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Tailor-made copolymers for the adsorption to cellulosic surfaces*Fiona L. Hatton, Eva Malmström* and Anna Carlmark**

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Abstract

The utilization and modification of cellulose, in particular nanocelluloses, for applications in bioplastics and biocomposites have been well studied in recent years. There is an increasing need for materials with good mechanical properties from renewable resources to replace current polymeric materials derived from fossil fuels. The modification of cellulose is essential to improve compatibility with hydrophobic matrices. For this purpose, various modification techniques have been employed such as physical adsorption of polymers to cellulosic substrates. This review aims to summarize the existing literature describing the physical adsorption of tailor-made copolymers to cellulosic surfaces. This area of cellulose modification incorporates a broad range of polymeric materials, and the expansion of this method of cellulose modification is promising for future sustainable, renewable and 'green' material development.

Keywords: cellulose, nanocellulose, copolymer, physical adsorption, physisorption.



Eva Malmström received her PhD in polymer technology in 1996 from KTH Royal Institute of Technology, Sweden. After a postdoctoral stay at IBM Almaden Research Center, US, she rejoined KTH as an assistant professor in 1997. In

2005 she became full professor and in 2009 she was appointed deputy president for KTH. She has published more than 100 papers and is the co-inventor of two patents and one of the founders of Polymer Factory Sweden AB. Professor Malmström's main research interests are the interplay macromolecular architecture and properties, renewable materials and controlled polymerizations.



Malmström. Between 2004-2007 she was employed as a researcher in several industries in Sweden (GE Healthcare AB, Gyros AB and SweTree Technologies AB) before she rejoined KTH in 2007 and since 2013 she is

now an associate professor in the division of Coating Technology at KTH. Her research focus is within the fields of controlled radical polymerization, the synthesis of complex macromolecular architectures, functional surfaces and (bio) fibre modifications.

Dr. Anna Carlmark received her PhD in polymer technology in 2004 from Fibre and Polymer Technology at KTH Royal Institute of Technology in Sweden, under the supervision of Prof. Eva

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