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WITH INTERNATIONAL PARTICIPATION • 5th SYMPOSIUM "VLADIMIR PRELOG"
5-8 OCTOBER 2021 • VELI LOŠINJ, HOTEL PUNTA, CROATIA

BOOK OF ABSTRACTS

27th Croatian Meeting of Chemists and Chemical Engineers

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5th Symposium Vladimir Prelog

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Veli Lošinj, Vitality Hotel Punta, Croatia

BOOK OF ABSTRACTS

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EXPLORATION OF VARIOUS ELECTROPHILE-INDUCED TRANSFORMATIONS OF PROPARGYL SILANES

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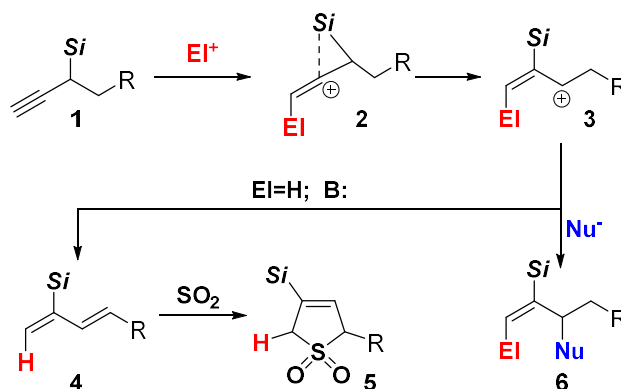
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Stabilizing properties of silicon in reactions, that proceeds via β -silyl carbenium ion, is commonly known as β -silicon effect. Mechanistic insights show two possible pathways of stabilization – vertical (e.g. hyperconjugation) or non-vertical (e.g. 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.

Previously we have reported the use of propargylsilanes **1** in the synthesis of silyl dienes and indenenes by the catalytic amounts of strong Brønsted acids (TfOH, Tf₂NH, Tf₃CH) that involves 1,2-silyl shift.^[2]

Herein, we report the use of liquid sulfur dioxide for this transformation 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**.



Scheme 1. Electrophile induced transformations of propargyl silanes

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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