



Synthesis of borylsilylalkenes by hydrosilylation of borylalkynes with silanes

Kinga Stefanowska,^[a] Tomasz Sokolnicki,^[a,b] Jędrzej Walkowiak,^[a] Adrian Franczyk^[a]

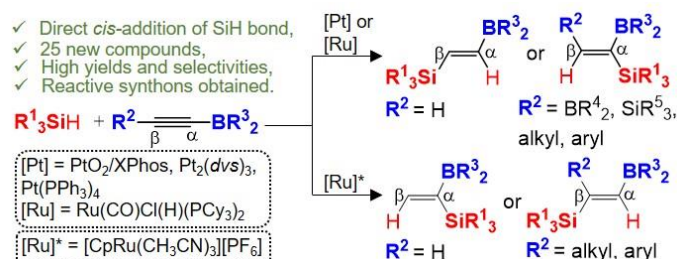
^[a] Adam Mickiewicz University, Centre for Advanced Technologies, Uniwersytetu Poznańskiego 10, 61-614 Poznań

^[b] Adam Mickiewicz University, Faculty of Chemistry, Uniwersytetu Poznańskiego 8, 61-614 Poznań

kinga.stefanowska@amu.edu.pl

Borylsilylalkenes are useful intermediates in organic synthesis because of their ability to achieve straightforward modification through a series of chemical transformations. Such molecules combine the synthetic potential of both boryl and silyl groups bonded to sp^2 -carbon and their different reactivities.^[1] They can be converted into other functional groups (e.g., halogen, aryl, alkenyl, hydroxyl, etc.) via demetallation processes (e.g., palladium-catalyzed coupling reactions at the boryl (Suzuki-Miyaura)^[2] or silyl (Hiyama)^[3] fragment), or become reagents for the synthesis of saturated functional molecules.^[4]

Catalytic hydrosilylation of borylalkynes with silanes will be discussed as a highly effective method for the synthesis of borylsilylalkenes with a diverse arrangement of substituents, which gives the possibility to use commercially available catalysts and substrates, carrying out the processes with stoichiometric ratio of reagents.^[5]



Borylsilylalkenes have been successfully obtained by directed *cis*-hydrosilylation of a structurally different, wide group of borylalkynes with silanes. The processes occurred by *cis*-addition of the Si-H bond across the carbon-carbon triple bond and led to *trans*- and *cis*- products depending on the specific catalyst and reaction conditions used. The obtained products constitute very useful synthons for the synthesis of substituted ethenes or complex materials by widely spread chemical transformations.

In the communication the detailed optimization of the reaction conditions on the process efficiency and selectivity will be presented.

Acknowledgements

Financial Support from the National Centre for Research and Development in Poland, Lider Programme No. LIDER/6/0017/L-O/17/NCBR/2018 and the National Science Centre in Poland No. UMO-2018/31/G/ST4/04012. KS gratefully acknowledges the Foundation for Polish Science (FNP) START grant No. 075.2022.

References

- [1] J.-J. Feng, W. Mao, L. Zhang, M. Oesterich, *Chem. Soc. Rev.*, **2021**, 50, 2010.
- [2] J. Jiao, J. K. Nakajima, Y. Nishihara, *Org. Lett.*, **2012**, 15, 3294.
- [3] C. Morrill, N. S. Mani, *Org. Lett.*, **2007**, 9, 1505.
- [4] Y. Sun, J. Guo, X. Shen, Z. Lu, *Nat. Commun.*, **2022**, 13, 650.
- [5] K. Stefanowska, T. Sokolnicki, J. Walkowiak, A. Czapik, A. Franczyk, *Chem. Commun.*, **2022**, 58, 12046.