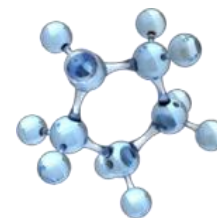




ХАРКІВСЬКИЙ ХІМІЧНИЙ СЕМІНАР KHARKIV CHEMICAL SEMINAR



*НДВ хімії функціональних матеріалів
НТК «Інститут монокристалів» НАН України
Division of Functional Materials Chemistry
State Scientific Institution
«Institute for Single Crystals» NAS of Ukraine*

Lecturer: **Prof. Pavel Nagorny** (*The University of Michigan*)

Topic: **Development of the New Catalytic Tools for the Synthesis of Natural Products and Glycoderivatives**

Date: **September 29th**

Time: **16-00 (Kyiv)**

Zoom link:

Join Zoom Meeting

<https://zoom.us/j/5792236596?pwd=TIVSVzdrTnVrdE9XRXovcUpBMS9zQT09>

Meeting ID: 579 223 6596

Passcode: 24022022

Chairman: **Prof. Valentyn Chebanov**

Lecture abstract:

Due to their structural complexity and diversity as well as their importance to molecular medicine, natural products represent challenging synthetic targets. While synthetic organic chemistry has continuously played a central role in the development of natural product-based therapeutics, only a few organic syntheses could match the natural biosynthetic machinery in terms of efficiency. However, recent developments in organic catalysis have greatly expanded the repertoire of the tools available to modern synthetic chemists. Our group has worked on the interface of organic synthesis and catalysis with the objective to develop new catalytic transformations that would enable the assembly of complex natural products. This seminar will highlight some of our work focused on the synthesis and exploration of complex cardiotonic steroids.

Cardiotonic steroids have many centuries-long history of serving as drugs for the treatment of various heart conditions. Many recent studies suggest that these compounds hold great potential as therapeutic agents for the treatment of cancer, inflammation, immune and metabolic diseases, and in various important health-related areas such as contraception. The development of flexible synthetic routes enabling the preparation of various members of the cardenolide family is highly desirable as it may greatly enhance the medicinal exploration of these compounds. This presentation will describe the application of stereoselective Michael/Aldol cascade reactions to the convergent total synthesis of oxygenated cardenolides including ouabagenin, sarmentiologenin, 19-hydroxysarmentogenin, cannabiol, and oleandrigenin derivatives. In addition, the strategies for the organocatalytic functionalization of cardiotonic steroids as well as other natural polyols will be presented.

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