Curriculum Vitae

Personal Details

Name: Dr. Béla Mátravölgyi
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Current Position

2023 - present Associate Professor, BME Department of Organic Chemistry and Technology

Previous Positions

2017 - 2023 Assistant Professor, BME Department of Organic Chemistry and Technology
2012 - 2017 Research Associate, MTA-BME Organic Chemical Technology Research Group
2010 - 2012 Research Assistant, MTA-BME Organic Chemical Technology Research Group
2007 - 2010 PhD student, BME Department of Organic Chemistry and Technology

Education

- MSc in Chemical Engineering (2007, BME Faculty of Chemical Technology and Biotechnology)
- PhD in Chemical Sciences (2012, BME George A. Oláh Doctoral School of Chemistry and Chemical Technology)

Research Experience

I have almost 20 years of experience in the field of preparative organic chemistry, which includes the planning and implementation of a wide variety of chemical transformations, the different purification methods of the crude products and the wide knowledge of analytical background, which is essential for high-quality research work. My professional experience covers reactions carried out with organometallic reagents under inert conditions, the preparation of optically active compounds by resolution or enantioselective synthesis. I have extensive experience on the field of the total synthesis of heterocyclic derivatives and chiral compounds under batch and flow conditions.

I have participated in many industrial collaborations aiming to synthetize biologically relevant building blocks or APIs, and to develop new and efficient routes to intermediates and products.

Moreover, some of these research work resulted in patent applications, such as Ivabradine (WO2011/138625A1), Aliskiren (HU230043B1), Bedaquiline (WO2016/116076A1), Apremilast (WO2016/161996A1). According to these researches, my academic work is focused on the continuous development of transformations, which are highly important from industrial point of view, as well. In the case of a reliable chemical transformation, not only the synthesis, but the purification is fundamental. Therefore, I am also focused my research interest on new ways of purification approaches and techniques. I have experience in both normal and reverse phase analytical and preparative chromatography, trying to find efficient ways to continuous work-up procedures of flow-chemical synthesis. In the field of instrumental analytical chemistry, I routinely use gas- and liquid chromatographs, chiral techniques to analyse enantiomers, MS techniques, as well as NMR spectroscopy.

Fellowships and Grants

- 2021 -- 2024: Research of a new, effective plant conditioning agent for the reduction of toxin production in cereals and other plants, as well as the development of technology using industrial-scale ozone for the detoxification of food raw materials and animal feed, Support for market-driven research and development and innovation projects, 2020-1.1.2-PIACI-KFI-2021-00234 (participant).
- 2017 - 2021: Synthesis of heterocyclic aminophosphonate and aminophosphine oxide derivatives via multicomponent reactions, NKFIH FK-123961 (participant).
- 2016 - 2019: Design and synthesis of new conjugated or atropisomeric hetero- and polycycles through organometallic methodologies, OTKA-PD-129652. Result: excellent (principal investigator).
- 2018: National Talent Program, National Young Talent Scholarship by the Ministry of Human Resources, Preparation of educational video aids for organic chemical laboratory workflows (principal investigator).
- 2012 - 2017: Regio- and stereoselective reactions of polar organometallic compounds, OTKA-PD-104528. Result: excellent (participant).

Most Important Publications Over the Last Five Years

1. Nguyen, T. H. H.; Bálint, E.; Mátravölgyi, B. Time-Dependent Resolution of an Atropisomeric 1-Arylpyrrole by a Novel 1-Arylethylamine Saltforming Agent. *Chirality*, 2025, 37, e70074. IF(2025/2024): 3.000.

2. Orosz, J. M.; Rávai, B.; Mátravölgyi, B.; Bálint, E. Flow Synthesis of Capsaicin and Capsaicinoid Analogues. *ACS Sustainable Chem. Eng.*, 2024, 12, 7913. IF: 7.300. Independent citations: 6.
3. Popovics-Tóth, N.; Bao, T. D. T.; Tajti, Á.; Mátravölgyi, B.; Kelemen, Zs.; Perdih, F.; Hackler, L.; Puskás, L. G.; Bálint, E. Three-component Reaction of 3-Formyl-6-methylchromone, Primary Amines and Secondary Phosphine Oxides: A Synthetic and Mechanistic Study. *ACS Omega*, 2023, 8, 2698. IF: 4.132. Independent citations: 5.
4. Hergert, T.; Mátravölgyi, B.; Örkényi, R.; Éles, J.; Faigl, F. Multistep batch-flow hybrid synthesis of a terbinafine precursor. *Journal of Flow Chemistry*, 2022, 12, 51. IF: 2.786. Independent citations: 1.
5. Varga, B.; Vincze, D.; Pető, H.; Buna, L.; Pauló, J.; Holczbauer, T.; Mátravölgyi, B.; Hegedűs, L.; Fogassy, E.; Keglevich, Gy.; Bagi, P. Resolution of aryl-H-phosphinates applied in the synthesis of P-stereogenic compounds including a Brønsted acid NMR solvating agent. *Org. Chem. Front.*, 2022, 9, 2797. IF: 5.281. Independent citations: 5.

Further Significant Publications

1. Balogh, A.; Domokos, A.; Farkas, B.; Farkas, A.; Rapi, Zs.; Kiss, D.; Nyiri, Z.; Eke, Zs.; Szarka, Gy.; Örkényi, R.; Mátravölgyi, B.; Faigl, F.; Marosi, Gy.; Nagy, Zs. K. Continuous end-to-end production of solid drug dosage forms: Coupling flow synthesis and formulation by electrospinning. *Chem. Eng. J.* 2018, 350, 290-299. IF: 8.355. Independent citations: 51.
2. Mátravölgyi, B.; Hergert, T.; Bálint, E.; Bagi, P.; Faigl, F. Access to Fluorazones by Intramolecular Dehydrative Cyclization of Aromatic Tertiary Amides: A Synthetic and Mechanistic Study. *J. Org. Chem.* 2018, 83, 2282-2292. IF: 4.745. Independent citations: 23.
3. Mátravölgyi, B.; Hergert, T.; Thurner, A.; Varga, B.; Sangiorgi, N.; Bendoni, R.; Zani, L.; Reginato, G.; Calamante, M.; Sinicropi, A.; Sanson, A.; Faigl, F.; Mordini, A. Synthesis and Investigation of New Solar Cell Photosensitizers Having a Fluorazone Backbone. *Eur. J. Org. Chem.* 2017, 14, 1843-1854. IF: 2.882. Independent citations: 12.
4. Faigl, F.; Erdélyi, Zs.; Deák, Sz.; Nyerges, M.; Mátravölgyi, B. A new pyrrolidine-derived atropisomeric amino alcohol as a highly efficient chiral ligand for the asymmetric addition of diethylzinc to aldehydes. *Tetrahedron Lett.* 2014, 55, 6891-6894. IF: 2.379. Independent citations: 22.
5. Faigl, F.; Mátravölgyi, B.; Holczbauer, T.; Czugler, M.; Madarász, J. Resolution of 1-[2-carboxy-6-(trifluoromethyl)phenyl]-1H-pyrrole-2-carboxylic acid with methyl (R)-2-phenylglycinate, reciprocal resolution and second order asymmetric transformation. *Tetrahedron Asym.* 2011, 22, 1879-1884. IF: 2.652. Independent citations: 15.