

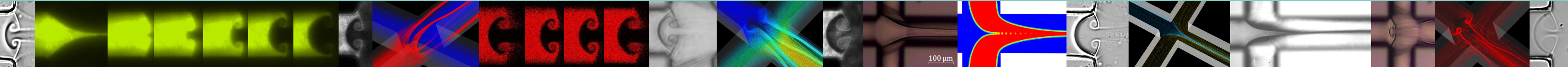
THE HYDRODYNAMIC FOCUSING OF LOW VISCOUS LIQUIDS AND WEAKLY ELASTIC POLYMER SOLUTIONS

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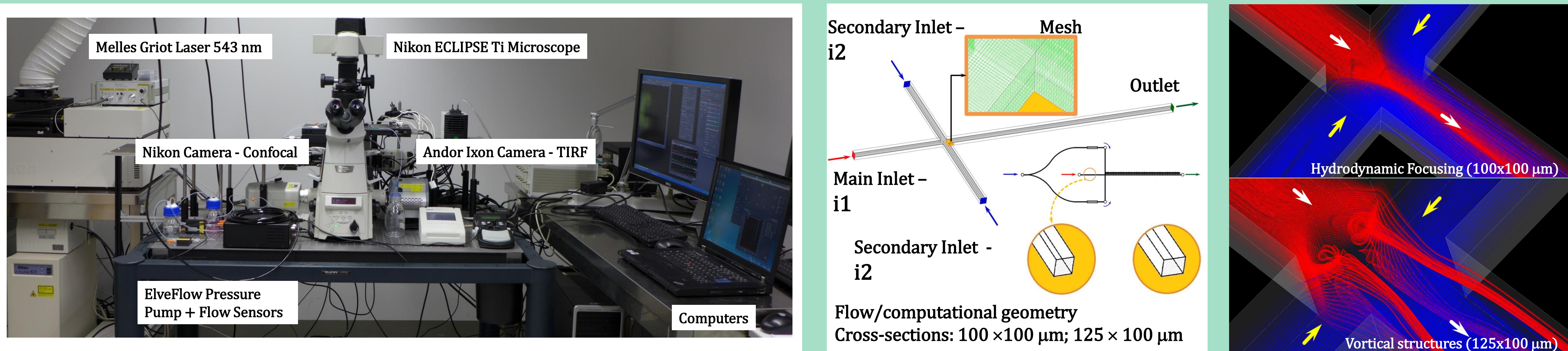


Hydrodynamic focusing is the confinement or redirection of a slower flowing stream by a faster flowing stream. The interface between the focusing and focused fluids depends on the Reynolds number Re and the device geometry.

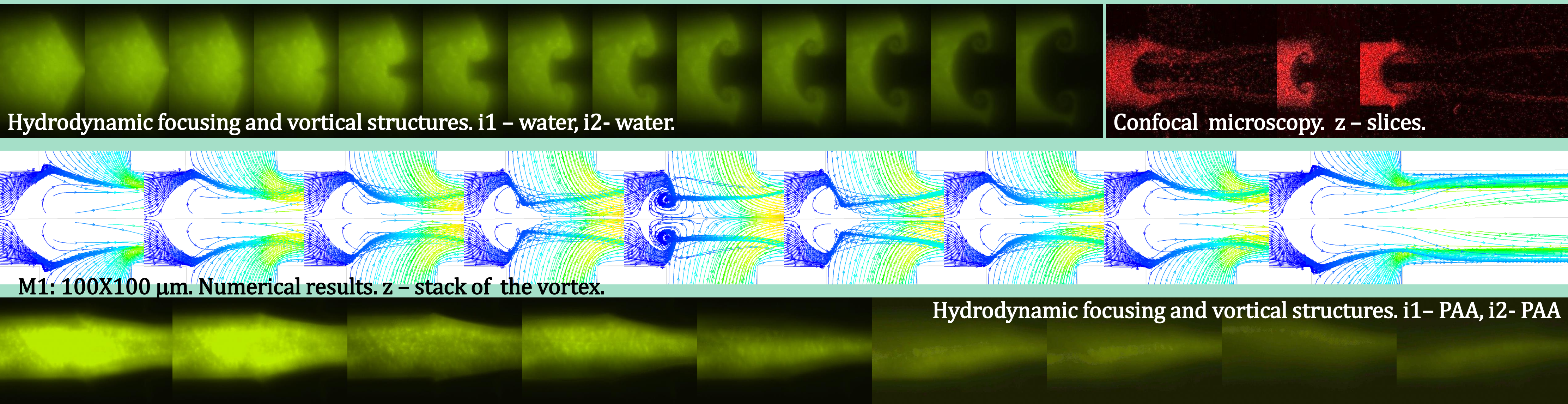
The present study investigated the hydrodynamic focusing phenomenon inside 2 cross-junction microchannels with rectangular cross-section of 100x100 μm and 125x100 μm . The aim was to understand and characterize the shape of the **vortical structures** obtained from the focused stream, in the region of cross linked branches of the junction, depending on the microchannel geometry, flow parameters and fluid properties. Numerical simulations performed by FLUENT code were found consistent for the Newtonian flows.

