Master Thesis:
3D-printing for optical system assembly

Optical systems comprising single-mode fibers (SMF) and photonic integrated circuits (PIC) are of high relevance for application from optical communications to metrology and bio-sensing. We use 3D-printing based on two-photon polymerization to structure lenses both on PIC, see Fig. a) and SMF, see Fig b) to enable low-loss coupling. To combine single components into a system, they need to be placed with micrometer accuracy using a fineplacer.

Your tasks:
- Simulate and optimize freeform optical components
- Establish a positioning process using a fine-placer
- Characterize optical systems using electron microscopy, white-light interferometry and optical coupling experiments.

The focus of this thesis is on experimental, practical work. Some optical and mechanical simulation will be required. Starting: as soon as possible. Location: CN (IMT) and CS (IPQ). The thesis will be in cooperation with the startup Vanguard Photonics.

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