Leibniz Universität Hannover

iPeG Institut für Produktentwicklung & Gerätebau

Bachelor/Study Thesis

Date: 29.09.2023

Start: As soon as possible

Literature Research on Process Influences and Parameters for Additive Manufacturing of Glass

Background / Rough Description of Tasks:
Additive manufacturing offers the possibility of producing optical systems with significantly greater design freedom than conventional manufacturing processes. However, the areas of application for additively manufactured optics have so far been limited by production and material influences. In particular, anisotropies in the material that arise during the printing process and the limited thermal and chemical stability of the polymer materials used have a negative impact. One approach to both reducing the anisotropies and increasing the stability is the use of glass nanocomposite materials with polymer binders. These are first processed using classic photopolymersiation techniques. In subsequent process steps, the polymer binder is removed. A homogeneous glass body is formed from the remaining blank in a sintering process.

The aim of this thesis is to investigate existing research on use of glass nanocomposite materials for additive manufacturing. The main focus is on the identification and classification of processing parameters and disturbances in the printing and post processing of the material found in existing literature.

Personal interests can be taken into account in the design of the project task. Please send a recent transcript of records and a short CV as your application.

Possible Tasks:

- Literature research on the state of the art
- Literature research on material and processing characteristics
- Classification and structuring of the acquired knowledge

What will be expected from you:

- Skills in knowledge acquisition and structuring
- Independent, structured and focused approach to work
- Fluent knowledge of English or German (spoken and written)

Have we caught your interest? Please send us a short CV and a recent transcript of records.

Supervisor:
M. Sc. Simon Teves

Institut für Produktentwicklung und Gerätebau
(Gebäude 8143)
An der Universität 1
30823 Garbsen

E-Mail:
teves@ipeg.uni-hannover.de