***Keywords:** hydrodynamic focusing, vortical structures, CFD, microfluidics, rheological properties.*

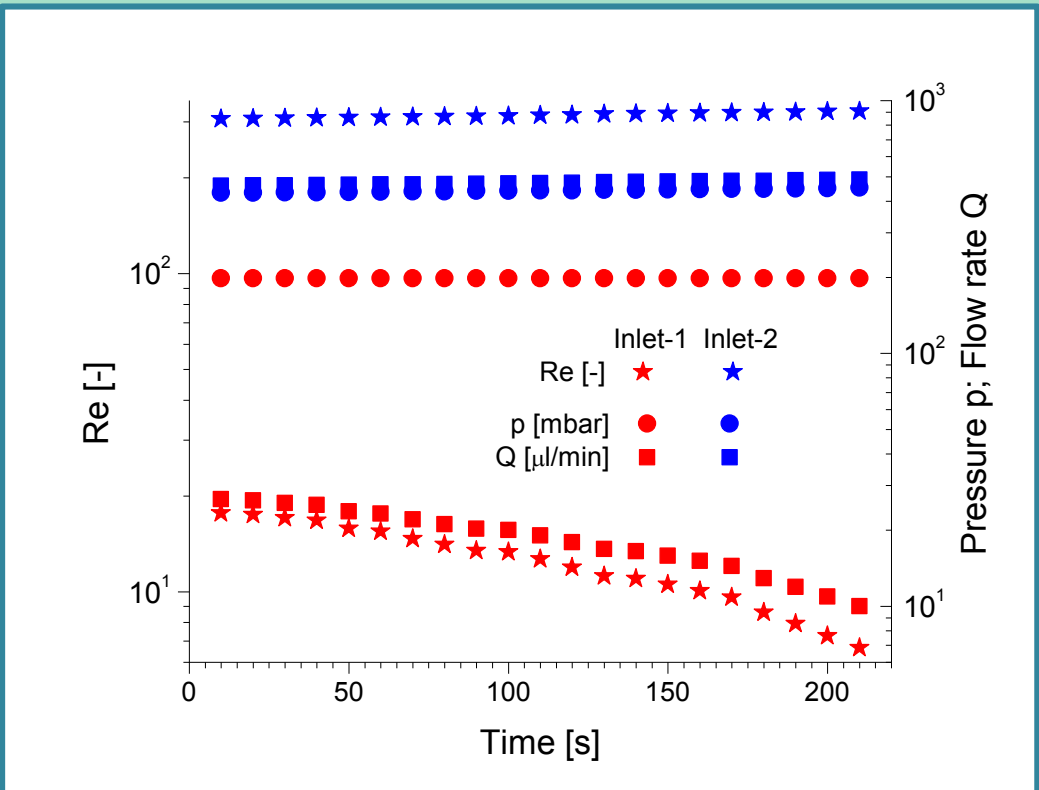
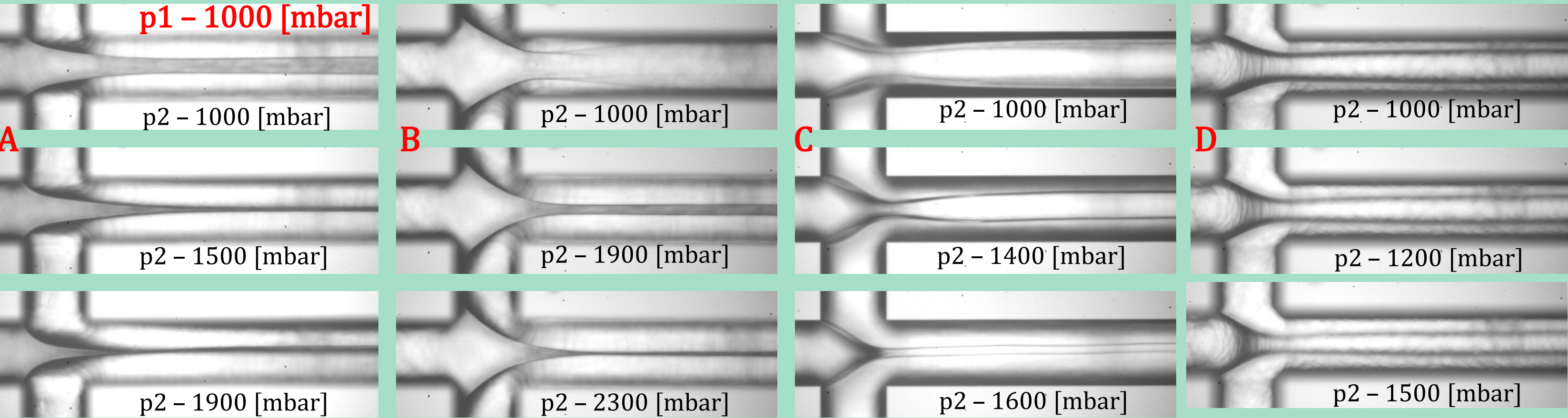
EXPERIMENTAL SETUP



