

Functionalization of Cellulosic Fibres via Reactive Extrusion

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Natural Fibres play an increasingly important role in the growing market of biocomposite materials. However in order to achieve tailor made properties, the most expedient chemical modification pathways are often hard to implement from an industrial point of view. With the aid of reactive extrusion, a platform technology is now available for the targeted mechanical fibrillation and the simultaneous chemical modification of cellulosic fibers. The use of a twin-screw extruder permits rapid, continuous process control at particularly high stock consistencies, whereby the necessary quantities of solvents and reagents are minimized. Combined with a short residence time, process costs can significantly be reduced. These advantages open up a broad field for the extended exploitation of cellulosic raw materials.

This lecture is intended to give an insight into various reactive extrusion opportunities for cellulosic fibres such as esterification, carboxymethylation or calcium carbonate co-precipitation leading to surface modified fibres and modified cellulose nanomaterials, respectively that can be implemented in promising applications such as paper, construction materials or plastics.