

Master thesis: Evaluation of different antimicrobial coatings regarding their antimicrobial efficiency and prevention of biofilm formation

The preferred form of life of microorganisms is in biofilms. They all have a common feature: the cells live in close associations at high densities and are embedded in an organic matrix of biopolymers, the so-called extracellular polymeric substances that are produced by the organisms themselves. Biofilms play a crucial role in medical-related infections. Various types of surfaces in clinical settings are prone to biofilm development and may increase the risk of diseases. Also in kitchens for commercial food preparation, biofilm can be a source for food borne illness. In industrial production processes, biofilm can decrease product quality and quantity, cause material damage leading to interruptions of the production process, and preventive overdosing of biocides and cleaners. Furthermore biofilms can cause hygienic and odor problems in washing machines.

To avoid undesired biofilms or delay their formation one technology is to apply antimicrobial coatings. There are several antimicrobial coatings already on the market but due to leaching, overgrowth, stability, toxicity, bacterial resistance etc. their efficiency is limited. A lot of new active agents were recently developed whereas their antimicrobial efficiency cannot be detected in the common used standard tests.

Goals of the master thesis are:

- Development of a simple and suitable screening test for evaluation of antimicrobial activity
- Testing of antimicrobial and/or anti-adhesive coating formulations
- Examination of antimicrobial effects of the most promising coating formulation(s)

In case of interest, please email your application to jost.wingender@uni-due.de

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