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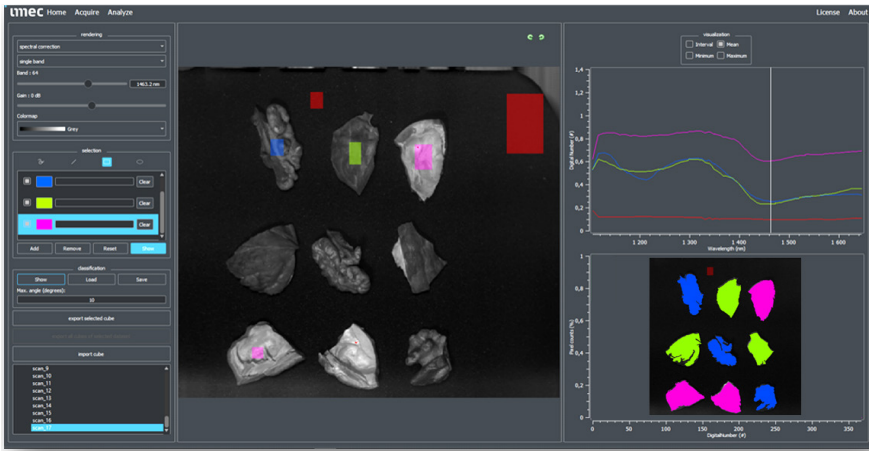
Snapscan SWIR hyperspectral imaging camera

Imec's snapscan SWIR high resolution hyperspectral camera is a major breakthrough for hyperspectral imaging application research. Within a few seconds, high quality hypercube data is created with high signal-to-noise ratio and unmatched spatial and spectral resolution. The snapscan kit enables application research of the highest quality, while still being user friendly by not requiring any external scanning system. It integrates all key components required: the spectral image sensor, optics, illumination and imec's hyperspectral imaging software: HSI Snapscan.

High resolution hyperspectral imaging in the short-wave infrared spectrum

User-friendliness is the key benefit of the snapscan SWIR camera. With only a few clicks users quickly generate high-resolution hyperspectral images for application research.



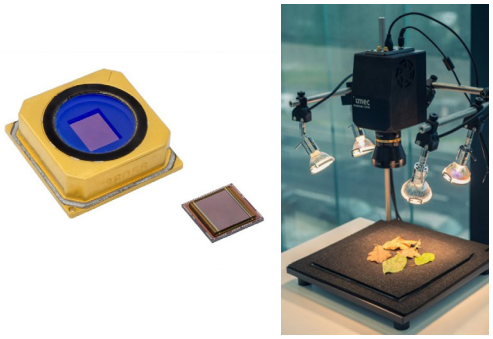
Hyperspectral imaging in SWIR range using imec's snapscan camera enables robust classification of nuts versus their shells

Key benefits

- **No translating stage/belt required** thanks to the integrated scanning mechanism inside the camera to generate a full hyperspectral data cube in a matter of seconds
- **Highest spatial** (up to 0.8Mpx) & **spectral** (100 bands) **resolutions**
- **Highest SNR** ever reached with the imec on-chip filter technology thanks to high performance backside illuminated InGaAs sensors and advanced software features for cube reconstruction and spectral correction

Customized solutions: Bringing the technology to the application

Custom linescan sensors can be made by modifying the design of the filter over the sensor pixel array. The filters can be tuned and designed for different number of bands. Customized solutions can serve the most demanding application requirements, such as in space operational environments, optimized for size, cost and performance.



