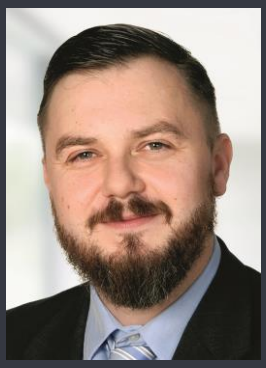
SPEAKER



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BIOGRAPHY

2001-2006
Study of Chemistry and Diploma at the University of Potsdam

2006-2010
PhD-student at Fraunhofer IAP in the field of polysaccharide chemistry

2010
Defense of PhD-Thesis at the Technical University of Dresden

Since 2011
Head of the department “Fiber Technology” at Fraunhofer IAP, dealing with shaping of polymers from solution (focus on man-made cellulosics) and melt (focus on bio-based thermoplastics) into filaments, films and nonwovens

Actual main topics: viscose, carbon fiber precursors, man-made cellulose fibers for technical applications

LECTURE

Current and emerging cellulose regeneration technologies

Cellulose, the most abundant renewable organic material on earth, exhibits outstanding properties and useful applications, but also presents a tremendous challenge with regard to economical and environmentally friendly chemical processing.

The viscose process, more than 100 years old, is still the most widely utilized technology to manufacture regenerated cellulose fibers and films. Today, viscose fibers are produced on a 5-million-ton scale worldwide with various fiber types ranging from high performance tire yarn to textile filaments and staple fibers with excellent properties close to those of cotton. Despite its broad utilization and the wide variety of fiber properties attainable with the viscose process, some environmental problems such as sulfur and heavy metal emissions have to be tackled. As an industrial alternative to the viscose route for shaping cellulose from solution, the so-called Lyocell process is performed in a scale of roughly 235 kt/a. This non-derivatizing route uses N-Methylmorphoine-N-oxide Monohydrate as a solvent. The different spinning solution properties entail different spinning technologies in comparison to the viscose route and even result in different fiber structures and thus finally in different fiber properties.

The strongly growing market for cellulose regenerates in the last 10 years revive the interest in alternative routes, such as ionic liquids or cold alkali soluble celluloses, as potential alternatives for man-made cellulose fibers, especially in Europe. The presentation will give an overview on similarities and differences of both industrially used processes and further on emphasize possible emerging technologies for shaping cellulose from solution.