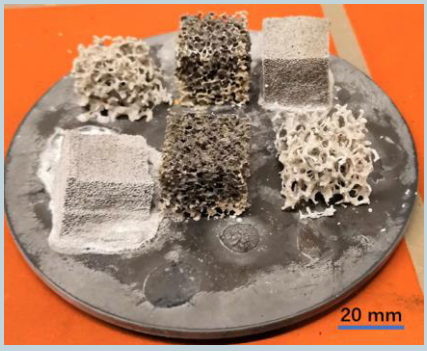
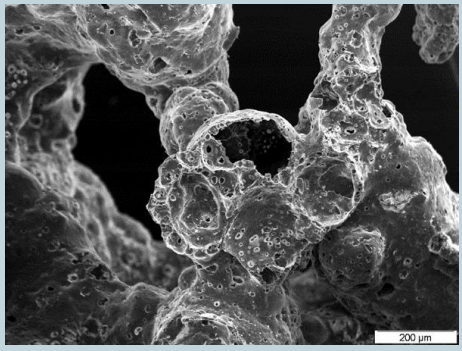
Abschlussarbeit

WiSe 2019/2020

Prof. Dr.-Ing. Claudia Fleck

Fabrication of water-glass based scaffolds by foam replication method





Scaffolds with interconnected pore structure are interesting for biomedical applications, for instance as bone replacements. They can been fabricated by the replication method. In general, this process contains as a first step the preparation of a glass slurry from glass powder and binder. Besides their biocompatibility, water glasses offer a special advantage in this process step: because they can be dissolved in water, they do not need a binder, and the water glass solution can be directly used for coating the foam precursor, yielding a simple and safe process.

The goal of this study is:

- to optimize the composition of the slurry
- to investigate the influences of process parameters on the structure
- to characterize the mechanical properties

The tasks in this study include:

- a comprehensive literature review
- sample preparation
- Microstructural characterization by means of light microscopy and scanning electron microscopy, and, possibly, micro-computed tomography
- characterization of the fracture toughness and fracture strength of samples by mechanical tests (compression test, bending test)

This project can be adapted to a bachelor or master thesis.

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