



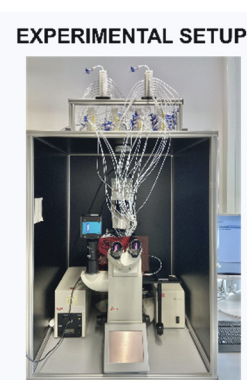
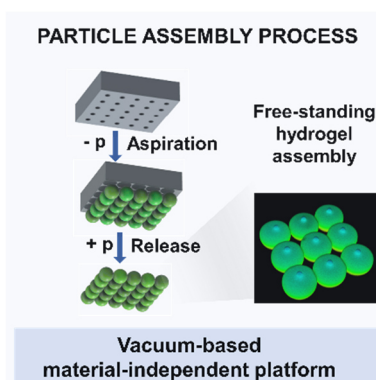
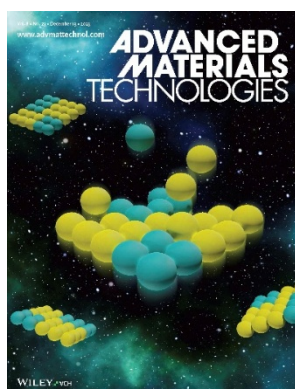
Master Thesis

“Developing an aspiration platform for spatially controlled polymeric microparticle assemblies”

Microsystems engineering has broad applications, ranging from miniaturized drug delivery systems and tissue engineering to next-generation data storage platforms. Despite this potential, existing techniques for assembling microparticles into rational, multi-material architectures remain limited.

This **thesis aims to develop an aspiration-based assembly strategy for aligning microparticles into hierarchical architectures**. The goal is to realize an automated process for microparticle aspiration holding, and inter-crosslinking, followed by controlled assembly release.

Weigel *et al*¹. introduced an initial platform concept using syringe pumps. Subsequent improvements were achieved with a single-hole, selective pressure-driven microfluidic aspiration system. Building on this work, the present thesis will further focus on reducing switching times, improving process stability, minimizing undesired particle uptake, and related failure modes.



If you're interested, please contact us via email, phone, or stop by at our office.

Professor: Prof. Dr. rer. nat. Julian Thiele (Department of Organic chemistry)

Supervisor: Dr. rer. nat. Kaihua Wu, M.Sc. Michelle Vigogne

Contact: kai.wu@ovgu.de, +49 391 67-57022, Office G28-303
michelle.vigogne@ovgu.de, +49 391 67-52216, Office G16-112

Background: chemistry, materials science, chemical/biomedical engineering, microsystems engineering, or a related field

¹ N. Weigel, E. Grigoryev, N. Fertala, J. Thiele, *Adv. Mater. Technol.* 2023, 8, DOI 10.1002/admt.202300374.