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Webinars

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Selective cellulose modification: from molecular design to sustainable applications.

Ricardo Chagas

LAQV REQUIMTE, Applied Organic Chemistry Group, Chemistry Department, NOVA School of Science and Technology | NOVA FCT, Portugal
r.chagas@fct.unl.pt
https://laqv.requimte.pt/people/275-ricardo_chagas

Biopolymers and their derivatives play a key role in bioeconomy, offering sustainable alternatives to fossil-based materials. Since I began my CEEC position at LAQV, I have been focusing on establishing a new research line on the selective chemical modification of cellulose and its valorisation into functional materials. The work started on the synthesis of cellulose derivatives *by-design* and evolved toward the development of tailored materials for biomedical, food, and agricultural applications. Linking organic synthesis and materials chemistry, we perform the controlled and application-oriented modification of cellulose, allowing precise tuning of its structure and functionality according to specific requirements, combining fundamental studies on cellulose reactivity with applied projects. The ongoing competitive projects *CellMembrane, Resilcrops*, and *Aero2Cycle*, provide a complementary framework for translating cellulose chemistry into defined application contexts (comprising biomimetic membranes, plant protection formulations and lightweight bio-based composites). At the same time, we have been working on the regioselective functionalization of cellulose to understand how the substitution patterns influence structure and material performance. In this webinar, I will present an overall perspective on the research our group has been carrying out across these topics, and their fit within LAQV research lines.

Short Bio

Ricardo Chagas is an Assistant Researcher in the Molecular Synthesis group of LAQV at NOVA FCT. He holds a Ph.D. in Sustainable Chemistry and is the author of 21 peer-reviewed articles, 2 patents, and more than 30 conference communications. His scientific impact includes an h-index of 12 with 394 citations. He is currently lecturing General Organic Chemistry at NOVA University Lisbon as Invited assistant professor. He has also taught across several curricular units, including Enological Microbiology, Wine in Gastronomy, and Cellulosic Materials and Paper. His achievements include the International SIVE OEnoppia Award for research in enology and an OIV Grant for developing synthetic alternatives to sulfur dioxide in winemaking. He previously served as Technical and Scientific Director of CoLAB Food4Sustainability, where he coordinated a multidisciplinary team of 27 researchers working in the areas of biotechnology, agronomy, food technology, and microbiology. He is currently the PI of the EIC Pathfinder Cellmembrane project at NOVA. Most recently, he secured a competitive position under the CEEC 2024 call, focusing on the regioselective synthesis of cellulose derivatives with applications in food and health.

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Webinar Host

Paula Branco, Molecular Synthesis Group