

Press release

Defence on 09 April 2021

Title of the doctoral thesis	Recycling and Spinning of Superbase-Based Ionic Liquid Solutions in the Lyocell Process: Potential and Limitations
Content of the doctoral thesis	<p>This thesis explores the recyclability of superbase-based ionic liquid solvents to develop a sustainable Lyocell process for the man-made cellulose fiber industry. Generally, this class of solvents can undergo undesired chemical alterations during thermal recovery, which may negatively affect its dissolution power to cellulose and inhibits any potential of fiber spinning.</p> <p>In our work, we carefully identified and analyzed alterations for different types of ionic liquids. Also, the tolerance of the solvent to alterations while still delivering good cellulose dissolution was defined. Finally, we were able to construct a recycling scheme that yields the solvent within the desired specifications. This allowed the successful spinning of fibers, from recovered IL solutions, which demonstrated good mechanical quality and were able to be converted to a demonstration dress.</p>
Field of the doctoral thesis	Regenerated cellulose fibers/Bioproduct Technology
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Remote defence	https://aalto.zoom.us/j/65571290575
Place of defence	Aalto University School of Chemical Engineering, Department of Bioproducts and Biosystems, meeting hall Halko, Vuorimiehentie 1, Espoo
Opponent(s)	Associate professor Héctor Rodríguez, University of Santiago de Compostela, Spain
Custos	Professor Herbert Sixta, Aalto University School of Chemical Engineering
Link to electronic thesis	https://aaltodoc.aalto.fi/handle/123456789/51
Keywords	ionic liquid, superbase, regenerated fiber, MMCF, solvent recycling, cellulose dissolution