Automated platform for parallelization of capillary wave micro reactors

Description

The IMT is working on micro bioreactor, "Open capillary wave micro-reactor (cwMBR) for biopharmaceutical screening applications". The cwMBR has the advantage that due to the small volume of less than 8 µL many cultivation approaches can be performed in parallel. The cwMBR is shaked by a vertical oscillation technic. Until now only single experiments are possible. In this student project the task is to develop a platform which enables to use 9 reactors in parallel by using an axis system to move the reactor platform to the used sensors, which are by now optical sensor spots, read out by optical fibres and a liquid level control, achieved by triangulation measurements. For Control of the sensor readout, mixing and feed of water a python program has to be written. The goal is, to have a fully automated platform, where all functions of the device can be controlled and monitored and which can be used for cultivating cells in all cwMBRs parallel.

Fig1.: *Single reactor setup, used so far*

Tasks

- Develop a suited setup, using the exciter, a aperature xy-axis system and all sensors
- Programming in Python
- Testing the system by cultivating *escherichia coli* in 9 parallel micro reactors
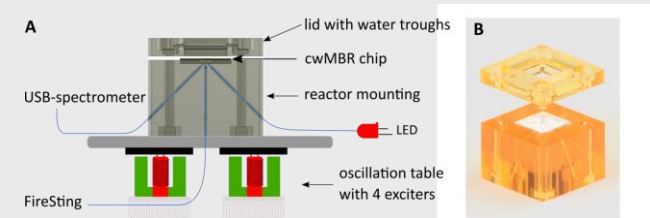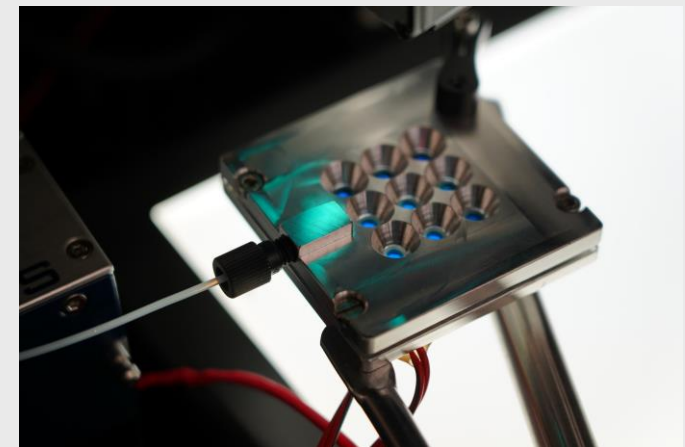

Fig2.: *cwMBR-Array with heating and fluidic connection*

Start: As soon as possible
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