

IMPROVED ADHESION IN NATURAL FIBER COMPOSITES BY USING MALEIC ANHYDRIDE COPOLYMERS

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Environmental and economic reasons play an important role in the lightweight construction, especially in mechanical engineering and building trade. Natural fiber reinforced thermoplastics have gained great attention i. a. in automobile body construction because of their excellent specific properties e.g. high stiffness, high strength and low density [1].

The aim of the current work is the development of novel biocomposite materials using bio-polyethylene (bio-PE) and wood veneer. A chemical modification or blending of the biopolymer is not allowed due to producer policies. Thus, only the reinforcing material can be modified. First attempts to produce a homogeneous biocomposite materials from bio-PE and wood veneer without adhesion promoter failed because of their different surface polarities [2]. We present a strategy to hydrophobize the wood veneer surface with various maleic anhydride copolymers to obtain bio-PE compatible materials. Maleic anhydride groups do react with the surface OH groups of the wood veneer which enables the strong bonding to that component [3].

The coated wood veneers were characterized by contact angle measurement of water droplets, SEM and EDX. Furthermore, polymer-veneer-polymer-test specimens (PVP) were produced by compression molding. The Young's modulus and the tensile strength were investigated perpendicular to fiber direction. All modifications show improved tensile properties compared to the unmodified sample. Polypropylene-*graft*-maleic anhydride modified PVP shows an improved Young's modulus up to 139 % compared to the unmodified PVP.

This work was performed within the Federal Cluster of Excellence EXC 1075 "MERGE Technologies for Multifunctional Lightweight Structures" and supported by the German Research Foundation (DFG). Financial support is gratefully acknowledged.

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