

<b>Project title: Development of all bio-based, wet-stable, low-density materials for use in hygiene products</b>	
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<b>Abstract</b> <p>The demand for bio-based superabsorbent materials is greater than ever in the multibillion-dollar market of high-end hygiene products like diapers and sanitary products. Superabsorbents are materials that are traditionally made from petroleum-based polymers that can absorb and retain large amounts of liquids, a crucial quality in hygiene products. Since the recycling of these materials is very limited, there is a risk that these non-biodegradable polymers are accumulated in the environment. Despite this, these materials continue to be used on a large scale due to the lack of bio-based alternatives and their excellent functional properties. In my PhD project, we are developing a bio-based superabsorbent material using cellulose fibers and nanofibrils derived from wood. This material has the potential to be produced at a large scale to disrupt the use of petroleum-based polymers in the production of superabsorbent materials. It consists of a fiber-based layer for fast initial liquid absorption through its larger pores and a wet-resilient, highly swelling layer from nanocellulose fibrils which absorbs and retains the liquid also under pressure. Our vision is that these cellulose-based materials will pioneer sustainable development and production of superabsorbent materials from forest raw materials, replacing existing non-biodegradable and non-renewable options in the market.</p>	
<b>Key words: Superabsorbent materials, aerogels, hydrogels, hygiene products, fiber, nanofibrils</b>	