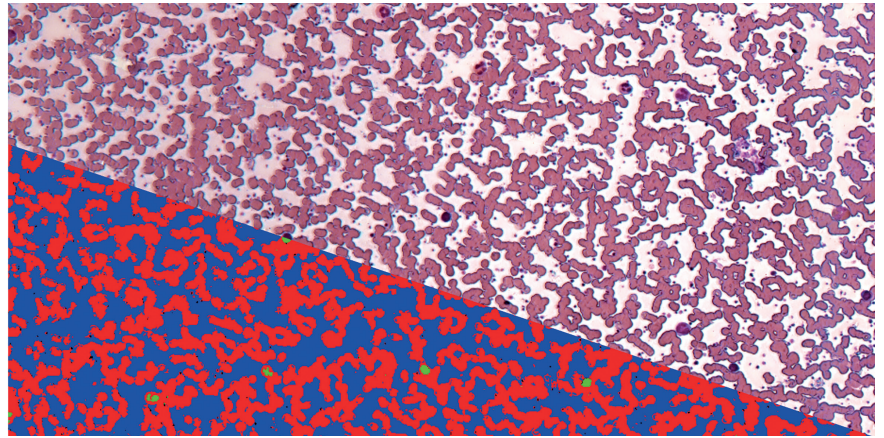
## SNAPSCAN SYSTEM PRODUCT SPECIFICATION



Spatial resolution	up to 3650 x 2048px (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	- 2 - 40 seconds (depending on scanning 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)
Dynamic range	8/10 bit
Optics	25/35/50 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	5°C to 45°C (operation)-10°C to 50°C (transport)
Mechanical	Integrated shutter for automatic dark-counts, Tripod mount (1/4"-20) + side mounting M5 holes
Dimensions (LxWxH)	10 x 7 x 6.5 cm
Weight	245 g (with optics)



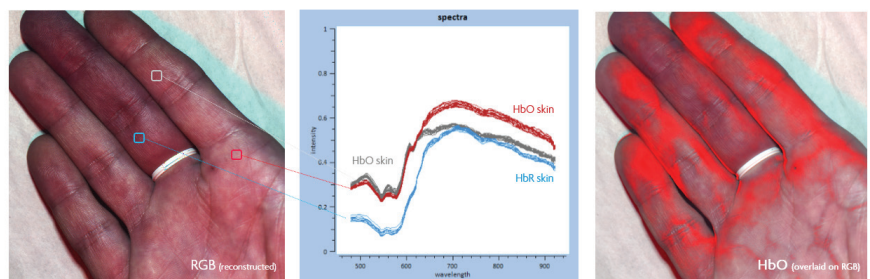
NIR & VNIR Linescan hyperspectral image sensors integrated into the snapscan camera system (view from the back with interface connectors)



RGB rendering & image with classification (red blood cells versus white blood cells) from a single snapshot of 150+ spectral images with 7Mpx spatial resolution (snapscan camera was mounted onto a LEICA microscope for spectral imaging of one blood smear test sample)

## 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 few spatial points and HbO overlaid image showing variations of oxygenation within hand when one finger blood circulation is blocked by rubber band

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