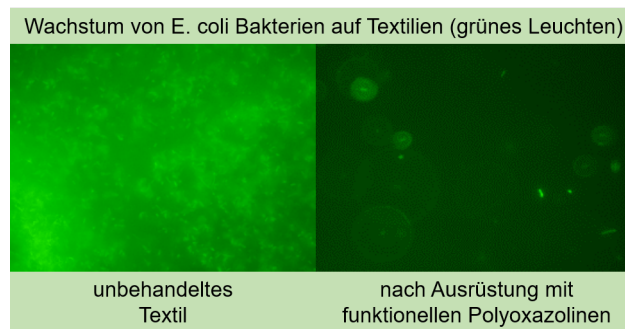


## Polyoxazolines - Polyoxazoline-based finishing polymers for generating anti-adhesive textiles with controllable antimicrobial function.

Textile surfaces have always been a target for microbial infestation. This manifests itself in the formation of persistent biofilms, which, in addition to aesthetic limitations and the destruction or unusability of the material, are also associated with a considerable potential health hazard. Existing technical solutions for antimicrobial textile finishing accumulate in the environment and are suspected of causing damage to health. Therefore, the goal of the present research project was to develop novel finishing polymers based on polyoxazolines for textile applications that impart both anti-adhesive and antimicrobial properties to textile materials. The aim was to functionalize polyoxazolines with intrinsic anti-adhesive properties in such a way that they also have an antimicrobial side chain and, in addition, a suitable chemical anchor group for covalent fixation to textile products made of cotton and polyester. This was achieved via a multistep derivatization of the base polymer. Immobilization on textile substrates was achieved both on standard textiles and on commercially available species. All textiles treated in this way exhibited both anti-adhesive and antimicrobial properties. Due to the commercial availability of the starting polymers, the water solubility of the polyoxazoline derivatives and their toxicological safety, the implementation and further development of the R&D results will open up new products with antifouling properties to the many SMEs in the textile industry, which could previously only be achieved with environmentally problematic chemicals or chemicals with little public acceptance.



**Figure 1:** The growth of bacteria can be detected with the fluorescence microscope (green glow). Textiles finished with functional polyoxazolines (right) do not glow.

### Project Information:

Title (German): Polyoxazolin-basierte Ausrüstungspolymere zur Generierung antiadhäsiver Textilien mit steuerbarer antimikrobieller Funktion  
Acronym: Polyoxazoline  
Grant: IGF 19622 N  
Project Duration: 01.07.2017 - 30.10.2020



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