

# Bogdan-Constantin Enache

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## EDUCATION

**PhD in Chemistry** — *University of Bucharest, Faculty of Chemistry* (2021–2026, thesis submitted)

Thesis: “*Expanding Heteroaryl Azo Toolbox — Synthetic Approaches of Novel Molecules and Evidence of their Photoswitching Ability*”

Advisor: Conf. Dr. Habil. Mihaela Matache

**MSc in Chemistry of Drugs and Cosmetics** — *University of Bucharest, Faculty of Chemistry* (2019–2021)

Thesis: “*Azoheteroaryl molecular photoswitches*” (grade: 10/10). Advisor: Conf. Dr. Mihaela Matache

**BSc in Chemistry** — *Babeş-Bolyai University, Cluj-Napoca* (2016–2019)

Thesis: “*Synthesis and spectroscopic characterisation of 2-[Me(i-Pr)NCH(Me)]C<sub>6</sub>H<sub>4</sub>Si(H)Me<sub>2</sub>*” (grade: 10/10).

Advisors: Conf. Dr. Ciprian Raţ, Prof. Dr. Cristian Silvestru

**Baccalaureate** — *Colegiul Naţional “Mihail Sadoveanu”, Paşcani* (2012–2016)

Natural Sciences

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## WORK EXPERIENCE

**R&D Chemist** — *Microsin S.R.L., Bucharest* (March 2020 – Present)

- Developed and scaled synthetic processes for active pharmaceutical ingredients from laboratory to production scale (up to 250 kg), bringing Chloramine-T, Octatropine Methylbromide, and Acetyl-L-Carnitine Hydrochloride through process validation.
- Proposed synthetic routes and optimised processes for multiple APIs from research through pilot scale. Generated impurity reference standards and supported analytical method development.
- Conducted mutagenic impurity assessments (ICH M7, QSAR Toolbox), general impurity profiling (ICH Q3A), nitrosamine risk evaluations, and purge factor calculations (theoretical and experimental). Assisted in preparing CMC regulatory documentation.
- Collaborated cross-functionally with QA in a GMP environment.

**Consultant Chemist** — *Attune, Alexandra Pirici @ Hamburger Bahnhof, Berlin* (Jan – Oct 2024)

- Designed and optimised a large-scale automated Briggs-Rauscher oscillating reaction for a performative art installation at Hamburger Bahnhof Museum.
  - Provided regulatory consultancy and prepared health and safety documentation.
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## PUBLICATIONS

1. Enache, B. C.; Hanganu, A.; Tablet, C.; Anghel, C. C.; Popescu, C. C.; Paun, A.; Hădade, N. D.; Mădălan, A. M.; Matache, M. Exploring Arylazo-3,5-Bis(Trifluoromethyl)Pyrazole Switches. *ACS Omega* **2022**, 7 (43), 39122–39135, DOI: [10.1021/acsomega.2c04984](https://doi.org/10.1021/acsomega.2c04984)
  2. Enache, B. C.; Simene, A. F.; Hanganu, A.; Tablet, C.; Mădălan, A. M.; Popescu, C. C.; Matache, M. Light-Responsive Oxadiazole-Based (Hetero)Aryl-Azobenzenes. *Synthesis* **2025**, DOI: [10.1055/a-2675-3787](https://doi.org/10.1055/a-2675-3787)
  3. Enache, B. C. *et al.* Arylazothiadiazoles – a new class of stable push-pull photoswitches, *Manuscript in publication*.
  4. Enache, B. C. *et al.* Beyond switching – photochemical conversion of arylazooxadiazoles into triazinone scaffold, *Manuscript in publication*.
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## CONFERENCES & PRESENTATIONS

### International

- Enache, B. C.; Dobre, A.F.; Hanganu, A.; Mădălan, A.M.; Popescu, C.C.; Păun, Anca; Matache, M. Synthetic challenges in preparation of novel oxadiazole and pyrazole-based (hetero)arylazo compounds. *KAUST Research Conference — Advances in Sustainable Catalysis*, Jeddah, Saudi Arabia, 2023. (Poster)

- Enache, B. C.; Dobre, A.F.; Hanganu, A.; Mădălan, A.M.; Popescu, C.C.; Păun, Anca; Matache, M. Influence of electronic effects on performance of novel arylazopyrazole photoswitches. [8<sup>th</sup> EuChemS Chemistry Congress](#), Lisbon, Portugal, 2022. (Poster)
- Enache, B. C.; Dobre, A.F.; Hanganu, A.; Mădălan, A.M.; Popescu, C.C.; Păun, Anca; Matache, M. Synthesis of novel 3,5-bis(trifluoromethyl)-4-arylazopyrazole photoswitches. [17<sup>th</sup> Belgian Organic Synthesis Symposium](#), Namur, Belgium, 2022. (Poster)
- Enache, B. C.; Hanganu, A.; Mădălan, A. M.; Popescu, C. C.; Păun, A.; Matache, M. Synthesis of novel arylazopyrazole photoswitches. [21st Tetrahedron Symposium](#), 2021. (Poster)
- Enache, B. C.; Hanganu, A.; Mădălan, A. M.; Matache, M. Synthesis of novel arylazopyrazole photoswitches. [3rd Young Researchers' International Conference on Chemistry and Chemical Engineering \(YRICCCE III\)](#), Cluj-Napoca, 2021. (Poster)
- Enache, B. C.; Raț, C.; Silvestru, C.; Synthesis and characterisation of [1-(2-bromophenyl)ethyl](methyl)(propan-2-yl)amine. [XVI International Conference "Students for Students"](#), Cluj-Napoca, 2019.

