

Young researchers bringing the future to the forest industry

Description

From timber houses to 3D-dresses

New approaches to the forest industry were presented by young researchers during the celebrations of The Marcus Wallenberg Prize 2015. The ideas extended over packaging materials to timber constructions and environmental-friendly dresses produced by a 3D-printer.

Some 40 PhD students and postdoctors were selected to take part in the Marcus Wallenberg Prize Ceremony and Banquet in Stockholm, Sweden 28-30 September 2015. The young researchers also had the opportunity to display posters with their results and meet leading scientists and forest-based industry representatives from all over the world.

– Very interesting applications for the future, says Yoshiaki Kumamoto, Principal Research Scientist at Kao Corporation, Wakyama, Japan, as he stops by to take a closer look at the poster presented by Tobias Benselfelt, PhD student at The Wallenberg Wood Science Center KTH, Stockholm, Sweden. Tobias Benselfelt and his colleagues are investigating the surface of highly charged cellulose materials, and how it can be functionalized with nanometer thin polyelectrolyte layers.

He thinks that meeting young scientists from all over the world gives him an overview of current research on new materials from the forest.

– It can inspire to new ideas for my research or provide knowledge of new methods. However, the most beneficial aspect is the opportunity to form social networks that can be of high value as the importance of cross disciplinary collaboration is becoming more important, says Tobias Benselfelt.

Testing in the virtual world

Masafumi Sato, first secretary of the Embassy of Japan in Sweden, asked a lot of questions to Eric Borgqvist, PhD student at Lund University, during the poster session. Eric Borgqvist and his group have developed a 3-D model to simulate the process when paper is folded together into a package.

– My vision is to push the research front for fibrous materials and converting procedures from physical testing to the virtual world. It will lead to a reduced development time, an improved cost efficiency and the ability to tailor new products, says Eric Borgqvist.

Many of the participants are chemists, but Eric Borgqvist has a background in the science of solid mechanics. So has Gustaf Larsson, another PhD student from Lund University. He is involved in a project to develop an innovative connector design for large timber structures suitable for industrialized construction methods. A new design concept called the shear plate dowel connection using a rubber foil simplifies the work and contributes to an increased capacity of up to 150 percent.

Smart dresses by 3D-printing

A group of young researchers kept discussing via internet after the celebrations last year. This year they returned and launched their idea about renewable textiles. They were looking for alternatives to cotton production, which relies heavily on chemical treatments. Cellulose-based textiles like rayon,

viscose, modal and lyocell are also natural fibres, however produced in a more sustainable way.