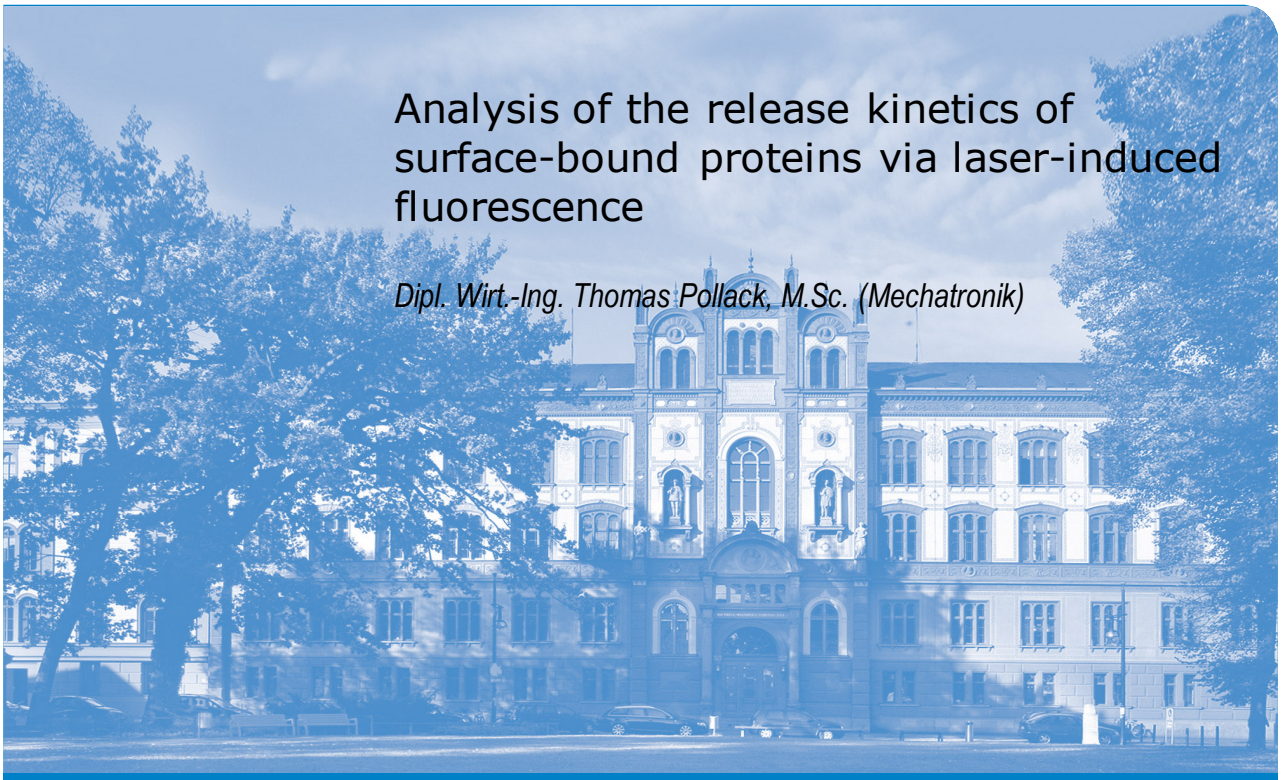

Analysis of the release kinetics of surface-bound proteins via laser-induced fluorescence

Dipl. Wirt.-Ing. Thomas Pollack, M.Sc. (Mechatronik)

