

Novel composite material with 100 % bio-based carbon content

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The interest in high performance composites based on renewable resources is growing vigorously. Besides the employment of natural fibers, much effort has been directed toward the implementation of an appropriate non-toxic matrix material. Promising results were achieved specifically by using linseed oil and pure crystalline citric acid. Without the addition of any other catalyst or solvent, a thermoset with a glass transition temperature of $\sim 75\text{ }^{\circ}\text{C}$ was generated.

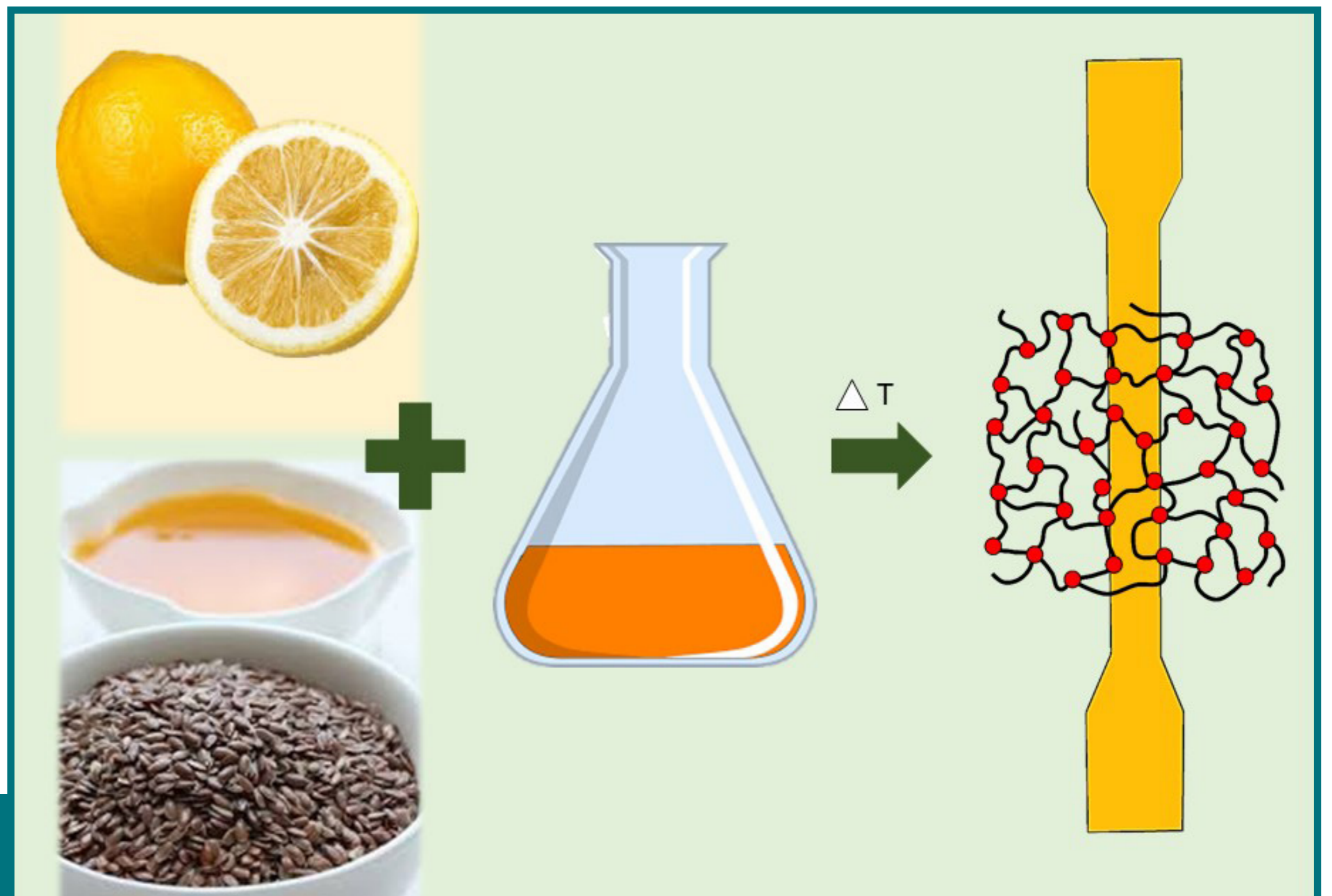
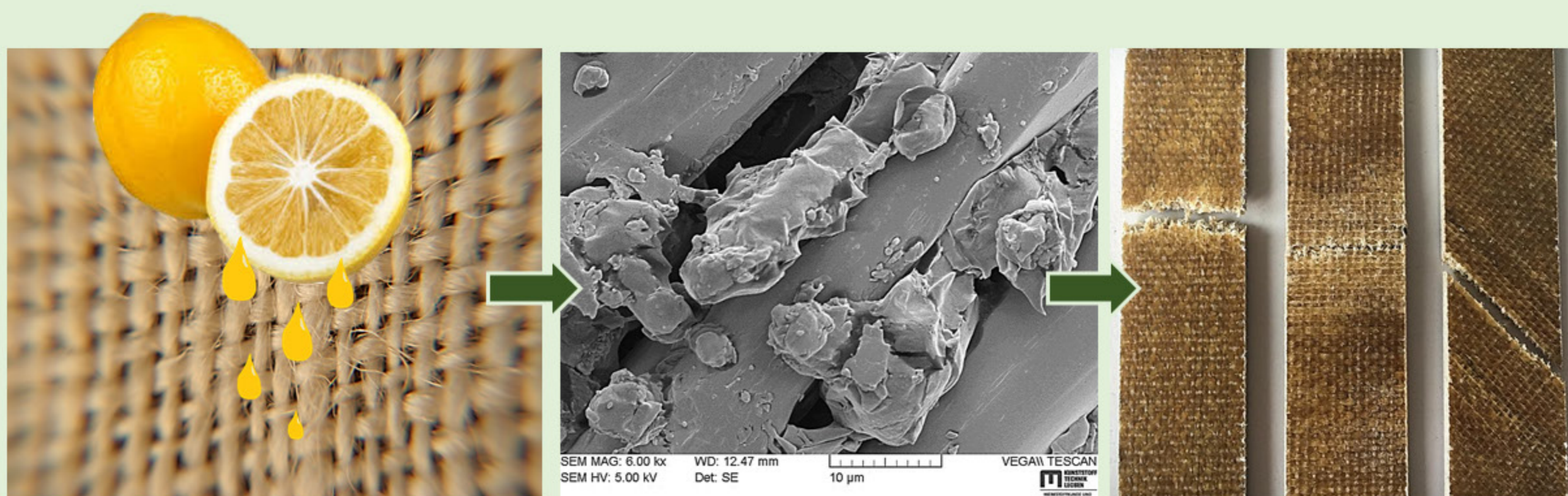


Fig. 1: Development of a thermoset with 100 % bio-based carbon content

Due to the solid state of the citric acid, the composite manufacturing was implemented by the fiber surface impregnation with a citric acid solution. In conclusion a vacuum infusion with epoxidized linseed oil yielded a 100 % bio-based composite, which represents an innovative, and sustainable substitute for petrochemical based composites.

Fig. 2: Implementation of citric acid on the flax fiber surface and manufacturing of a 100 % bio-based composite



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RESEARCH FOCUS: Thermosets based on renewable resources, natural fiber reinforced composites, advanced morphological characterization

PROJECT: Reliable and Sustainable composite production for Biobased Components (RSBC)

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