

Defence announcement

Public Defence on 22 April 2024

Enzymes are the key: Tailored biomaterials for future applications

Title of the doctoral thesis	Cellodextrin and β -D-1,3-glucan phosphorylases as biocatalysts for novel glucan structure synthesis
Content of the doctoral thesis	<p>The thesis examines how different enzymes can be used in a test tube to produce polysaccharides such as cellulose that are of interest for biomaterial applications. The properties of the polysaccharides are tailored by manipulating the reaction conditions, and the relationship between these properties and the structures formed is also examined.</p> <p>A noteworthy finding of these studies is that the properties of the biomaterials formed can be influenced by changing the conditions of laboratory experiments, such as temperature or the number of molecules that take part in the reactions. This opens the door for designing carbohydrate-based biomaterials with tailored properties.</p> <p>In addition, entirely new type of hexagonal particles were successfully generated, offering new possibilities for material science applications. Another interesting aspect is the linking of color molecules to these materials, which can make them not only practical but also visually appealing.</p> <p>The results of this dissertation broaden our understanding of the applicability of enzymes in materials science and inspire us to look for new ways to utilize nature's own processes in a sustainable way.</p>
Field of the doctoral thesis	Biotechnology
Doctoral candidate and contact information	M.Sc. (Tech.) Robert Pylkkänen robert.pylkkanen@vt.fi
Public defence date and time	22 April 2024 at 12 o'clock (in Finnish time)
Remote defence	https://aalto.zoom.us/j/66034197504
Place of public defence	Aalto University School of Chemical Engineering, Lecture hall Ke2 (Komppa-Sali), Kemistintie 1, (main door at Biologinkuja) Espoo
Opponent(s)	Professor Vincent Bulone, Flinders University, Australia
Custos	Professor Merja Penttilä, Aalto University School of Chemical Engineering
Link to electronic thesis	https://aaltodoc.aalto.fi/handle/123456789/51
Keywords	polysaccharide synthesis, enzymes, cellulose, β -glucan, glycoside phosphorylases, material science, biomaterials