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## Functional surfaces - Development of innovative products

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Surfaces and their properties are playing an increasingly significant role in the industrial application. In general, materials are used according to their property requirements such as elasticity, strength, heat resistance or to meet other requirements such as corrosion resistance. However, traditional surfaces are often not able to meet the ever-increasing demands of today's applications in automotive, textile, medical and food industry. Thus, in recent years, advances have been made using functional coatings to exceed limitations of material to make surfaces more attractive for specific industry applications. Hygienic and efficient automation technologies are key aspects of a successful production process for example in the food and beverage industry. Requirements regarding the clean ability and durability of surfaces that are in food contact are key factors. The approach of this study was to design functional surfaces with easy to clean and/ or self-cleaning coatings that enable automation components to be easily or less cleaned. For coating procedure, physical vapor deposition was carried out to facilitate separation of the vaporized coating material to the substrate. Substrates used are aluminum, stainless steel, and plastics, for example, polyamide or polyethylene. Analytical descriptions of surface characteristics were performed using scanning electron microscopy, contact angle, and roughness. Different surfaces were successfully coated with easy to clean coatings and characterized analytically. In addition, a coating of automation components consisting of varied materials was realized and coating adhesion was improved. First application tests showed a clear improvement of material properties relating to chemical resistance and clean ability compared to today's standard materials used.

### Biography

Aline Holder has her expertise in Material Science and Engineering, Food Science and Technology as well as food contact materials. Her research focus is based on advanced technologies for the food and beverage industry with special focus on smart surfaces to develop innovative automation products. She has built up her expertise during her PhD thesis from 2010-2014 in research, evaluation, teaching and administration at University of Hohenheim, Institute of Food Science and Biotechnology. Since 2015, she is part of the research department of Festo AG & Co. KG focusing on applied research to transfer new promising technologies to the company.

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