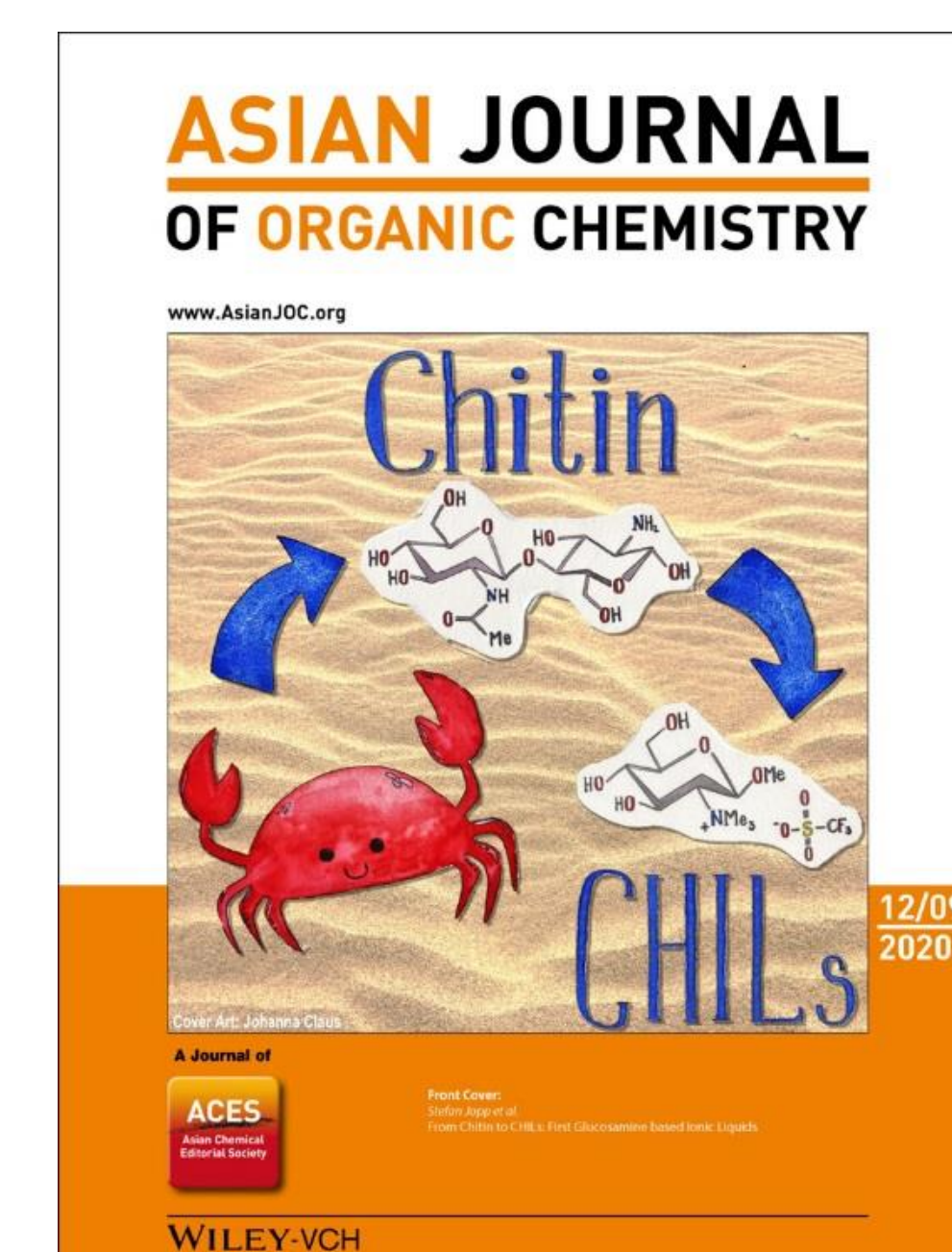


Glucosamine-based Ionic Liquids for Asymmetric Catalysis

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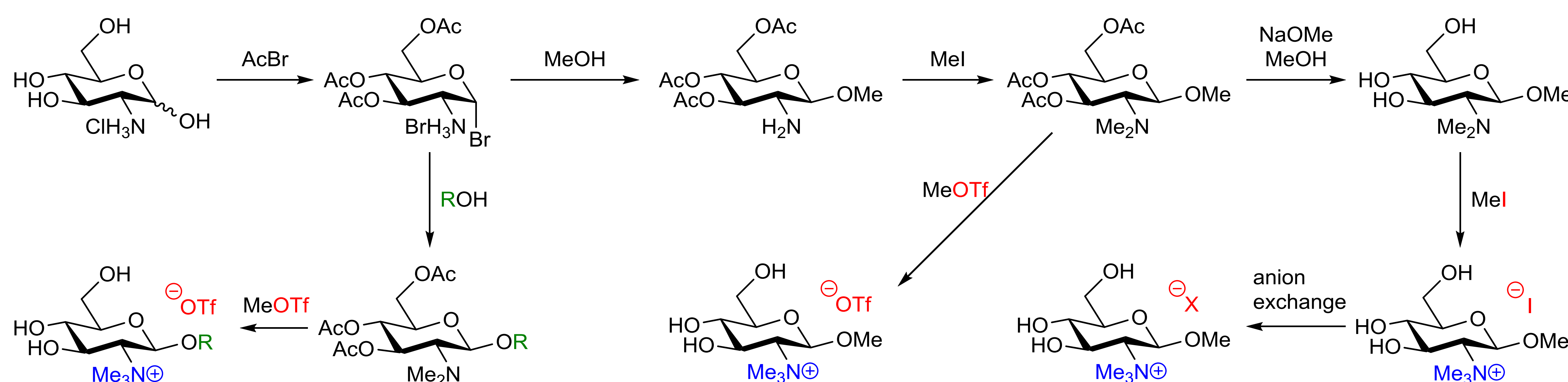
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Introduction

