BALTICUM ORGANICUM SYNTHETICUM 2022

In memory of Prof. Victor Sniečkus

July 3-6, 2022
Vilnius, Lithuania

PROGRAM AND ABSTRACT BOOK

P038

SO2-ASSISTED GLYCOSIDIC BOND FORMATION

Krista Gulbe[1], *Jevgeņija Lugiņina*[1], *Edijs Jansons*[1], *Artis Kinēns*[2,3], *Māris Turks*[1]

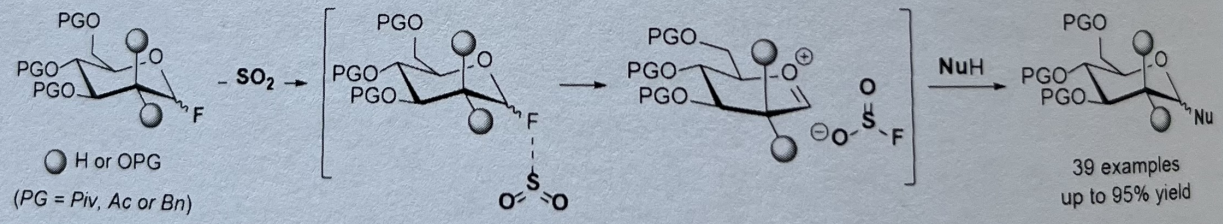
[1]*Institute of Technology of Organic Chemistry, Riga Technical University, Latvia*

[2]*Latvian Institute of Organic Synthesis, Latvia*

[3]*Department of Chemistry, University of Latvia, Latvia*

Being one of the few polar solvents that possess Lewis acid properties, liquid SO_2 facilitates Lewis acid promoted and/or carbenium ion mediated chemical transformations.[1] Furthermore, SO_2 has an affinity towards fluoride ion that leads to covalent bonding in the form of fluorosulfite anion.[2]

Based on the aforementioned physico-chemical properties of SO_2, we have developed SO_2-assisted glycosylation with glycosyl fluorides as glycosyl donors in liquid SO_2 without an external promoter.[3] The novel synthetic method was demonstrated with variously protected mannosyl and glucosyl fluorides, and series of O-, S- and C-glycosides were obtained in moderate to excellent yields. The α/ß-selectivity of glycosylation was proposed to be substrate-controlled presenting thermodynamic equilibrium. The formation of fluorosulfite species during the glycosylation in the presence of SO_2 was proved by both ^{19}F NMR spectroscopy and DFT calculations.



References:

1. (a) Posevins, D.; Suta, K.; Turks, M. Eur. J. *Org. Chem.* 2016, 1414. (b) Suta, K.; Turks, M. *ACS Omega* 2018, 3, 18065. (c) Leškovskis, K.; Gulbe, K.; Mishnev, A.; Turks, M. *Tetrahedron Lett.* 2020, 61, 152528.
2. Eisfeld, W.; Regitz, M. *J. Am. Chem. Soc.* 1996, 118, 11918.
3. Gulbe, K.; Lugiņina, J.; Jansons, E.; Kinēns, A.; Turks, M. *Beilstein. J. Org. Chem.* 2021, 17, 964.