

Abstract for Cellulose Conference 2023

Title: Regional.Digital.Individual – Regional Cellulose processed with digital technologies for individual textile and paper products

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Pulp is THE sustainable structural material from nature. The production of textiles and paper are key platform technologies from structural pulp to diverse as well as individual applications and products. The paper manufacturing process in particular uses cellulose as a raw material. But often the cellulose comes from Scandinavian or Latin American countries.

Regional farmers have large quantities of residual materials - sugar beet pulp and different types of straw, for example. From residue to valuables to nutrient – under this claim, the INGRAIN alliance is turning the innovation region “Rheinisches Revier” to the leader for bio-based circular economy. Next to coupling the sectors Agri-Business, Nutrition and Textile integrated biorefinery concepts will be the key solution for:

- Access to high quality α -Cellulose
- Access to platform chemicals
- Access to high-value precursors
- Ecological production of new materials and end products
- Cascade utilization of by-products

INGRAIN develops high-quality structural materials from residual materials that were previously unused for this purpose. The innovation areas are sustainability and digitalization.

The Digital Nonwoven Innovation Center, short D-NIC, is the beacon of the digitalised and sustainable nonwovens industry in the heart of Europe. A fully digitalised real laboratory is to be realised in order to digitally support processes on an industrial scale. In addition to industry, the D-NIC also links other partners:

- Niederrhein University of Applied Sciences
- Textile Academy NRW
- Innovation Centre Düren
- Nelly-Pütz-Berufskolleg
- Modellfabrik Papier gGmbH

Nonwovens and paper are platform technologies for the bioeconomy and complement each other synergistically at the Düren site!

The aim of Modellfabrik Papier is to achieve energy savings of 80% in paper production and climate neutrality by 2045. With 7 research institutes and 20 industrial partners (steadily growing), it sees itself as a society for promoting research into sustainable paper technologies. The purpose is pre-competitive research for emission-free paper production. Core activities are: Energy & total system, raw materials, processes and procedures, bioeconomy, digitalisation.

This lecture will show how regional lighthouse projects, will develop a knowledge and innovation based fundament for the structural change in the “Rheinisches Revier” towards circular bio-economy by coupling different local sectors via cellulose production and processing.