

DIBLOCK CO-POLYSACCHARIDES: SYNTHESIS, CATION-INDUCED SELF-ASSEMBLY, AND BINDING AND DELIVERY OF RADIONUCLIDES

Biørn E. Christensen^a, Amalie Solberg^a, Martin Fauquignon^b, Lionel Porcar^c, Jean-Paul Chapel^d, Elise B. Holmås¹, Morten Karlsen^e, Yoshiaki Yuguchi^f, Gaston Courtade^a, Christophe Schatz^b

^a NOBIPOL, Department of Biotechnology and Food Science, NTNU, Sem Saelands veg 6/8, NO-7491 Trondheim, Norway

bjorn.e.christensen@ntnu.no

^b Laboratoire de Chimie des Polymeres Organiques, Pessac, Nouvelle-Aquitaine, France

^c Institut Laue-Langevin, Grenoble, Rhône-Alpes, France

^d Centre de Recherche Paul Pascal, Pessac, Aquitaine, France

^e PET Center, St. Olavs Hospital, Trondheim, Norway

^f Osaka Denki Tsushin Daigaku, Neyagawa, Osaka, Japan

The conjugation at chain termini of two different polysaccharides provides diblock co-polysaccharides, a new class of precisely engineered polysaccharides. This architecture provides on one hand new solution and stimuli-responsive self-assembly properties, while retaining key properties such as biodegradability on the other.

The first part of the presentation will focus on the preparation of blocks through dioxyamine linkers [1–3]. The second part will focus on diblocks containing Ca-reactive oligogulonates [4] (derived from alginates) and their Ca-induced self-assembly to nanoparticles using static and dynamic light scattering, AFM, SEC-MALLS, SANS and SAXS for their characterization [5].

The final part describes the binding and release of radionuclides and related cations in a dialysis assay.

References:

1. Mo, I. V.; Dalheim, M. Ø.; Aachmann, F. L.; Schatz, C.; Christensen, B. E. *Biomacromolecules* **2020**, *21*, 2884–2895.
2. Solberg, A.; Mo, I. V.; Omtvedt, L. A.; Strand, B. L.; Aachmann, F. L.; Schatz, C.; Christensen, B. E. *Carbohydr Polym* **2021**, 278.
3. Mo, I. V.; Feng, Y.; Dalheim, M. Ø.; Solberg, A.; Aachmann, F. L.; Schatz, C.; Christensen, B. E. *Carbohydr. Polym.* **2020**, 232.
4. Solberg, A.; Mo, I. V.; Dalheim, M. Ø.; Aachmann, F. L.; Schatz, C.; Christensen, B. E. *Polym. Chem.* **2021**, *12* (38), 5393–5558.
5. Fauquignon, M.; Solberg, A.; Porcar, K.; Chapel, J-P.; Christensen, B.E.; Schatz, C. *Biomacromolecules* **2024**, *25*, 6555–6569