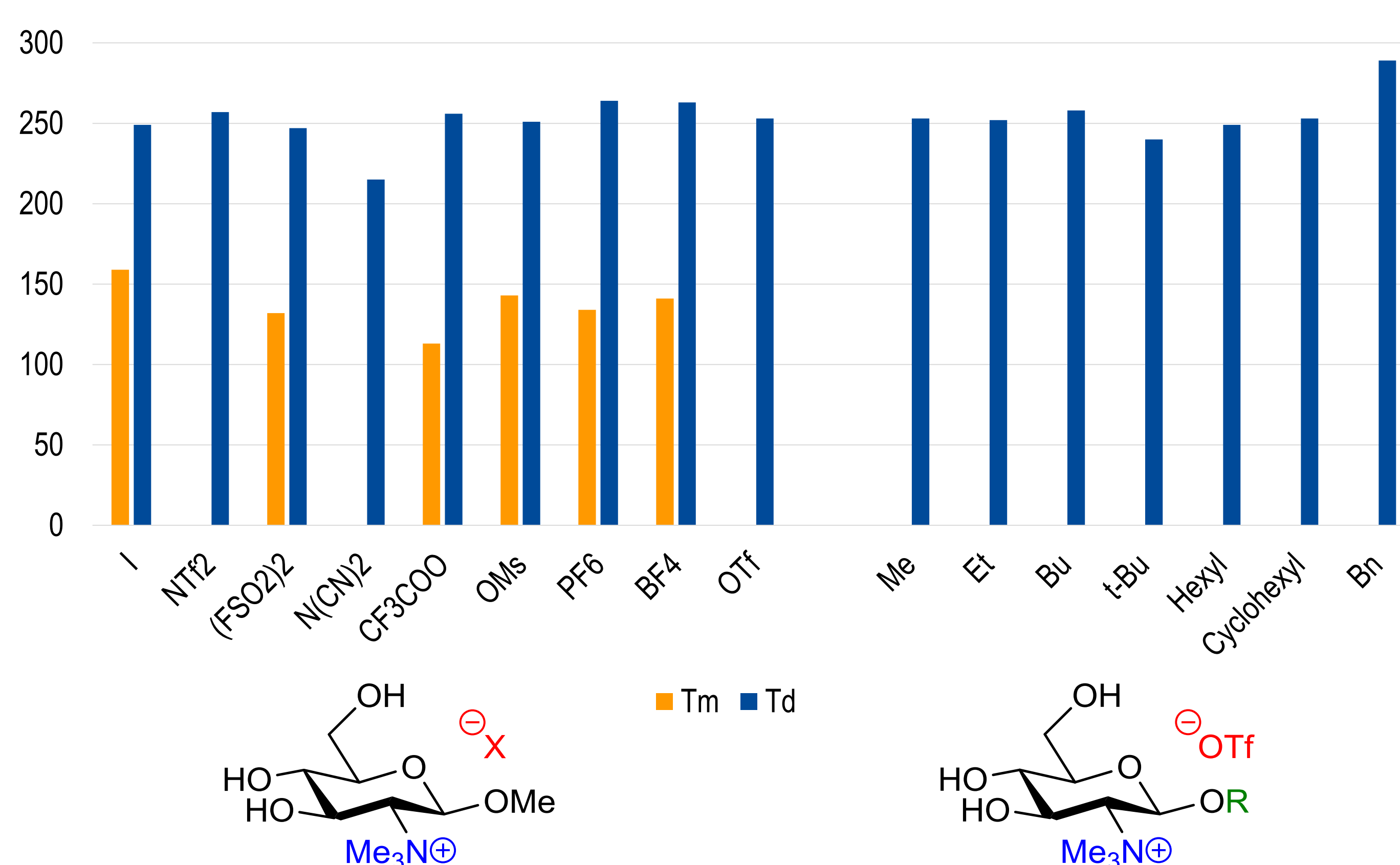
Monosaccharides are known as one of the most abundant natural resources. Glucosamine, a monosaccharide obtained from the exoskeletons of arthropods like crabs, shrimps, insects, is known as a sustainable and biocompatible material. Carbohydrate-based ionic liquids (CHILs) are an uprising subclass of ionic liquids. After the first report of CHILs in the 2000s, a variety of applications as a catalyst had been found.^[1] For asymmetric Diels-Alder reactions, glucose-based ionic liquids are known to improve both the yield and the endo:exo ratio.^[2,3] In this research, our group produced glucosamine-based salts with several variations of anions, glycosidic groups and amino substituents.^[3,4]

