

## **Computer assisted modelling and simulations in pressure driven microfluidic devices**

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Modern separation sciences rely largely on experimental methods. A possibility to replace a large bulk of experiments by computer assisted simulations is nowadays relatively inexpensive through numerous software packages running on standard desktop PCs. Therefore computer modelling has been recognized as a powerful tool in simulations and optimisations saving experimental costs in many research areas including separation sciences. This project will be using computer assisted modelling of microfluidic systems using numerical simulation package COMSOL Multiphysics®. The software that is used in the host research group is of leading brand in world of scientific simulation. It is a very powerful tool allowing modelling, simulation and optimisation of physico-chemical processes based on the underlying laws. The processes that can be studied for instance include heat transfer, fluid dynamics, diffusion and electromigration and the results can be usually visualised in 2D or 3D colour plots. The specific project will investigate flow patterns in multiple-flow planar pressure driven microfluidic devices.