

## **Polyvinylbutyral (PVB) coatings for optical modification of textile substrates**

**Thomas Grethe, Anne Schwarz-Pfeiffer, Carsten Grassmann, Elena Engelhardt, Sophia Feld, Fangliang Guo, ..... , Boris Mahltig\***

Hochschule Niederrhein, University of Applied Sciences Niederrhein, Webschulstr. 31, 41065 Mönchengladbach, Germany

\*To whom correspondence should be addressed

Polymer coatings onto textile substrates are widely used to create new materials with advantageous properties to realize new applications. Such materials are often named as laminates and find applications in medical area, textile building, tents or automotive sector. A prominent example from common life is artificial leather, useable for clothing, shoes and accessories. Typical polymers used for such coatings onto textile substrates are polyvinylchloride PVC, polyurethane PUR or Polyethylene-vinyl-acetate EVA.

In contrast, the actual study set the focus on a type of polymer which is less often used for coating of textiles but it is strongly used for coating of glass substrates. This polymer is polyvinylbutyral PVB which is prominently used in automotive safety glass as polymer interlayer. The aim us current investigations is to demonstrate that PVB can be as well used for coating of textiles substrates to enable especially optical modifications of the textiles. Optical modifications which are aimed are UV protective properties or special optical effects introducing metallic like appearance. For these purposes, as inorganic UV-absorber titanium dioxide  $\text{TiO}_2$  powders and as organic UV-absorbers cinnamate derivatives are used as coatings additives. For metallic effects and UV-protective issues metal effect pigments are applied. This study works as proof-of-concept for the recycling of PVB polymer products gained as waste material from automotive glass and its use in textile functionalization.

**Key words:** functional coating, effect pigment, UV absorber