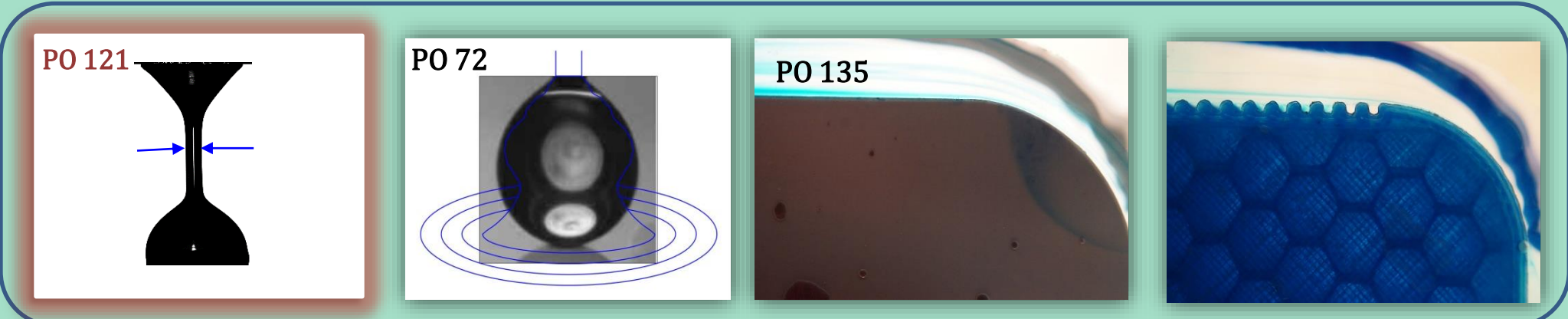
EXPERIMENTAL AND NUMERICAL RESULTS



Hydrodynamic focusing. A) i1 – PAA, i2 – Oil. B) i1 – PAA, i2 – water. C) i1 – Oil, i2 – PAA. D) i1 – Oil, i2 – water.



REOROM Group



FUTURE WORK