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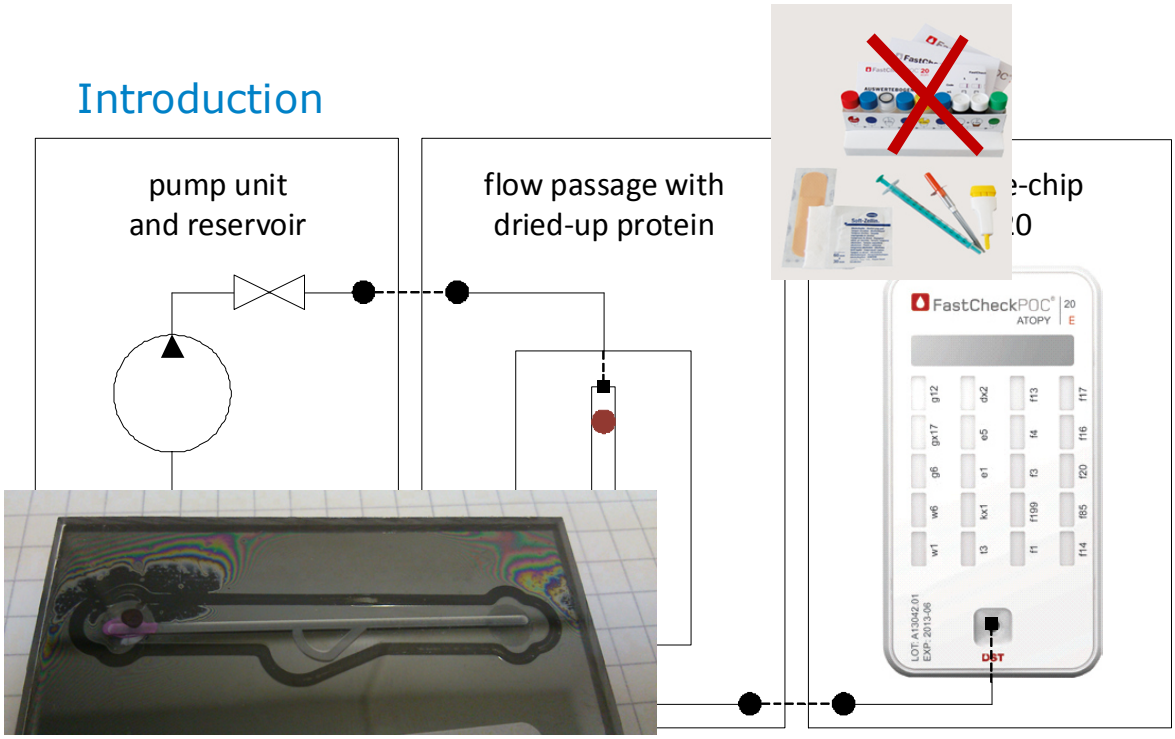
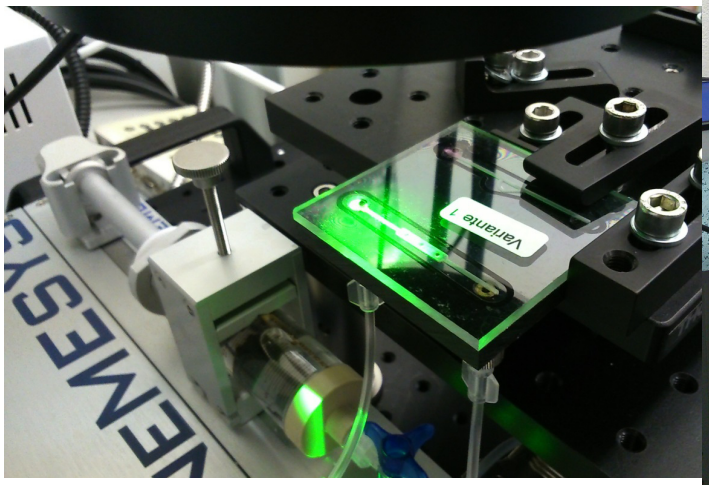
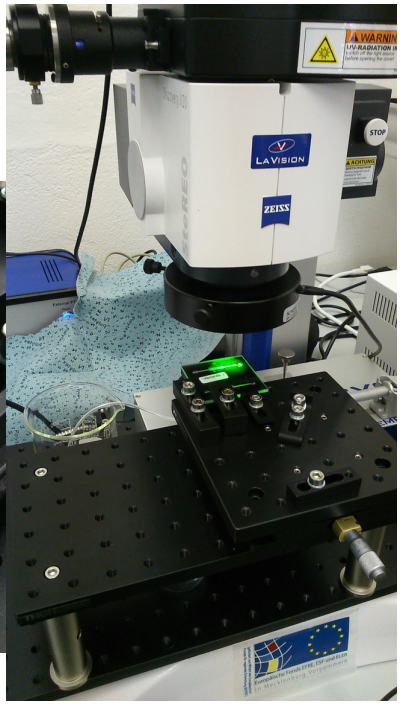
Introduction



