TEXTILE BASED BIOPHYSICAL CONCEPT FOR THE PROTECTION OF HUMAN SKIN

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Abstract:

The human skin is exposed to manifold harmful influences which can lead to accelerated skin aging, damages and even skin cancer. These influencing factors can be categorized into physical factors as UV- or IR-radiation. Also, chemical factors as the exposure to NO_x gases can have a significant effect. A biophysical concept for protection of human skin should consider several influencing factors. This can be done by physical shielding against the different types of radiation in combination with a release of biological active substances supporting beneficial effects to the skin.

With this background, the aim of the presented research is to realize textile materials based on Lyocell fibers that offer protection against UV and IR radiation and at the same time contain a skin-care component in the form of vitamins. The textile surfaces can be used to produce clothing for areas where these properties are relevant, e.g. work clothing (UV protection, IR protection), children's clothing (UV protection, release of vitamin D) and clothing for the elderly (UV protection, release of vitamin D and vitamin E).

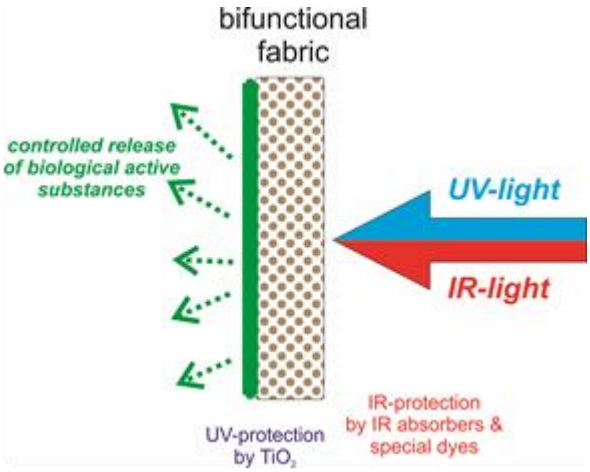

Figure 1 Schematic drawing of a bifunctional fabric according to the biophysical approach – shielding against unwished radiation while releasing skin friendly substances.

Keywords: *UV protection, IR protection, controlled release, functional textile, bifunctional fabric.*

The schematic idea of a bifunctional fabric acting according to the biophysical concept is depicted in Figure 1. In this example one layer of the fabric is responsible for the filtration of unwished radiation as UV- or IR-light, which can damage the skin. Several approaches to realize such functional textiles are reported earlier [1, 2]. The skin directed layer is able to release skin friendly substances in frame of a biological skin friendly and skin caring approach.

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