

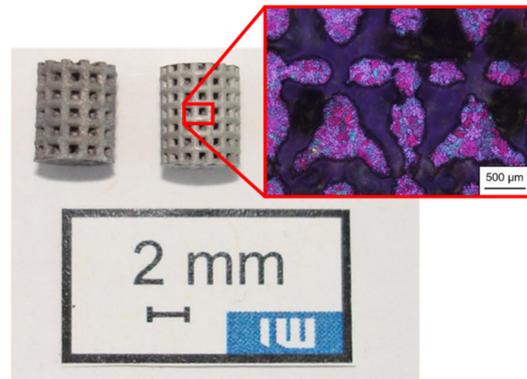
## Degradation behaviour of additively manufactured components with local functional properties

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**Motivation:** Additively manufactured components with integrated functional areas or density gradients lead to the challenge that these may have a negative influence on important technological properties such as mechanical strength or corrosion resistance. Therefore, a comprehensive characterization of the property profile of functional components is required in order to establish the relationship between local microstructural features and degradation behaviour under mechanical load. With these data, additively manufactured functional components can be developed with regard to their intended field of application.



**Objective of the PhD project:** Since, depending on the material composition and microstructure, both high-cyclic and low-cyclic stresses can dominate its damage and degradation behaviour, lifetime data (LCF, HCF) is to be determined for the materials developed in the consortium. Here, the morphologies and distributions of functional primary and secondary phases are of particular interest to the understanding of crack initiation and propagation mechanisms. Reference tests in dried air to record the damage development without media influence will be supplemented by comprehensive experiments on corrosion fatigue.

**Open-porous bone grafts made of biocompatible magnesium alloys featuring graded, multiphase microstructures**



This is a PhD-project of SAM “School for Additive Manufacturing”. SAM is a structured PhD-programme of the Leibniz Universität Hannover in cooperation with the Hochschule Hannover, the Laser Zentrum Hannover e. V., the TU Braunschweig and the TU Clausthal.

Students interested in this or any other project of SAM can apply for fellowships. Please have a look at <https://www.iw.uni-hannover.de/de/forschung/school-for-additive-manufacturing/projekte/> for details.