Laser-induced fluorescence





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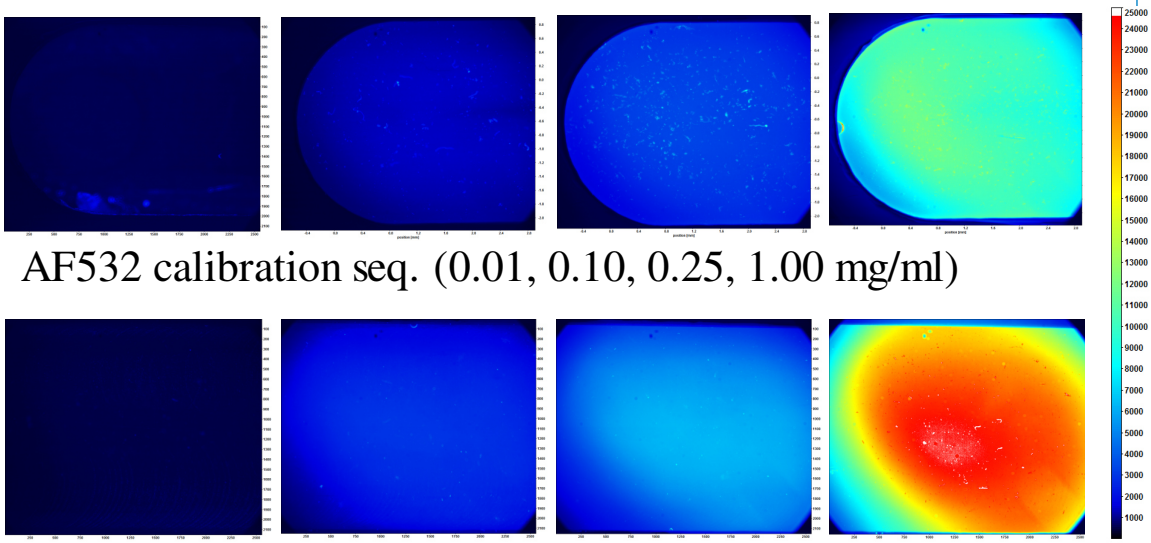
Aim of the Project

establishing of the LIF-method and the **qualification** of the resolving process

1. identifying the dye-protein combination which works best
2. proof the concept (of drying and resolving proteins)
3. qualify the volume flow of resolved protein (homogenous, granular, in strings / amount of protein)

Results – Step 1



AF532 calibration seq. (0.01, 0.10, 0.25, 1.00 mg/ml)

AF546 calibration seq. (0.01, 0.10, 0.25, 1.00 mg/ml)

