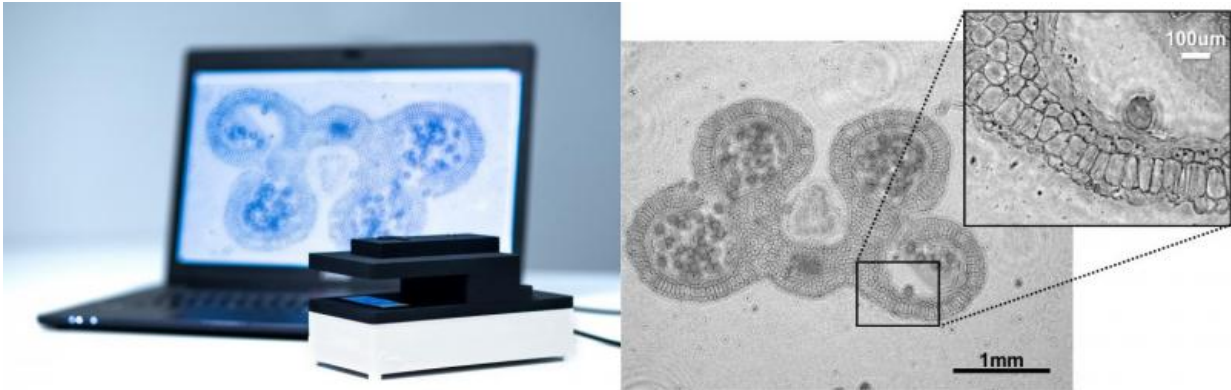


Compact lens-free digital microscope

February 11 2016, by Hanne Degans



At next week's SPIE Photonics West 2016, imec will demonstrate a lens-free microscope for large field-of-view live imaging at micrometer resolution. Imec's on-chip lens-free microscope can be integrated into life sciences and biotech tools, targeting multiple applications such as label-free cell monitoring, automated cell culturing, or automated high-throughput microscopy.

Compared to conventional optical microscopes, lens-free digital microscopy removes the need for expensive and bulky optical lens components to acquire and visualize microscopy images. In a lens-free digital [microscope](#), images are captured on a CMOS image sensor, and digitally reconstructed using software. Imec's lens-free microscope features a comparable micrometer-scale accuracy as traditional optical

microscopes. While being much smaller and less expensive, imec's microscope captures a larger field-of-view in one shot, enabling shorter sample processing times. The lens-free microscope paves the way to new applications with living cells and tissues.

"This microscope will enable an abundance of applications, where traditional microscopes are just not applicable," stated Andy Lambrechts, program manager of integrated vision solutions at imec.

"Recently, we demonstrated its ability to be integrated into a bio-incubator in stem-cell research for cell culture monitoring, and for cardio-toxicity testing, where the microscope monitored contractions of cardiac tissue in response to drugs. With impressive results our team has branched out even further and is exploring its ability measure fabrication tolerances and stress in our in-house developed neural probe chips, and for defect inspection of thin-film displays."

"Imec's lens free imaging solution is now available as a full, ready-to-use demo kit evaluation system including a light source, image sensor, control and read-out electronics and a software interface," stated Jerome Baron, business development manager of integrated vision systems at [imec](https://www.imec.be/). "Companies can use it to try out their own applications, supported by our engineers to fine-tune the hardware and software and customize the systems toward their exact application requirements."

Provided by IMEC

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