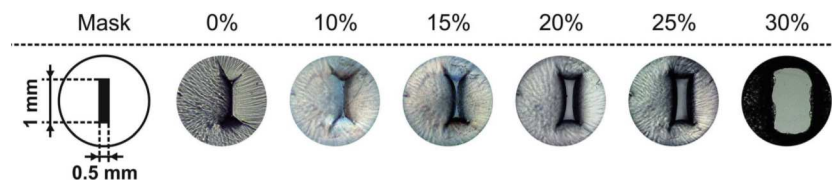


### Topic for a diploma thesis

## Subject: **Design of a test stand for the characterization of switchable single pores**

The separation and sorting of cells from complex liquids is one of the critical unsolved challenges in the life sciences and fields of technology. For example, powerful systems could be used to treat incurable cancer and infectious diseases or to carry out phenotyping. Membranes with switchable pore properties are suitable for this due to the high parallelisability of the filtration principle and the resulting high throughput.

Within the scope of the diploma thesis a test stand for the characterization of chemically (if necessary thermally) controlled single pores has to be set up. This consists of (a) a measuring cell with the fluidic connections for clamping the single-pore membrane, (b) a microscope camera for optical evaluation of the pore functionality, (c) fluid handling including microfluidic sensors to enable precise definition of the flow and the pressure, (d) the mechanical-fluidic test stand set-up, and (e) the test stand IT, which comprises in particular the test stand and evaluation software.



For the diploma thesis the following subtasks result:

- Literature research and
- Conception of the measuring cell for the optical examination of the individual pores and the separation behaviour
- Development and definition of the sensory parameters required for the test rig and the analytically permitted/necessary tolerances
- Realization of precisely adjustable fluid handling and the corresponding sensors
- Programming/implementation of a suitable control and evaluation software
- Set-up and starting up of the test stand

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