

Project Proposal

For the Degree Program in Sustainability Studies

Characterization of innovative packaging based on Polyethylenfuranoat (PEF)

Duration: 5-6 Months (27,5 ECTS = 825 h)

Location: Sigmaringen (Forschungsfabrik), partially Home Office

Possibilities for a follow-up Master's Thesis: yes

Potential Cooperation Partners (if applicable): Arburg GmbH + Co KG

Supervisor / Contact: Max Sturm, M.Sc.

Aim of the project: The aim of the project is to increase the knowledge of the packaging-relevant properties of PEF in order to make it available for more packaging applications. For this reason, the project aims to characterise and analyse the mechanical, barrier and surface properties relevant to packaging using the packaging application example of ice cream cups.

Project description: PEF is a promising bio-based packaging material made from renewable resources. It is often seen as a potential replacement for conventional PET. PEF offers a number of advantages that make it an attractive option for various applications in the packaging industry. An outstanding feature of PEF is its improved barrier properties to oxygen and carbon dioxide compared to PET. This makes it particularly suitable for food and beverage packaging as it increases the shelf life and freshness of products. In addition, PEF is lighter and offers greater rigidity than PET, which results in improved dimensional stability and thus offers the possibility of producing thinner packaging, which reduces material consumption. Another advantage of PEF is its biodegradability. In contrast to PET, PEF can be completely biodegraded in a short time under the right conditions, which leads to a reduction in the environmental impact of plastic waste.

Suitable for / Requirements for the student: Can be carried out in German or English. The student should be interested in the topic, have an independent way of working and be willing to familiarize themselves with material characterization and statistical analysis.