Project title:	PhotoDynTex
Partners:	Institut für Textiltechnik der RWTH Aachen Institut für Experimentelle Molekulare Bildgebung der Uniklink Aachen Wenzel & Hoos GmbH GEOS-Geilfuss GmbH
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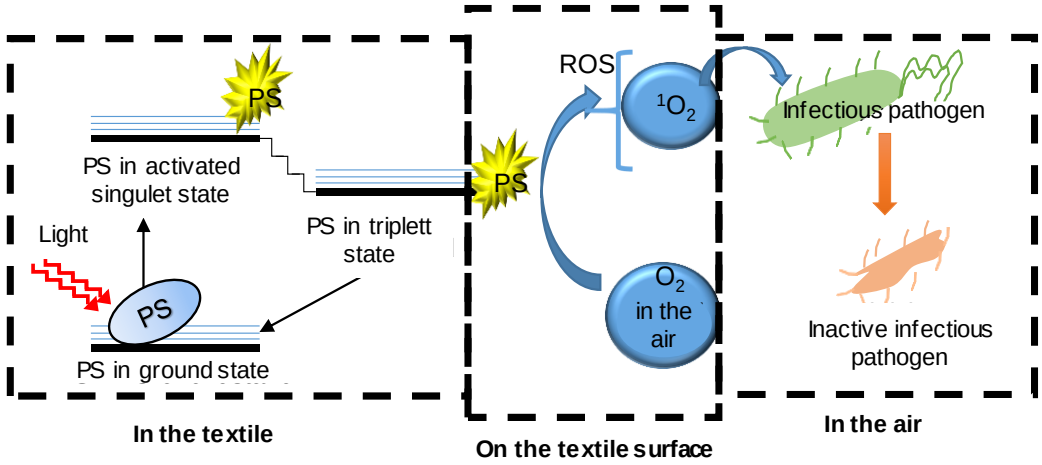
Mission Statement

In the EU alone, more than 6.7 million infections per year are caused by bacterial and viral pathogens, and the trend is rising due to the increased occurrence of multi-resistant germs. The removal of infectious pathogens from surfaces requires large quantities of disinfectants, which can cause serious damage to health and the environment. Furthermore, airborne pathogens cannot be eliminated with conventional disinfectants. Instead, UV radiation is used to disinfect them, which is also harmful to health and the environment when exposed indoors for extended periods.

In the project, an innovative, sustainable and scalable concept for combating infectious agents by developing self-disinfecting textiles using the photodynamic-therapy (PDT) approach with the following objectives will be investigated:

1. efficient inactivation of infectious agents in the air and on the surfaces.
2. avoidance of disinfectants that are harmful to the environment and health and cost-intensive
3. use of sustainable and environmentally friendly raw materials



Solution

Fibers functionalized with photosensitizers can be excited with light to generate a cytotoxic reactive oxygen species (ROS). Upon contact of the highly reactive ROS with infectious agents, a cascade of reactions is triggered, ultimately causing the death of the microorganism. Such antibacterial fibers can be produced in the melt spinning process. By developing an adapted weaving process, the fibers are processed into a fabric and subsequently into home textiles, e.g. curtains and cleaning cloths. With the novel filaments and textiles, an efficient, persistent inactivation of infectious agents in the air as well as on surfaces is possible.

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