



NEW ZEALAND
FOREIGN AFFAIRS & TRADE
Manatū Aorere

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New Zealander, Professor John Ralph wins Marcus Wallenberg Prize

MARKET INTELLIGENCE REPORT

Report

The world's highest award in forestry, the Marcus Wallenberg Prize, has been awarded to US-based New Zealander, Professor John Ralph and his collaborator, Belgian Professor Wout Boerjan.

Their extensive collaboration over several decades has delivered groundbreaking insights on lignin (the glue in wood fibre) biosynthesis and structural diversity. Their work has revealed some of the secrets of wood and opened the door for new commercial applications using plants. The potential rewards of commercialisation are huge, both in terms of the impact on the green transition globally and on a commercial basis.

The Marcus Wallenberg Prize is often described as the Nobel Prize for Forestry. The Prize is to recognise, encourage and stimulate path-finding scientific achievements contributing to broader knowledge and technical development within fields of importance to forestry and forest industries. Professors Ralph and Boerjan received the prize from His Majesty the King of Sweden Carl XVI Gustav in Stockholm on 11 November.

Professors Ralph and Boerjan spoke passionately about their work at the Marcus Wallenberg Symposium on 12 November. Marcus Wallenberg, grandson of the industrialist the prize is named after, and one of Sweden's leading business figures, hosted the prize ceremony and the symposium. In opening the symposium, he described tree fibre use as the key question for the next phase of the forestry industry.

Professor Boerjan noted that lignin is currently removed from wood and often used as a fuel. His research had shown that by manipulating lignin levels, higher wood productivity can be achieved. Higher yields from planted forests would reduce pressure to harvest native forest. Professor Ralph took this theme further by asking "how shortsighted had we been to neglect to use what nature has so beautifully engineered for us". Natural lignin could produce much needed products without using fossil fuels and chemicals and using simpler processes. An example was the production of Tylenol pain relief medicine from woody biomass rather than a fossil base. The economic returns from use of lignin were potentially huge.

Other speakers at the symposium highlighted that the technology exists today to use lignin and it is already feasible to produce a range of products using this material. One speaker estimated total annual lignin waste globally as being about 700 million tonnes, with wood representing about 180 million tonnes of that total (rice, wheat, corn, bagasse and soybeans were other sources). Some extracted lignin is being used already to make

fragrances, coatings, materials and resins. Graphene, a new material made from lignin was recognised with a 2010 Nobel prize. It is 200 times stronger than steel and a superconductor, with potential to revolutionise the manufacturing of a wide range of products when it can be mass produced. Several start-up company representatives and students at the symposium highlighted a wide range of lignin applications and research under way. Senior company representatives and academics at the events were optimistic about the prospects for lignin use in a range of areas. The challenge was to raise awareness and produce the forms of lignin required to scale.

This important prize recognised groundbreaking work in an exciting area of cutting-edge innovation. It is a fabulous example of scientific collaboration across the globe. Professor Ralph is based at the University of Wisconsin-Madison in the United States but remains passionate about New Zealand and maintains links to New Zealand forestry organisations. Throughout his lecture he credited the contributions of many people to his work over the years. His passion for his work and his humility shone through in his remarks.

Comments around the margins of the events recognised New Zealand's particular forest expertise and reputation. As lignin commercial applications develop, there should be good opportunities for New Zealand to use this element of our commercial wood resource and reap the potential economic benefits.

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