

The Chemist's Interactions

Seminars @ the Chemistry Department

Friday, 23rd October 2020



LIVE
STREAM
h 14:30

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Synthetic carbohydrate materials

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Polysaccharides are the most abundant organic materials in nature, yet correlations between their three-dimensional structure and macroscopic properties have not been established. Automated glycan assembly (AGA) enables the preparation of well-defined oligo- and polysaccharides resembling natural as well as unnatural structures.¹ These synthetic glycans are ideal probes for the fundamental study of polysaccharides, shedding light on how the modification patterns affect the polysaccharides properties (*i.e.* solubility and crystallinity). Molecular dynamics simulations and NMR analysis show that different classes of polysaccharides adopt fundamentally different conformations, drastically altered by single-site substitutions.² Moreover, these synthetic oligosaccharides are able to self-assemble into nanostructures of varying morphologies.³ Well-defined differences in chain length, monomer modification, and aggregation methods yield glycomaterials with distinct shapes and properties.

1) M. Delbianco, A. Kononov, A. Poveda, Y. Yu, T. Diercks, J. Jiménez-Barbero, P. H. Seeberger, *J. Am. Chem. Soc.*, 2018, 140, 5421

2) Y. Yu, T. Tyrikos-Ergas, Y. Zhu, G. Fittolani, V. Bordoni, A. Singhal, R. J. Fair, A. Grafmüller, P. H. Seeberger, M. Delbianco, *Angew. Chem. Int. Ed.* 2019, 58, 13127

3) Y. Yu, S. Gim, D. Kim, Z. A. Amon, E. Gazit, P. H. Seeberger, M. Delbianco. *J. Am. Chem. Soc.*, 2019, 141, 4833



The Virtual Seminar Series will be broadcast with the Zoom software.

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