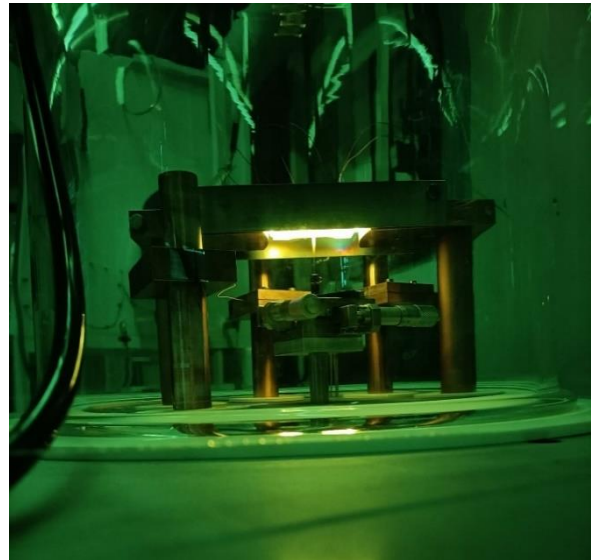


Bachelor/Master thesis

Synthesis of single crystals using the micro-pulling-down method

High-quality monocrystalline samples of the material systems to be analysed are indispensable for the study of structural and electronic properties. The synthesis of these single crystals poses a particular challenge and has given rise to a variety of methodological approaches in recent decades. One of these approaches is the micro-pulling-down method. In this process, the single crystal is pulled out of a melt using a seed similar to the Czochralski process; however, it is not pulled upwards but downwards through a hole of a defined size in the crucible. This process enables a significantly faster production of single crystals and thus a correspondingly large sample throughput in a comparatively short time. The aim of this work is to investigate the influence of various alloying elements on the phenomena of the martensitic phase transition of shape memory alloys based on nickel-titanium. These represent an important model system for martensites due to their wide range of possible applications and are still the subject of current research.



Tasks

- Synthesis of single crystals using the micro-pulling-down method with variation of the composition
- Preparation of metallographic samples (sawing, grinding, polishing, etching) and evaluation under a light microscope
- Measurement of transport properties in the cryostat

Requirements

- Degree in engineering or physics
- Careful and thorough way of working
- Enjoy experimental work

Contact

- Dr Alexander Kunzmann alexander.kunzmann@uni-due.de
- Timon Sieweke timon.sieweke@uni-due.de

Starting date

- From June or by arrangement