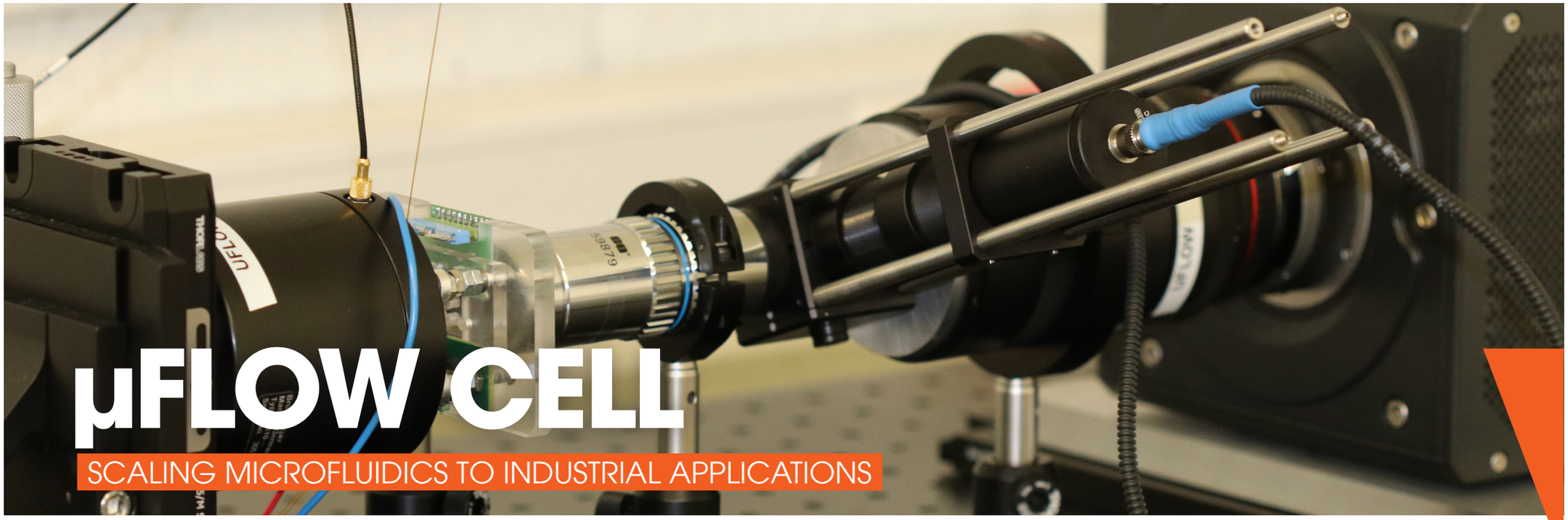

µFLOW CELL

SCALING MICROFLUIDICS TO INDUSTRIAL APPLICATIONS

The µFlow Cell valorizes the R&D of a consortium between the µFlow Group of prof. Wim De Malsche of the Department of Chemical Engineering (CHIS) and Department of Bioengineering Sciences (DBIT) and prof. Karine Hellemans of the Diabetes Research Cluster (DRC) of the VUB.

HIGHLIGHTS

The µFlow Cell is focused on **medical, pharmaceutical** and **biotech** applications, and aspires cooperation with industry along three routes:

- design and develop innovative **microfluidic solutions** within the core research lines of the consortium,
- fabricate and validate **microfluidic devices** and microreactors, from prototype to small industrial series,
- engineer and produce **functional microparticles**, such as biomaterials for therapeutic or diagnostic procedure, from lab to small industrial scale.

VUB VRIJE UNIVERSITEIT BRUSSEL

2 research groups

20 researchers

1 spin-off

9 patent applications

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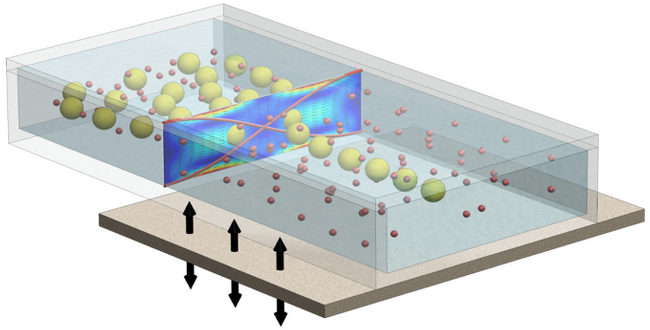
EXPERTISE

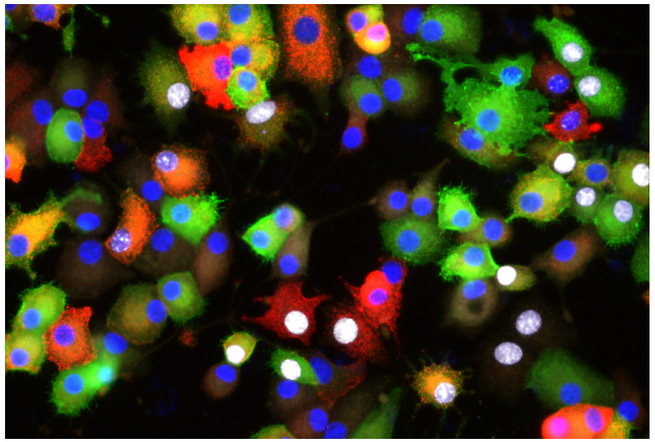
The µFlow Cell has a dedicated team of experts and technicians with access to internal and external cleanroom facilities equipped with advanced micro- and nanofabrication processes.

The expertise of the consortium is focused on the following research lines:

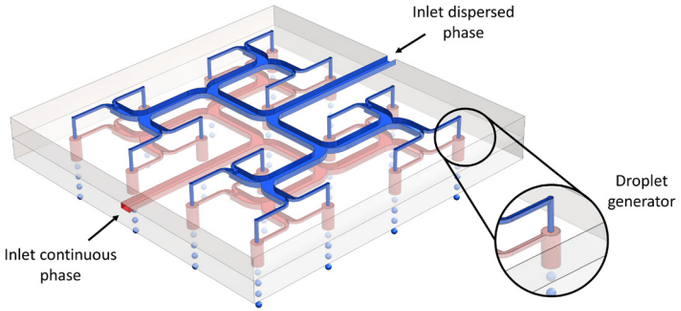
- induce **vortex flows** in microfluidic channels with acoustic or electroosmotic forces to accelerate mixing,
- manipulate **particles/droplets/cells in flow** by application of acoustic, electroosmotic or dielectrophoretic forces for microfluidic separation, purification or detection,
- tuning **surface functionalities** to enhance mass transport and avoid fouling,
- unique **3D Particle Image Velocimetry (PIV)** instrument for imaging of microfluidic flow patterns,
- unique flow tools with **controlled shear** to study precipitation,
- advanced fabrication processes for polymers, silicon and glass, microfabrication of **porous membranes**,
- POC devices which can handle biological matrices (e.g. **stool analysis**),
- unique **3D emulsification** devices for production of monodisperse functional microparticles,
- bottom-up engineering of **drug-loaded microparticles** for sustained and targeted release.



Acoustic mixing and separation



Effect of drug carried by microparticle on phenotype of beta cell



3D emulsifier to generate monodisperse droplets/particles