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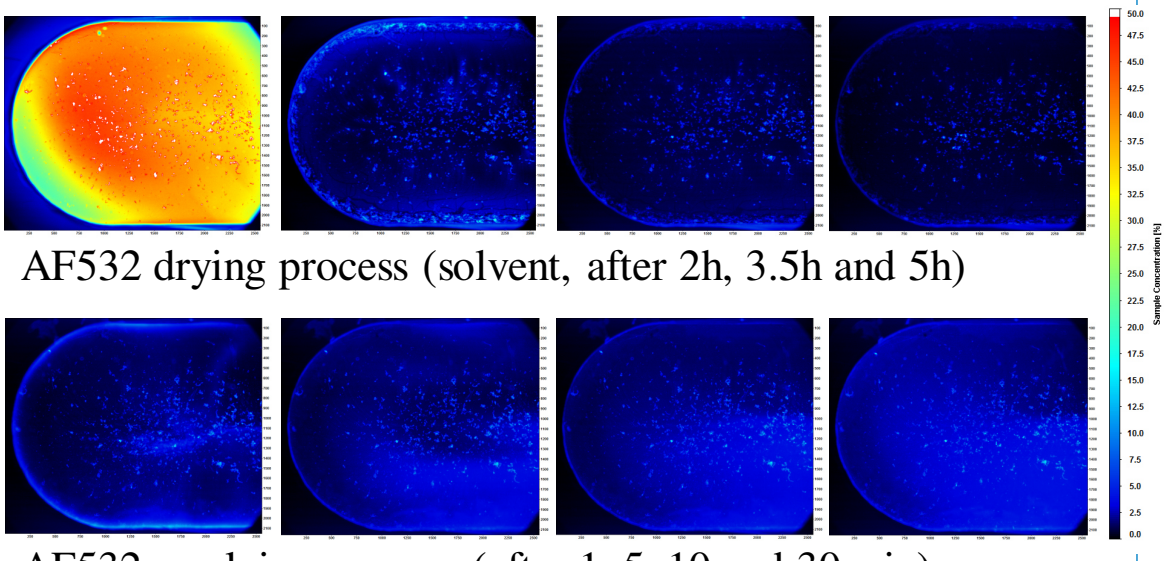
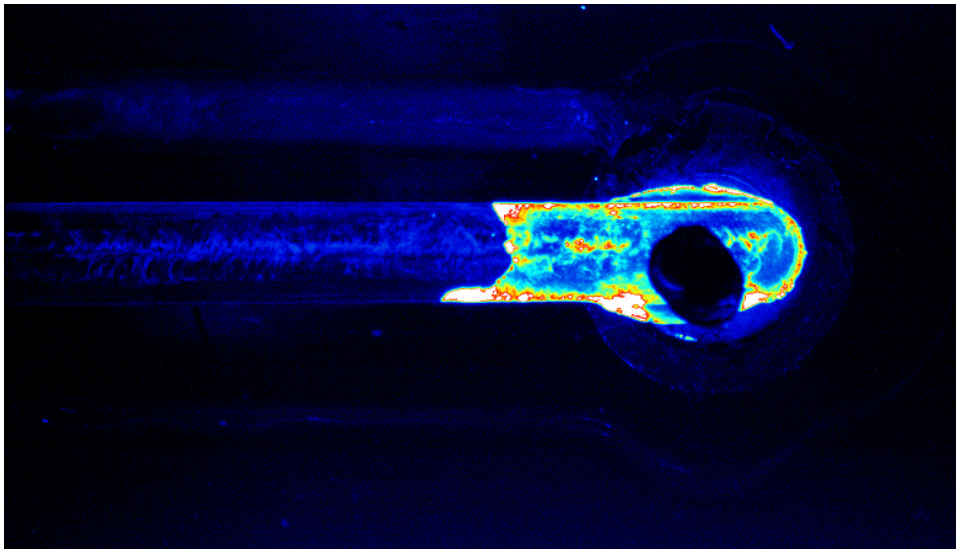
Results – Step 2



AF532 drying process (solvent, after 2h, 3.5h and 5h)

AF532 resolving process (after 1, 5, 10 and 30 min)

