



Name:

Simon Schick

Name of the project:

Bio-based staple fibers from PBS

Abstract of the project:

In the first part of this project, a comprehensive review of melt-spinning, biodegradation and food packaging will be executed. The focus of this work is to produce a nonwoven prototype made of spun BioBased Polymer. This will include methodological choices, trials and decision based on found and gained data. Beside that, the operational sequences of spinning and the biodegradation needs to be understood in detail.

In the second part of the project, the pool of Polymers is put together and the trials are designed. First, all polymers will be tested in the lab. This testing makes the characterization and afterwards the comparison of the different Biopolymer possible. After the characterization, the Polymers will be spun to fibers on the lab extruder at ASOTA. With the gained knowledge, the polymers can be compared not only as granulate, but also as fibers. The pool of polymers will be narrowed down for further tests on the FET (Fiber Extrusion Technology) at AMIBM. With three to four Polymers it is easier and cheaper to order, store, prepare and produce Fibers. When the spinning on the FET is successful, the fibers from the trials in the lab at ASOTA will be compared to the fibers from the FET. With this knowledge, the pool of Polymers to choose from will again be narrowed down to one maximum two. With the remaining Polymers, a upscaling to the pilot line at ASOTA will be attempted. The produced Fibers will be cut into short staple fibers at production sight and afterwards processed into nonwovens with the wet-laid process. The produced nonwoven will be tested for sealing, as well as food safety and could at the end be produced into a tea bag.

Introduction of the ESR:

After finishing secondary school in 2011, I started an apprenticeship as an industrial mechanic at Groz-Beckert KG and completed it in 2015 with commendation. In addition to the apprenticeship, I achieved to gain the qualification for university entrance on the weekend. After half a year of occupation in assembly at Groz Beckert, I was able to begin my studies with the support from the scholarship program offered by Groz-Beckert. During my studies, I was given the opportunity to complete a practical semester in North Carolina (USA) at the Nonwovens Institute of NC-State University. I successfully wrote my bachelor thesis at Groz-Beckert in the Nonwovens department. After my English-speaking Master of Science at the University of Applied Science in Mönchengladbach, and the successful Master-thesis again at the Nonwovens Institute I am now continuing with my Ph.D. This step leads me to the Aachen-Maastricht Institute for Biobased Materials (AMIBM), where i am now researching on Biobased Polymer for Staple-fibers.

Keywords:

Filtration, Nonwovens, technical textiles

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