

Master of Science – Biomedical Engineering
Thesis Proposal

Bioresorbable implants for corrective osteotomies of the distal radius

Malunions of distal radius fractures are usually treated with a corrective osteotomy, stabilized with a bulky plate and screws, which have to be removed in a second surgery. We, an interdisciplinary team of hand surgeons of Kantonsspital Baselland and biomedical engineers of the University Hospital of Basel focussing on 3D printing, strive to improve the current treatment method by using a patient-specific implant made of a 3D printed bioresorbable composite instead of conventional plates and screws. This eliminates the need for a second surgery for implant removal and the associated risks. The master thesis project aims to conduct a feasibility study focussing on in-hospital 3D printing of these patient-specific implants. The master student will design and 3D print the implants, which will be evaluated in biomechanical tests before and after in vitro degradation studies. We strongly believe this method will cause a breakthrough in this field due to various advantages compared to the current state of the art. If you are interested, please get in touch with us. We are happy to provide more details.

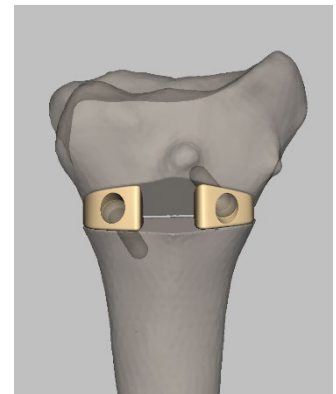


Figure 1 © 2022 Swiss
MAM/Philipp Honigmann and
Michaela Maintz

Nature of the Thesis

Experimental: 50%

Computer-aided design/modeling: 20%

Documentation: 30%

Specific Requirements

- Fundamental knowledge of biomaterials and implants
- Strong interest in the use of 3D printing for medical applications
- Basic knowledge of 3D printing is advantageous

Supervisor

PD Dr. mult. Florian M. Thieringer, MHBA / PD Dr. med Philipp Honigmann (co-supervisor)

Medical Additive Manufacturing Research Group (Swiss MAM)

Department of Biomedical Engineering, University of Basel

Collaborators

- Kantonsspital Baselland, Liestal
- University of Applied Sciences and Arts Northwestern, Muttenz, Switzerland

Contact

Dr. Neha Sharma (neha.sharma@unibas.ch) / Michaela Maintz, michaela.maintz@unibas.ch