

Bio-based Circular Economy: Chemistry and Value Chains

Organized by University of Helsinki in collaboration with the Circular Materials Bioeconomy Network (CIMANET)

We are moving towards a carbon neutral society where a circular economy built on bio-based materials will have an essential role. Such a transition is challenging and needs a wide range of expertise in biomass conversion and establishment of these new value chains.

Circular Materials Bioeconomy Network (CIMANET) is a multidisciplinary pilot project built with support of the doctoral education pilot by Ministry of Education and Culture. This network allows 67 new doctoral researchers to take the challenge and progress the transition towards sustainable use of our natural resources. CIMANET brings together the top researchers from 9 Finnish universities with expertise from forest-based value chain management to innovative bio-based materials and sustainability assessment of bio-based products.

Student challenge

Chembio2026 and Chemistry days bring the CIMANET network visible to a wide audience in the form of a scientific seminar, to share the latest research findings and discuss the future of a bio-based circular economy. The program consists of two parallel sessions. One highlights topics of bio-based material chemistry and experimental research, while a parallel session focuses on value chains and lifecycle impacts. Both sessions provide a chance for 5 doctoral students to introduce their visionary answers to the following questions:

How bio-based and circular materials can help to solve sustainability issues of today?

How do we adopt bio-based materials and ensure their sustainability?

Expert talks in two parallel sessions

Besides the student challenge, we will hear talks from experts in the field. In the morning session of *Chemistry of bio-based materials*, Professor Kirsi Mikkonen from the University of Helsinki tells how to combine lignocellulosic biomass and fungi in the context of food science. After lunch, postdoctoral researchers Alexandar Todorov and Trung-Anh Le will cover topics from ionic liquids to spectroscopy and the role of chemistry research in the biomass valorization. Session ends with Jukka Niskanen from Aalto University who takes us into the world of plastics, bio-based polymers, and chemical recycling.

Bio-based material value chains and lifecycles session addresses the sustainability perspectives of bio-based materials. Marileena Mäkelä from University of Jyväskylä gives an opening presentation about Sustainable Business Futures. After lunch, our CIMANET students lead a panel of expert guests from LUT university, Helsinki innovation services, and Ministry of economic affairs and employment to share their take on the challenge question in a panel discussion. Panel discussion will be followed by insightful talks about commercializing Bio-Based Innovations by Tero Tervahartiala from Metsä Group, followed by visions of consumers and appropriation of innovations, given by Eliisa Kylkilahti from University of Helsinki.

The seminar day will end with a poster session, where our audience is welcome to have a refreshment and good scientific discussions while diving into the world of circular bioeconomy with guidance from CIMANET doctoral researchers.

Whether you are a researcher, a student, or anyone interested in sustainable development, this seminar offers interesting perspectives and an opportunity to learn about the future of

the bioeconomy in Finland. The event will be held in English. Around 70 seats will be available in both sessions.