## National

- Enache, B. C.; Hanganu, A.; Tablet, C.; Anghel, C. C.; Mădălan, A. M.; Popescu, C. C.; Paun, A.; Hădade, N. D.; Matache, M. Synthesis of novel 3,5-bis(trifluoromethyl)-4-arylazopyrazole photoswitches. [Student Scientific Communications Session](#), Bucharest, 2024. (Presentation)
- Enache, B. C. Exploring novel azoheteroarene scaffolds towards more versatile photoswitches. [Scientific Communications Session — Chemistry Day](#), Bucharest, 2024. (Presentation)
- Enache, B. C. Exploring novel azoheteroarene scaffolds towards more versatile photoswitches. Workshop: [Transboundary chemistry at the forefront of molecular sciences, Smart Diaspora 2023](#), Timișoara. (Presentation)

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## RESEARCH PROJECTS

- Turning tautomeric molecular switches into nanoscale molecular motors ([PROTON DREAMS](#)), **Research assistant** (2025-2028) – synthetic methodology development for novel molecular tautomeric switches, Principal Investigator Conf. Dr. Mihaela Matache, UEFISCDI - MAPS. 8ROCH/01/07/2025.
- Novel probes for dissecting the cellular roles of lipids ([ProLip](#)), **Research assistant** (2024-2026) – synthesis of Si-Rhodamine derivatives, Principal Investigator Prof. Dr. Adrian Șalic, PNRR/2022/C9/MCID/I8, Contract no. 760056/23.05.2023 CF 235/29.11.2022.
- Competence centre for nature-based community development, ecosystems protection and restoration in the Lower Danube Basin - NW Black Sea coast ([ResPonSE](#)). **Research assistant** (2023-2025) – synthesis of rhamnose derivatives for obtaining SUPRAs, Principal Investigator Prof. Dr. Corina Bradu, PNRR/2022/C9/MCID/I5, Contract no. 760010/30.12.2022 CF 18/16.11.2022.

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## AWARDS & DISTINCTIONS

- [Best Master's Thesis in Exact Sciences and Engineering — Senate Awards Gala, University of Bucharest, 5<sup>th</sup> Edition, 2021](#)
- Academic merit scholarship — MSc, Faculty of Chemistry, University of Bucharest, 2019–2021
- Academic merit scholarship — BSc, Faculty of Chemistry and Chemical Engineering, Babeș-Bolyai University, 2016–2019
- National Chemistry Olympiad — 4<sup>th</sup> place in 2015; 7<sup>th</sup> place in 2016; selected for IChO preparatory camp in 2016

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## SKILLS

**Transversal Skills:** Scientific writing, grant proposal writing, science communication and outreach, mentoring, interdisciplinary collaboration

**Synthetic Chemistry:** Route scouting, target-oriented synthesis, multi-step organic synthesis, process optimisation and scale-up (lab to 250 kg), crystallisation and polymorph screening, impurity standard generation, Schlenk line / inert atmosphere techniques, crystal growth for X-ray diffraction

**Analytical Techniques:** NMR, UV-Vis, IR, HRMS, XRD, structural elucidation

**Computational Chemistry:** DFT (ORCA 6)

**Regulatory & Quality:** ICH M7 mutagenic impurity assessment (QSAR Toolbox), ICH Q3A general impurity profiling, nitrosamine risk evaluation, purge factor calculation (theoretical & experimental), regulatory documentation for API manufacturing, Quality by Design (QbD)

**Software:** ChemDraw, MestreNova, Mercury, Diamond, Xcalibur, ORCA, Gaussian, Chemcraft, Avogadro, Python, SciFinder, Reaxys

**Languages:** Romanian (native), English (C1–C2)

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## **VARIA**

- Member of Romanian Chemical Society
- Delivered seminars on organic chemistry research careers to Chemistry Olympiad trainees (Preparatory Camp) and [APEX Chemistry 2025](#) participants
- Attended [Horizon Europe proposal writing and project management workshop](#), May 2025
- Member of the [Science On](#) chemistry committee (problem setting and grading)
- Jury member for [LicArt](#) (photography and poetry contest for high school students)
- Member of [Școala de la Bunești](#) (traditional building methods: dry stone, timber framing, hemp insulation)
- Attended summer school [“Catalysis for promising future”](#), Băile Govora, 2022
- Volunteered as Secretary, [AEGEE-Cluj-Napoca](#) (2017–2018)
- Hobbies: Sports (running, cycling, hiking); Literature (classics and contemporary); Music (electronic music, DJ-ing, audio engineering); DIY