



ZELLCHEMING-CONFERENCE

CELLULOSE-BASED MATERIALS –
FROM SCIENCE TO TECHNOLOGY

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All-Cellulose Composites (ACC) for the packaging industry

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Abstract

All-Cellulose Composites (ACCs) are a subtype of bio-composites, in which both the matrix and the reinforcement fibres are based on non-derivatised cellulose.^[1] The poster will show an innovative procedure for the industrial production of ACC material. A chemical bath partially dissolves cellulose from paper web and fills the microscopic gaps of the web. Thereby, it is possible to achieve a plastification of the paper.

Next to the process, the poster will show technical values such as elasticity and SCT comparing untreated paper to ACC equivalents.^[2] The improved strength and elasticity properties of ACC is from the technical perspective suitable for packaging raw material, for instance. The question arises whether ACC packaging can be sustainable market solutions. Therefore, the poster delivers answers from a current research project about the cost-efficient ecological evaluation in regard to short innovation cycles as in the packaging industry.

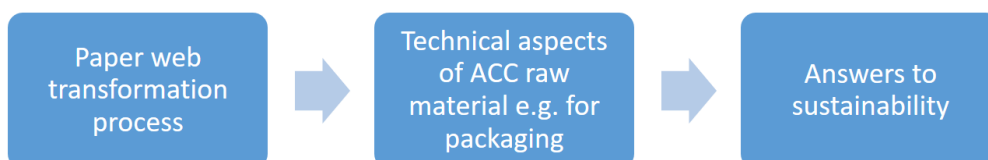


Figure 1: Essential key aspects of the poster design



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References

- 1 Nishino, T., Matsuda, I., & Hirao, K.: All-cellulose composite. *Macromolecules*, American Chemical Society (2004), 37(20), 7683-7687
- 2 Valkama, J.-P., Hilderbrandt, N. C., Piltonen, P., Illikainen, M.: Cellulose. The effect of calendering on the mechanical properties of paper-based, self-reinforcing composites. *Springer* (2018), 25(7), 4001-4010

KEYWORDS:

All-Cellulose Composites
Resource Efficiency
Biodegradability
Recyclability
Corrugated cardboard
Honeycomb board
Plastification
Tensile strength
Elasticity

Biography

Tobias Jung is born in 1987 in Aschaffenburg. He studied Packaging Technology at the Stuttgart Media University and graduated in 2012. From 2012 to 2019, he worked as a project engineer in the corrugated cardboard industry at Palm Packaging. During this phase, he also finished his Master studies in Innovation and Technology Management by distance learning at the Wilhelm Büchner University (Darmstadt 2017). Tobias currently works for the Cooperative State University Baden Wuerttemberg Karlsruhe as academic employee. He is also a doctoral candidate at the Technical University of Chemnitz in the field of economics.

