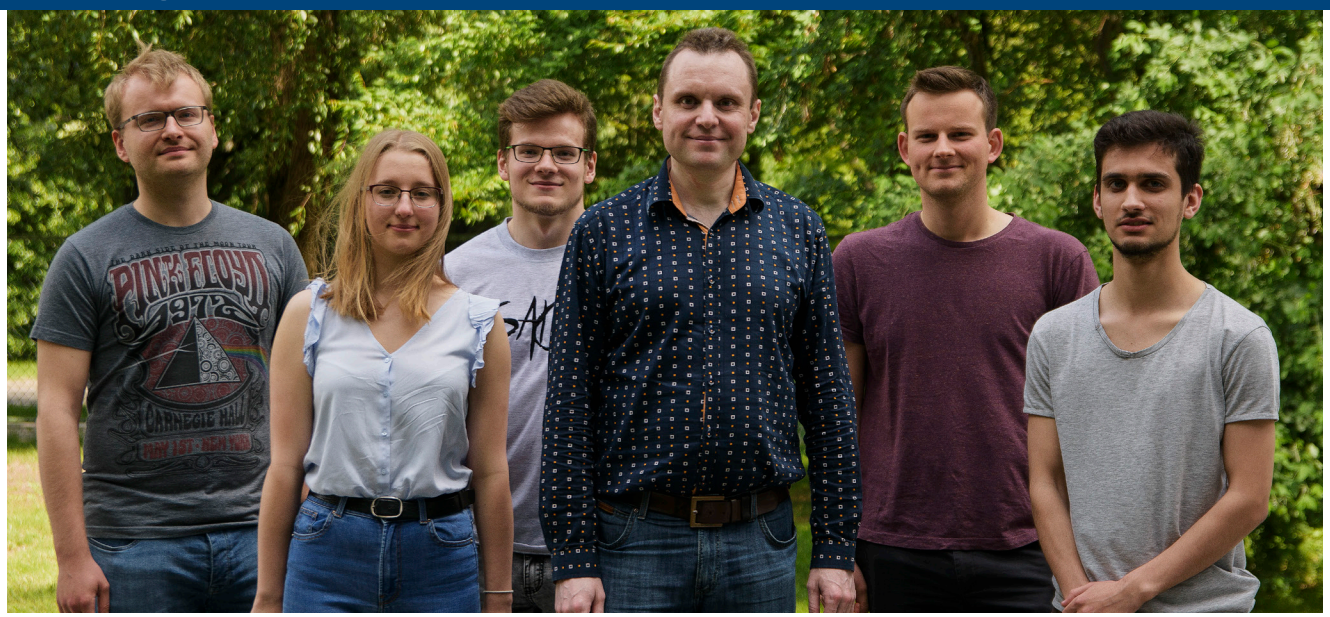
Research Group of Methods of Organic Synthesis



HEAD:

Michał Barbasiewicz*, PhD DSc

GROUP MEMBERS:

Dariusz Basiak, PhD
PhD student: Damian Antoniak
MSc student: Michał Tryniszewski
BSc students: Jan Dudziński, Bartosz Pałuba

RESEARCH PROFILE:

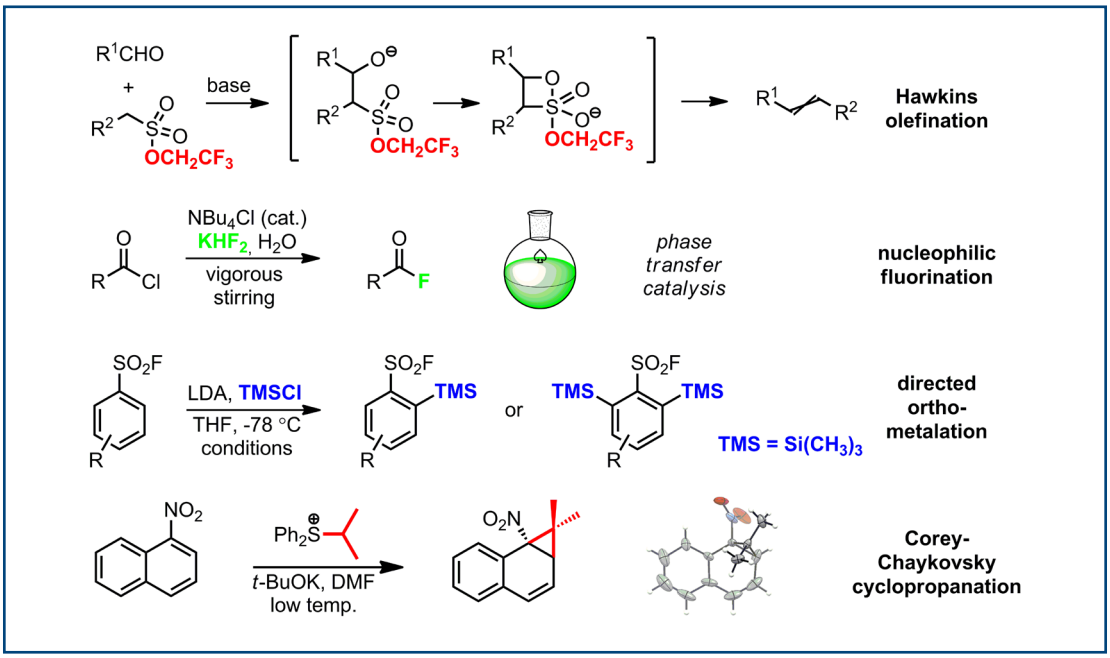
Development of new methodologies in synthetic organic chemistry

CURRENT RESEARCH ACTIVITIES:

We are interested in design and development of new organic transformations, based on fundamental reactivities of simple molecules and a canon of named reactions reported in the literature over decades. Examples of our studies are, e.g.: (1) Hawkins olefination with activated alkanesulfonates, which mimics mechanistic scheme of the Wittig reaction (cyclization and fragmentation of four-membered ring intermediate), (2) nucleophilic fluorination with aqueous bifluoride solution under phase-transfer catalyzed conditions, which enables efficient synthesis of acyl fluorides, (3) functionalization of arenesulfonyl fluorides by directed ortho-metalation with in situ electrophile trapping, and (4) Corey-Chaykovsky dearomatization of nitronaphthalene derivatives.

Our research concerns mainly classical methods of organic synthesis, based on unique features offered by organic derivatives of main group elements of the Periodic Table.

*e-mail: barbasiewicz@chem.uw.edu.pl



SELECTED PUBLICATIONS:

1. D. Antoniak, M. Barbasiewicz, Corey–Chaykovsky Cyclopropanation of Nitronaphthalenes: Access to Benzonorcaradienes and Related Systems, Org. Lett. 21 (2019) 9320–9325.
2. A. Talko, D. Antoniak, M. Barbasiewicz, Directed ortho-Metalation of Arenesulfonyl Fluorides and Aryl Fluorosulfates, Synthesis. 51 (2019) 2278–2286.
3. A. Talko, M. Barbasiewicz, Nucleophilic Fluorination with Aqueous Bifluoride Solution: Effect of the Phase-Transfer Catalyst, ACS Sustainable Chem. Eng. 6 (2018) 6693–6701.
4. B. Górski, A. Talko, T. Basak, M. Barbasiewicz, Olefination with Sulfonyl Halides and Esters: Scope, Limitations, and Mechanistic Studies of the Hawkins Reaction, Org. Lett. 19 (2017) 1756–1759.