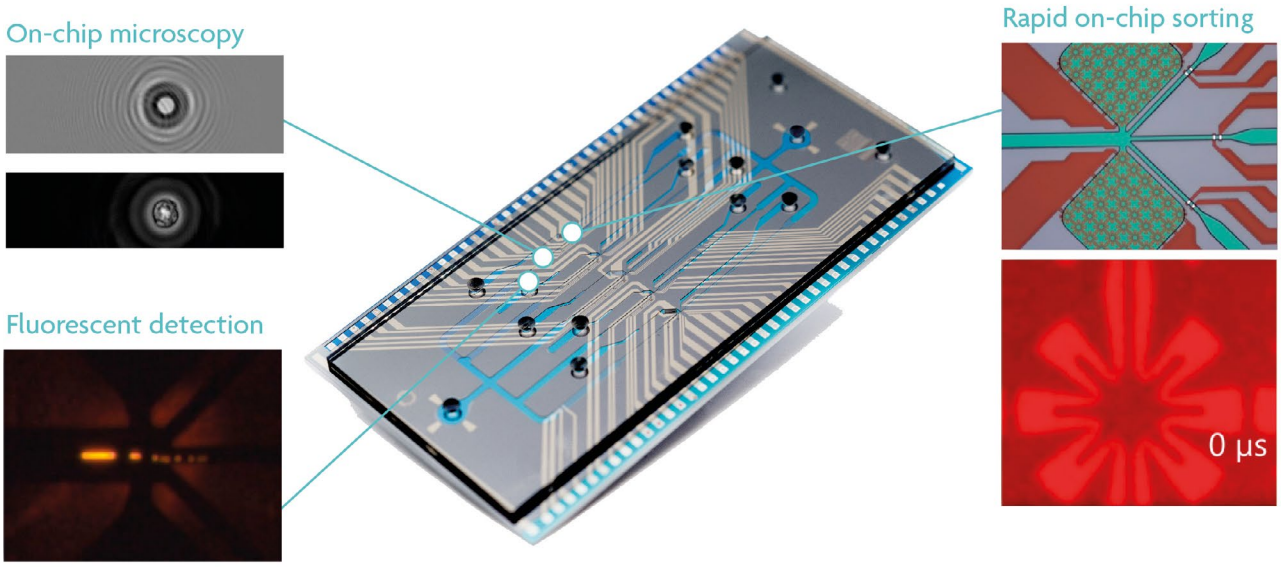
imec
embracing a better life

EXTREMELY FAST ON-CHIP CELL SORTING

Imec has developed a compact, disposable cell sorter with integrated on-chip cell characterization and downstream molecular analysis of the cell content through on-chip digital PCR. It enables sorting of cells from liquid biopsies in minutes, isolating specific cells for downstream analysis and reporting the result in one single device. The building blocks of imec's silicon flow cytometry platform have been internally validated for integration in next-generation diagnostics solutions, as well as cell purification and characterization for immune-oncology (I-O) and stem cell therapies and are available for licensing.



Compact, disposable cell sorter with integrated on-chip cell characterization.

BREAKTHROUGH PERFORMANCE AND VERSATILITY

Conventional cytometric technologies are based on glass or plastic substrates holding the samples that need to be tested. With all the critical components being integrated in the readout instrument, this leads to low versatility and high instrument cost. Imec's on-chip solution, combining a thermal bubble switch actuator and silicon chip technology with integrated photonics, allows for a much more versatile design and a theoretically unlimited application scope.

KEY BENEFITS

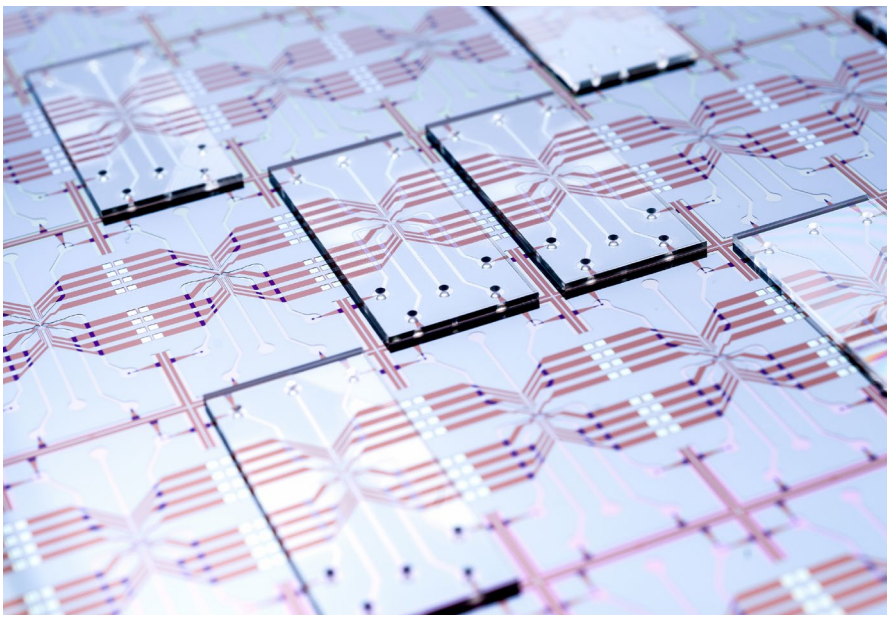
- Contains no mechanically moving parts, based on bubble-jet technology
- Fluorescent markers and morphology can be combined to produce more precise results
- Very gentle on cells: cells remain viable for downstream analysis
- Sorting speeds of up to 20 million cells per minute make it the best microfluidic cell sorter available
- Compact & disposable, making it suitable for clinical point-of-care applications

THERAPEUTIC AND DIAGNOSTIC APPLICATION POTENTIAL

- Cell extraction and cell quality control (QC) in stem cell therapies
- T-cell extraction and cell inspection in CAR-T immune-oncology (I-O) therapies
- Cell-based diagnostics and rare-cell detection (e.g. fetal cells for NIPT, circulating tumor cells (CTCs), for in vitro-diagnostics (IVD)

TECHNICAL HIGHLIGHTS

- Color & morphology based sorting
- Multiple holding chambers
- Parallelization of channels for increased sample processing (5,000 cells per second per channel)
- One workflow for cell sorting & molecular measurement
- Lens-free images of sorted cells
- Possibility to couple the cell sorting chip with digital- or droplet- or micro-PCR
- Fully enclosed walk-up system: drop your sample and get the final result



Wafer with fast on-chip cell sorter.

The development of the cellsorter technology was supported by a grant of the European Research Council.

IMEC HELPS YOU BRING YOUR INNOVATIONS TO LIFE

We combine extensive chip manufacturing facilities and bio-lab infrastructure with world-renowned expertise in chip technology, MEMS, bio-electronics, sensors, photonics, imagers, microfluidics, and biosciences. We work with strong, multidisciplinary teams of world-class scientists. This makes us the ideal development and manufacturing partner for your custom smart biochip solutions, from early R&D, design and prototyping to volume manufacturing. We help you bring your innovative product ideas to life.

CONTACT US
WWW.CONTACTIMEC.COM