Synthesis



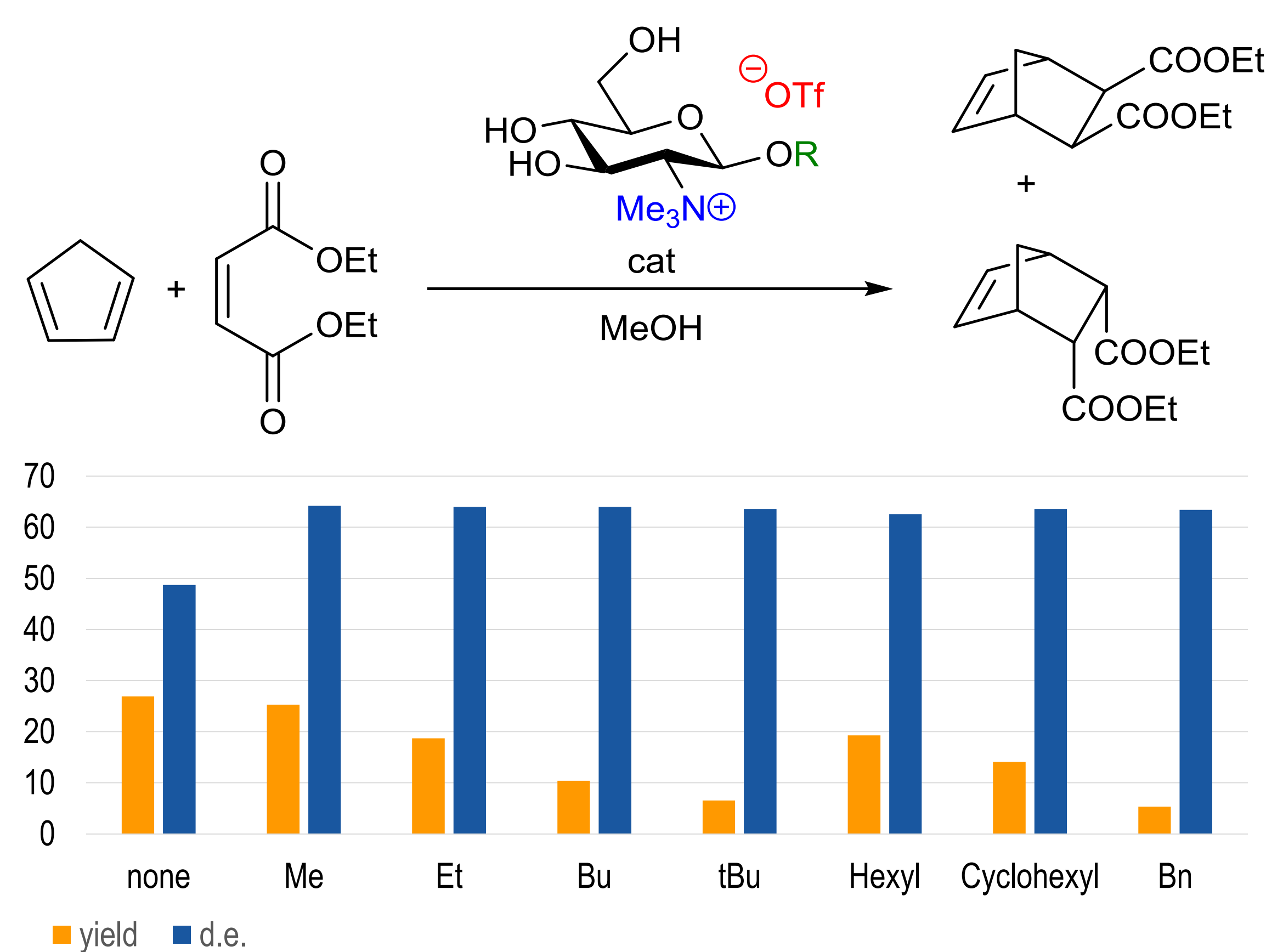
Results

Thermal Properties



- OMe-GluNMe₃-NTf₂ and -OTf as well as OEt-GluNMe₃-OTf were liquid under 100 °C
- all β -glycoside derivatives other than OMe were hygroscopic

Organocatalysis



- the yield was not improved
- all salts increased diastereomer selectivity towards endo by around 20 %

References:

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3. M. Komabayashi, T. Nokami, S. Jopp, *Asian J. Org. Chem.* **2020**, *9*, 2092–2094.
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