

## **Circular economy and the recycling of Fibers**

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Environmental protection and waste recycling have become two of the most important challenges facing the scientific and industrial community. Circular economy concepts are going far beyond only the textile recycling. Circular economy is a powerful method consisting of principles and activities that aim to retain the value of resources, materials, components, and products for as long as possible in the economy. It's a systematic approach, the purpose of which is to reduce the consumption of natural resources and contribute to sustainable development.

Currently, the extraction of cellulose from biobased material is based on complex, time consuming, energy and water intensive processes which are mostly in a laboratory scale development and are expensive due to the use of complex ionic liquids or enzymes. The usage of complex materials leads to limitations in existing technologies to separate the components from biomass in a non-destructive cost competitive manner.

CELLiCON has developed a unique cost effective, proprietary, patented circular technology platform to isolate high-quality nano-structured cellulose crystals (NCC) without damaging or destroying them from cellulose-based feedstock such as cotton-containing textile (waste) fabrics and (waste) biomass.

CELLiCON's technology therefore contributes to the meaningful goal of reducing CO<sub>2</sub> emissions and enabling a circular economy by recycling cellulose-based waste feedstocks to produce high value products that can be recycled via the same technology, resulting in a high CO<sub>2</sub> reduction impact. Due to CELLiCON's process simplicity and mild operating conditions, it uses less water and energy than comparable processes.

Fibers produced via CELLiCON's technology platform have a high quality and purity as well as a high degree of crystallinity. They can be applied in different industrial applications such as textile for a co-blending into the new fabrics and/or as an individual material.

High quality cellulose nano-structured crystals produced by CELLiCON's technology have applicability in the packaging industry as a barrier coatings, replacing EPS products with foamed nano-structured cellulose, replacing fossil feedstock for binders and many others.

Currently, CELLiCON is in the phase of scaling up its process to a demo plant.