

Annual Symposium

on Polymer Science and Engineering

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Location:
E7

Nanocellulose for Precision Applications: Combatting Challenges Using Intentional Surface Chemistry Design

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Abstract:

Cellulosic materials, and in particular cellulose nanocrystals (CNCs), show significant promise in many applications where synthetic polymer components are traditionally used. To improve their compatibility, stability, and dispersibility however, surface-modification is often required. During this presentation, the design and careful modification of CNC surface chemistry will be discussed within the context of two projects where (1) CNCs were used to answer questions about polymer surface interactions with cancer cells and (2) a novel method of surface functionalization was used to disaggregate uncharged CNCs. To round out this talk, a third project concerning the optimization of CNC-stabilized oat oil emulsions will be briefly discussed in order to exhibit how the potential of such materials in industrially relevant applications increases once their chemical interactions at different interfaces become well understood.

Bio:

Megan defended a Polymer Chemistry PhD at University of Toronto in 2021 before moving to New Brunswick to teach organic chemistry at Mount Allison University for a year. At the end of this sabbatical replacement, she crossed Canada and took up a postdoc position at the University of British Columbia-associated Bioproducts Institute. In January 2025, Megan began her independent career as an Assistant Professor at Western University where she is working to understand how the structure of biomolecules links to their assembly. She intends to establish tools that will allow her to predict biomolecular behaviour and from this, build new classes of biomaterials for healthcare that can fully integrate with living systems.

A more detailed biography can be found on Megan's website at www.therobertslab.ca/about-megan