Riga Technical University 62nd International Scientific Conference

"Materials Science and Applied Chemistry"

Program and Abstracts

October 22, 2021

11:40-11:55 **Sergejs Beļuns.**
Lignin and Xylan addition to cellulose nanopaper - a sustainable solution to improve properties

11:55-12:10 **Madara Žiganova.**
Plasticization and properties of microbiologically synthesized polyhydroxyalkonate

12:10-12:25 **Artūrs Ķīsis.**
Effect of the polyurethane adhesive and polyvinyl acetate dispersion adhesive on the strength of the construction joints in bending strength

12:25-12:40 **Kristaps Zvirgzds.**
Additives for hemp shive board to decrease water absorption

12:40-12:55 **Laimdota Vilcēna.**
Technology development for betulin integration into nano-fibers web

Chemistry of Organic Compounds

11:10-11:25 **Rūdolfs Beļaunieks.**
Electrophile-induced transformations of propargyl silanes

11:25-11:40 **Kristaps Leškovskis.**
Aromatic substitution of azido-pyridopyrimidines and study of their azide tetrazole equilibrium

11:40-11:55 **Krista Gulbe.**
Sulfur dioxide-promoted glycosylation with glycosyl fluorides

11:55-12:10 **Armands Rudušs.**
The use of thiazoline-based carbenes for a development of metallo-organic thermally activated delayed fluorescence emitters

Clothing and Textile Technologies

11:10-11:25 **Solvita Bilinska.**
Fabric sewability, today's challenges

11:25-11:40 **Ilze Balgale.**
Multilayer woven textile switch array

11:40-11:55 **Liene Siliņa.**
Systematization of anthropometric characteristics of individual athletes

The MSAC poster session will be held virtually.

The posters are available: https://msac.rtu.lv/program-2021-2/ (till October 25, 2021).

Abstracts

Electrophile-Induced Transformations of Propargyl Silanes

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Stabilizing properties of silicon in reactions, that proceeds via β-silyl carbenium ion, is commonly known as β-silicon effect. Mechanistic insights show two possible pathways of stabilization – vertical (e.g. hyperconjugation) or non-vertical (e.g. silonium ion) [1]. Formation of closed silonium ion with combination of other stabilizing effects explains why many reactions involving β-silyl carbenium ion tend to undergo 1,2-silyl shift [2].

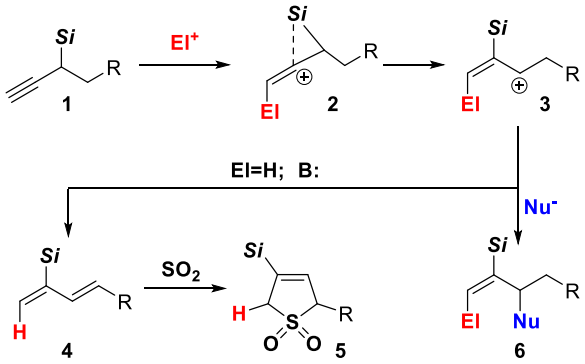

Figure 1. Mechanism and Transformations of Propargyl Silanes

Herein, we report the use of liquid sulfur dioxide for the transformation of propargyl silanes **1** as a highly polar and Lewis acidic reaction media, which offers possibility to use weaker acids (e.g. BzOH, TsOH). Moreover, in a tandem cheletropic addition process silyl sulfolenes **5** are obtained from the *in situ* formed dienes **4** [3].

To expand this concept further, other electrophiles have been used to activate propargyl silane moiety to obtain intermediate **3**. The latter can react with various nucleophiles to obtain compounds **6**.

Acknowledgements

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References

1. M. Puriņš, A. Mishnev, M. Turks, *J. Org. Chem.*, **2019**, *84*, 3595
2. R. Belaunieks, M. Puriņš, M. Turks, *Synthesis*, **2020**, *52*, 2147
3. R. Belaunieks, M. Puriņš, V. Kumpiņš, M. Turks, *Chem. Heterocycl. Compd.*, **2021**. *57*, 20