

Master's Thesis / Bachelor's Thesis / Forschungslabor

Additive manufacturing (3D printing) of bio- based wood-like customized 3D objects based on insect frass feedstocks

The aim of the bachelor's or master's thesis or Forschungslabor is the processing of bio-based customized light-weight parts by additive manufacturing in a sustainable manner. Wood-like granules from insect frass will be used in powder bed 3D printing approach by using renewable, biocompatible and biodegradable binder materials, aiming 100% bio-based customized objects. The thesis includes i) the proving of suitable binder systems, ii) the optimization of printing parameters e.g. layer height, binder concentration as well as the iii) extensive characterization of the binder systems and 3D printed parts e.g. by using viscosimeter, μ -CT, scanning electron microscopy, nitrogen sorption, FTIR, thermal analysis and mechanical testing.

The thesis is a joint project between the department of advanced ceramic materials (Prof. A. Gurlo, TU Berlin) and ceramic processing and biomaterials (Prof. J. Günster, BAM) and the research activities will take place at both institutions.

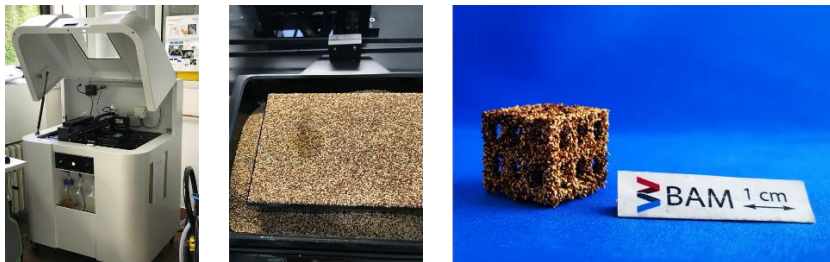


Figure 1. From left to right: (i) Binder Jetting 3D printer (ii) powder bed made of termite frass layers (iii) scaffold structure 3D printed with the termite frass material. Source: Bundesanstalt für Materialforschung und -prüfung, Berlin.

If you are interested please contact
Ulla Simon (ulla.simon@ceramics.tu-berlin.de) or
Andrea Zocca (andrea.zocca@bam.de)