Results – Step 3



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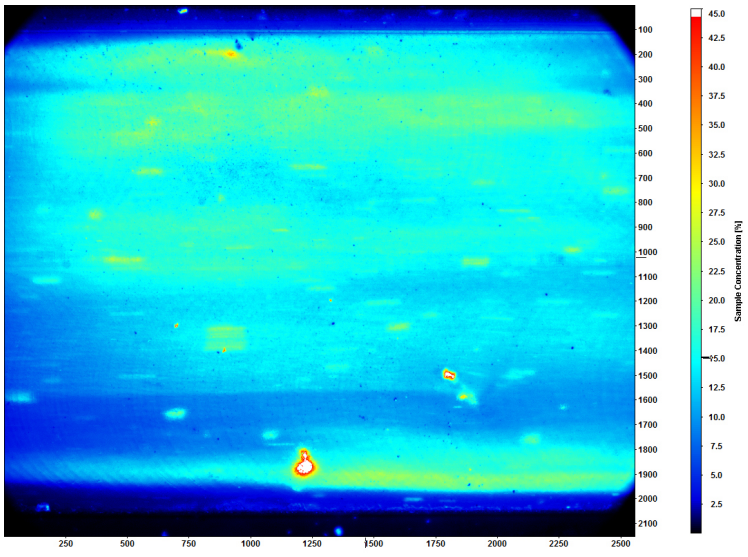
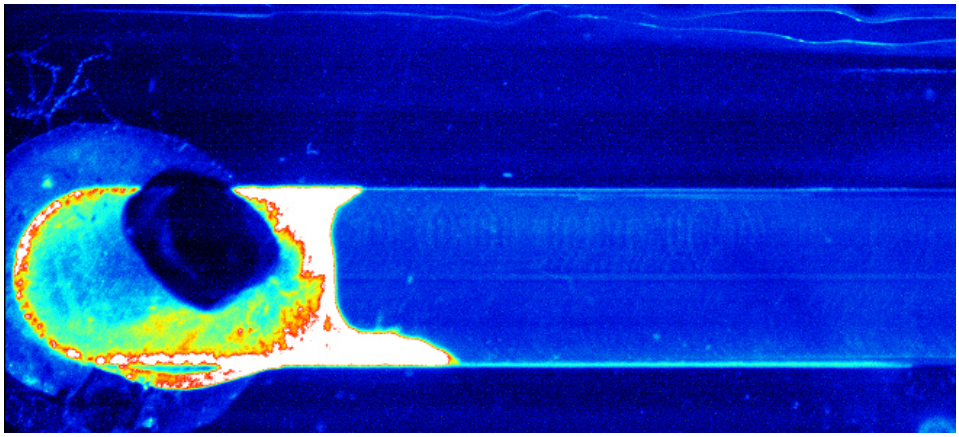
Results – Step 3



Results – Step 3



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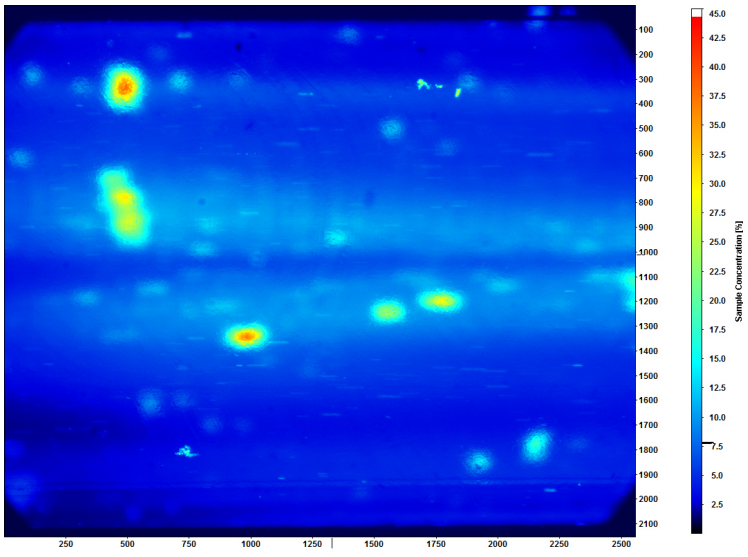
Results – Step 3



Summarizing the experimental results

- the resolving occurs within the first second of wetting
- concentration rises to a relatively high level and decreases afterwards
- the flow has no constant level of concentration and appears in strings or grainy fragments
- the maximum level of concentration in the second case is only the half of the other one

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Summarizing the results with regard to the aims of the project

- the LIF-system works and provides satisfying results
- the drying and resolving process can be observed and visualized in high resolution
- the mixing process can be analysed

Further studies

- better understanding of the resolving process
- the mixing of the dye-protein in the flow
- the high deviation between the peak-concentrations and the time curve of the concentrations

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Thank you for your attention.