

Hierarchical Micromold Structuring via 2PP Micro-Stereolithography

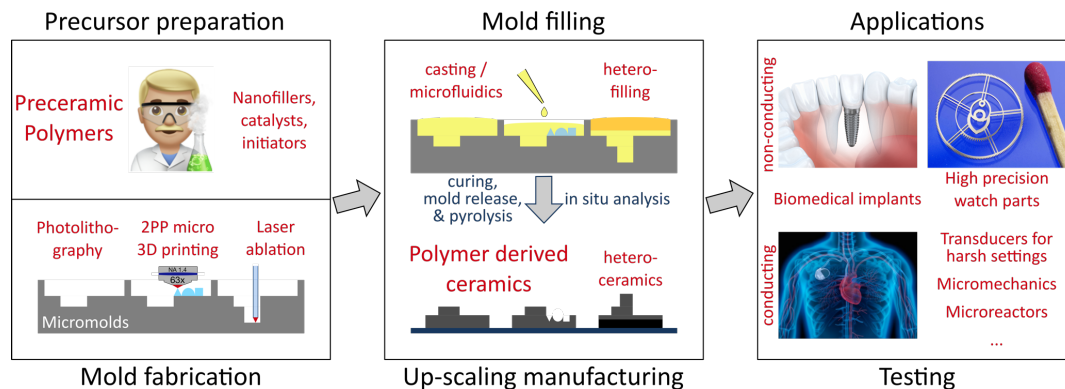
Semester Project / Master Thesis / Internship

(Section: Microengineering, Materials Science)

In the frame of the collaborative [SFA project Ceramic X.0](#), precise 2.5D micromolds for the shaping of polymer-derived ceramic (PDC) parts are fabricated by photolithography and etching processes in the *CMi*. In order to achieve a higher degree of shape complexity or to add a part surface functionality, the means of 2PP micro-stereolithography to be applied on these micromolds shall be investigated. In a subsequent process step, printed patterns would be replicated in the cast PDC part.

Suitable test structures and patterns have to be designed and printed on typical planar mold materials such as silicon, PDMS, and *SU-8* using the state-of-the-art micro-stereolithography system [Nanoscribe Photonic Professional GT+](#). Later, real molds will be used as substrate and the limits of the printing location (maximum mold depth, sidewall proximity) shall be investigated. Fabricated structures are characterized with respect to dimensional control, surface finish, mechanical behavior, and substrate bonding.

For these tasks, we are looking for a highly motivated student with cleanroom experience who is interested in interdisciplinary research.



Work description:

- 3D test structure design
- 2PP micro 3D printing on different substrate materials
- Approaching the limits of print location in real micromolds
- Comprehensive metrological and material characterization

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