

Research Assistant in the Interdisciplinary Field of Medical Implants

Material Characterization, Biomechanical Properties and Degradation Behaviour of Novel Magnesium Screws Used for Medical Applications

Are you interested in working with novel bioresorbable medical implants made of magnesium? If yes, we are the right team for you! Depending on your study background and expertise, we offer you the opportunity to deepen your knowledge, gain advanced research skills and contribute to the development of bioresorbable implants, which make patients' rehabilitation more convenient.



Background

Bioresorbable implants are a class of implants that are resorbed by the body of a patient over the time of healing. Especially magnesium-based alloys are a promising class of implants as no further operation is necessary. However, unlike polymer systems they exhibit sufficient mechanical properties to effectively support the bone structure in case of a fracture.

A class of patients that can hugely benefit from this behavior are children as they still exhibit significant skeletal growth and

would hence need reoperation in the case of a non-degradable implant (e.g. titanium or stainless steel).

Therefore, our current study focuses on novel magnesium screws, which are tested *in vitro* as well as *in vivo* and *ex vivo* in a sheep model. The aim is to find out if the implants can meet the requirement for a successful recovery of the patients. For this, biomechanical testing, evaluation of the degradation behavior and materials characterization are essential methods.

Possible Tasks

- biomechanical tests (push- and pull-out tests) of implanted screws
- *in vitro* degradation studies in physiological salt solution
- μ -CT imaging and 3D-reconstruction
- metallography and microscopy
- histological examination
- comparison to other implant materials (polymers, titanium)

Key facts

- collaboration of Medical University Graz, TU Graz and international medical device companies
- interdisciplinary team with medical professionals, engineers and natural scientists
- variable tasks depending on your expertise
- starting: 01.04.2022
- 6 months (extension is possible)
- part-time employment
- salary according to the collective bargaining agreement for university staff
- **optional:** Master's Thesis in cooperation with your home university



If your interest has been piqued, take the unique chance and contact me – informal and straightforward!
Just scan the QR code or write me an e-mail.

Contact

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