

Imec introduces new snapshot hyperspectral image sensors with mosaic filter architecture

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Imec's linescan (100 bands), snapshot tiles (32 bands) and new snapshot 5x5 mosaic (25 bands) hyperspectral image sensors

At next week's SPIE Photonics West 2015, imec will present a new set of snapshot hyperspectral CMOS image sensors featuring spectral filter structures in a mosaic layout, processed per-pixel on 4x4 and 5x5 'Bayer-like' arrays.

Imec's hyperspectral filter structures are processed at wafer-level on commercially available CMOS image sensor wafers, enabling extremely compact, low cost and mass-producible [hyperspectral imaging](#) solutions. This paves the way to multiple applications ranging from machine vision, medical imaging, precision agriculture to higher volume industries such as security, automotive and consumer electronic devices.

"Imec's latest achievements in hyperspectral imaging emphasize how our promising technology has become an industrially viable solution for a number of applications," said Andy Lambrechts, program manager at imec. "The new mosaic architecture, and extended spectral range, brings unique advantages compared to our previously announced hyperspectral linescan sensors for applications in which scanning would not be practical. It enables spectral imaging in a truly compact, tiny form-factor, that can even be scaled to handheld devices. From the technology standpoint, we have now successfully demonstrated linescan and tiled sensors, in which spectral filters cover many pixels, to mosaic sensors, in which filters vary from pixel to pixel. At the same time, the spectral range is extended and now covers down to 470nm."

The newly developed mosaic sensors feature one spectral filter per pixel, arranged in mosaics of 4x4 (16 spectral bands) or 5x5 (25 spectral bands) deposited onto a full array of 2 Million pixels 5.5µm size CMOSIS CMV2000 sensor. Two versions of the mosaic hyperspectral image sensors have been developed:

- one 4x4 mosaic with 16 bands in the 470-630nm (visible range)
- one 5x5 mosaic with 25 bands in the 600-1000nm range (Visible

– NIR range)

"Imec's hyperspectral imaging sensors (100bands linescan, 32bands tiled and 16/25bands mosaic designs) are off-the-shelf, commercially available engineering sample [sensors](#) that we developed to address the fragmented machine vision market and to trigger interest for this unique technology from potential end-users in other industries," explained Jerome Baron, business development manager at [imec](#). "We also offer customized spectral filtering solutions for companies that are already familiar with the technology and interested in developing proprietary solutions with a specific performance in terms of speed, compactness, spatial versus spectral resolution, bands selection, or cost."

Provided by IMEC

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