

Composites made from regenerated cellulose fibres

– from durable applications to rapidly degradable materials –

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The presentation will focus on the developments in regenerated cellulose fibre-reinforced composites over the last years. We will provide an overview over their use in current applications and products, the main motivations for their use as well as the advantages and disadvantages compared to natural and other ma-made fibres.

The range of different matrix materials used and the process technologies adjusted for optimised performance of those composites are presented. Processing techniques range from injection moulding, SMC processes and compression moulding to vacuum infusion processes. The matrix materials include petrochemical and bio-based thermoplastics and thermosets, and cellulose itself; the latter results in so-called ACC (all cellulose composites). We will provide a critical evaluation of those matrix materials and their influence on composite properties.

The mechanical properties of regenerated cellulose fibre-reinforced composites are presented, compared with other materials and discussed. The lightweight construction potential is evaluated here as well. Special attention is given to the influence of the unique properties of the regenerated cellulose fibres on the composites' performance.

In addition to the mechanical properties, other properties are discussed, such as moisture-dependent properties, long-term behaviour, and ACC's degradability.