

MWP – Young Researcher Abstract 2023

Project title: Circular cellulose for textile fibre production	
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Abstract (approx. 200 words): <p>The textile fibre production exceeded 100 mln tonnes/year and man-made cellulosic fibres (MMCF) constitute 6% of that volume. For the purpose of decreasing the environmental impact from textile industry, focus should be further shifted to sustainable, cellulose based fibres. However, the raising demand for MMCF is putting pressure on the pulp market. Increasing prices, predicted cellulose shortages and demanded climate actions call for a more circular and resource efficient cellulose economy. One of the solutions is production of MMCF from alternative resources. Following the circular economy underutilized streams that could supplement cellulose originating from wood were used in this project: post-consumer textile fibres and agricultural side streams. Selective cellulose separation processes including pre-treatments, cooking and bleaching were applied. Importantly, all process steps were chosen considering limiting the environmental impact and enabling the use of existing infrastructure of the traditional pulping industry. Moreover, the resulting processes were evaluated in terms of techno-economical and life cycle analysis. Introducing processes for converting non-wood residue-materials into dissolving pulp as a supplement for wood offers the potential to put Swedish forest industries at the forefront of the sustainable technology development and provide model for a resource- and energy-efficient circular bioeconomy while giving customers access to sustainable textile fibres.</p>	
Key words: Cellulose, fibres, non-wood pulp, man-made cellulosic fibres, circular cellulose	