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SEMINAR SERIES



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Title | Unlocking the potential of lignocellulosic biomass for designing and engineering the next generation of sustainable materials

Abstract | Nanomaterials produced from renewable matter such as wood, agricultural crops, and residues, combine the exciting properties of synthetic nanotechnology with sustainable features, such as biodegradability, biocompatibility, and recyclability. Renewable nanomaterials are showing strong potential in the wake of current political and societal movements towards the reduction of petroleum-derived plastic consumption; thereby drawing interest from a diversity of stakeholders. During this seminar, we will focus on one type of renewable nanomaterials, referred to as “cellulose nanomaterials” or “nanocellulose”, which is the primary expertise of my research group at NC State University.

After a brief introduction on cellulose nanomaterials, their production route, and main properties, we will navigate together through existing and future opportunities and challenges towards unlocking the potential of these nanomaterials for designing and engineering sustainable advanced products. I will exemplify this talk with the research of my group members and welcome any questions you may have on the topic.

Bio | Since 2018, [Nathalie Lavoine](#) has been an Assistant Professor in the Department of Forest Biomaterials at NC State University (Raleigh, North Carolina, US). She received her PhD degree in 2013 from the Laboratory of Pulp & Paper Sciences, and Graphic Arts under the supervision of Dr. Julien Bras and Dr. Isabelle Desloges, in Grenoble, France. She then conducted two postdoctoral research experiences under the supervision of Prof. Akira Isogai at the University of Tokyo, Japan (2014-2016) and Prof. Lennart Bergström at Stockholm University, Sweden (2016-2018).



Her research activities center on the development and engineering of advanced sustainable materials from biomass, particularly renewable nanomaterials. She has built a research-education integrated platform towards advancing the commercialization of sustainable packaging and renewable nanomaterials and tackle these important research challenges with the help of students, industrial partners, and researchers. This program fosters entrepreneurial thinking to boost outcomes in sustainable advanced materials meanwhile offering career opportunities and professional development support to undergraduate and graduate students.

Dr. Lavoine was recently awarded the [2022 TAPPI NanoDivision Mid-Career](#) award and the [2022 Quanser Sustainability award](#); both awards recognizing her research and education activities in renewable nanomaterials, sustainability and innovation.

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