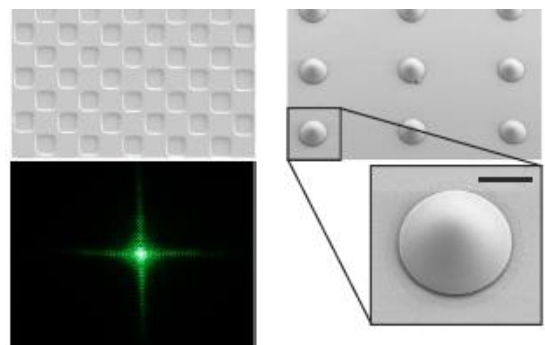


Development of glass coatings

Due to their outstanding optical and thermal properties, glasses are used in many important application fields. Especially in the field of micro optics, there is still a huge potential left to use fused silica glasses as the material of choice. However, glasses are hard to structure as they need a high temperature to be melted or hazardous chemicals for an etching process.

Our group developed a new method to fabricate high quality fused silica glasses using "Liquid Glass" (a silica nanocomposite) which can be structured at room temperature using UV-light (Kotz et al., *Advanced Materials*, 2016). This new technology allows to process glass like a polymer and to use a simple 3D printer to print complex shaped glass parts (Kotz et al., *Nature*, 2017). To further expand the technology, we are developing a new nanocomposite to fabricate glass coatings with a microlithographic printer. This work will focus on the development and the characterization of fused silica glass coatings on different substrates (glasses, metals, etc.).



The work will contain:

- 1.) Microlithographic structuring of the nanocomposites on different substrates.
- 2.) Adjustment of the liquid polymer binder matrix of the glass nanocomposite.
- 3.) Find appropriate debinding and sintering protocols for the glass coatings.
- 4.) Characterization of the max. coating thickness and the optical properties of the glass coatings.

Field of study: organic chemistry, material science

Qualification: Interest in working in an interdisciplinary team between engineering, material science and polymer chemistry. Knowledge of organic chemistry is required. Basic knowledge of the fabrication of nanocomposites and operating a stereolithography printer are beneficial. If you're interested please send a letter of motivation, your CV and a list of your academic track record.

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