SWIR linescan hyperspectral image sensor integrated into the snapscan camera system

Snapscan camera evaluation kit

- Snapscan hyperspectral imaging camera
- Lens
- Full lab setup including illumination
- HSI Snapscan software with permanent user license
- C & Python API for data acquisition and pre-processing in custom software
- Support on installation, software and application

Research applications

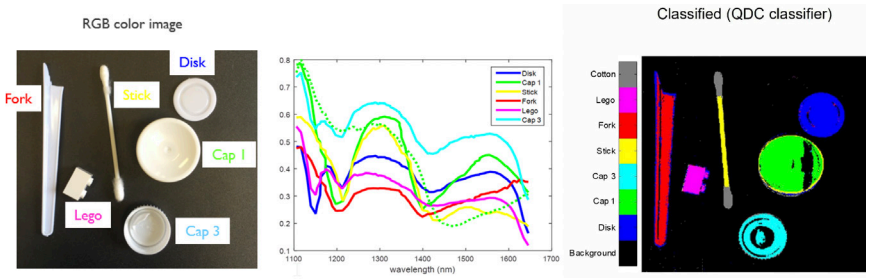
- **Medical diagnosis**
  - Cytogenetics & histology
  - Wound healing & diagnostics
  - Skin blood volume & oxygen saturation
  - Digital microscopy for pathology
- **Sample Analysis**
  - Precision agriculture
  - Mineral & material characterization
  - Skin imaging & cosmetic research
- **In-field measurement**
  - Material discrimination
  - Food inspection
- **General purpose research for lab environment**
- **Application research for determining the technical requirements needed for custom design**

Snapscan SWIR system product specification

Spatial resolution	up to 1200 x 640 px (0.8MP RAW per band)
Spectral resolution	100 bands (SWIR)
Spectral range	1100-1700 nm (SWIR)
FWHM	~ 5 – 10 nm (collimated)
Acquisition speed	2 to 10 seconds, depending on acquisition parameters, lighting and object
SNR	up to 600:1
Software	HSI Snapscan software for data acquisitio,, data pre-processing, hypercube visualization and classification & API for data acquisition and pre-processing in custom software
SW scanning modes	Digital TDI (x4 stages) Digital binning (lxl up to 20x20) Spectral ROI - Region of Interest Spatial ROI - Region of Interest
Dynamic range	13 bit
Optics	C-mount
Smile & keystone	Software-corrected
Interface	USB3.0 + GPIO for triggering (TTL)
Cooling	Passive & active cooling (fan based + TEC)
Ambient operating	15°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)	9 x 9 x 13 cm
Weight	1072g (without optics)
Hyperspectral soft-ware compatibility	Output in standard ENVI hyperspectral data format

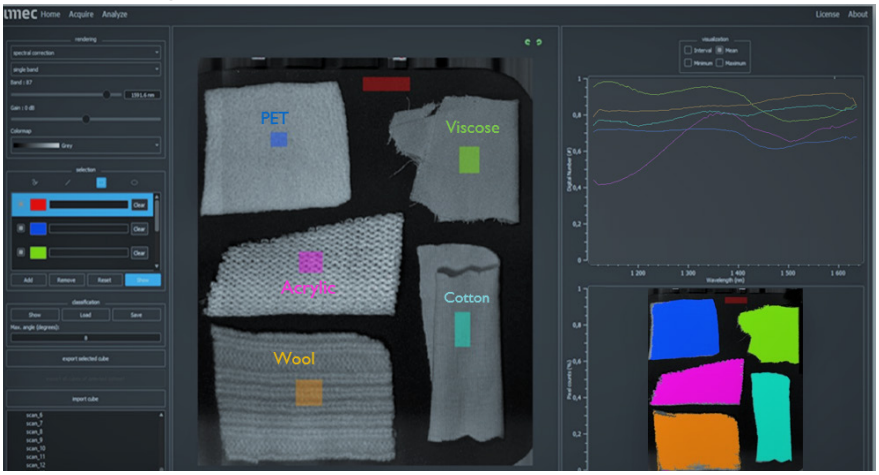
Research high resolution hyperspectral imaging

Plastic sorting



Hyperspectral imaging in SWIR range using imec's snapscan camera with l00 bands enables robust classification of various types of different white color plastics

Textile sorting



Hyperspectral imaging in the SWIR makes it possible for users to distinguish different types of textiles based on the material and not only on shape and color.

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