

Passionate student: From Radiological Assessment to Precision Nuclear Dating for a better understanding of the global carbon cycle

The debut of Savin Codrin-Fabian's in scientific endeavors is outlined by his adherence to the research collective of the Centre of Environmental Radioactivity and Nuclear Dating (Babeş-Bolyai University, Cluj-Napoca). Throughout his undergraduate studies at the Faculty of Environmental Science and Engineering, Codrin was engaged in scientific activities, as part of his collaboration with the Nuclear Spectrometry Laboratory. In 2020, under the guidance of Associate Prof. Dr. Begy Robert-Csaba, he submitted the research project entitled "Investigating the Radioactivity of Mineral Waters in the Northeastern Carpathians and Determining the Radiation Dose Resulting from Their Consumption" and won a Special Scholarship for Scientific Activity awarded by Babeş-Bolyai University. Throughout the duration of the scholarship, Savin Codrin-Fabian co-authored two scientific papers published in ISI-indexed journals and disseminated the results at two international scientific conferences. He gained the status of Member of the College of Academic Excellence 'Next Generation' within the Institute of Advanced Studies in Science and Technology (STAR).

Currently, Savin Codrin-Fabian holds the position of research technician, employed since 2022 by Babeş-Bolyai University, within the research project *PN-III-P1-1.1-TE-2021-0213* aimed at stimulating young independent teams, titled "Carbon sinks or sources: assessing the impact of climate change and anthropic activities on peat development in SE-Europe over the last 150 years" while pursuing a master's level degree at the Faculty of Environmental Science and Engineering.

In the course of the last four years, Savin Codrin-Fabian achieved tangible results as an outcome of his scientific involvement and dedication to the field of natural radioactivity, publishing a total number of eight research articles in ISI-indexed international journals and participating in numerous scientific conferences. The results of his studies hold relevance in the actual global context, depicting the mechanisms and impacts of both natural processes and anthropic activities from an environmental perspective. The recent transition in the focus of his scientific activities towards the study of retrospective peatland carbon dynamics is facilitating a better understanding of the global carbon cycle and the potential of carbon sinks, both fundamental in the understanding and mitigation of climate change and the impact of greenhouse gasses. Moreover, the radiological investigations performed on potable water sources at the national level have implications for public health safety. Savin Codrin-Fabian future academic ambitions include pursuing a Ph.D. program in natural sciences, advancing his knowledge in the field, to upscale the significance of his contributions in the area of scientific research.

Annex- Career timeline and listed achievements

Personal Information

Family name, First name: **Savin Codrin-Fabian**

Date of birth: 24 November 1999

Researcher unique identifier(s) ORCID 0009-0002-4707-9417, Scopus ID 57224781513,

Google Scholar: <https://scholar.google.com/citations?user=sZgl5oUAAAAJ&hl=en>

H-index = 2 (since 2019)

Education

2022 (ongoing) Master of Engineering degree in Sustainable Development and Environmental Management, Faculty of Environmental Science and Engineering, Babeş-Bolyai University

2018 – 2022 Bachelor of Engineering degree in Environmental Engineering, Faculty of Environmental Science and Engineering, Babeş-Bolyai University

Current positions

2022 (ongoing) Research Technician, Faculty of Environmental Science and Engineering, Babeş-Bolyai University, within the PN-III-P1-1.1-TE-2021-0213 research project for stimulating young independent teams

Fellowships and awards

Fellowships: 2023 - Erasmus+ Staff Training Mobility at University of Pannonia, Veszprem, Hungary

Awards: 2021 - Diploma of Excellence for Student Scientific Research, issued by the Centre for the Management of Scientific Research, Babeş-Bolyai University

Memberships of scientific societies

2023 - Member of European Radon Association (*ERA*) membership no. 549.923.484

2020 - Member of Babeş-Bolyai University Student Fellowship - College of Academic Excellence & "Next Generation" Virtual College of Excellence

List of Publications

Articles in indexed journals

- Begy, R.-Cs., **Savin, C.-F.**, Korponai, J., Magyar, E., & Kovács, T. (2024). Investigation of the last two centuries sedimentation dynamics in high-altitude lakes of Southern Carpathians, Romania. *Scientific Reports*, 14(1). <https://doi.org/10.1038/s41598-024-51812-2>
- Kelemen, S., **Savin, C.-F.**, Timar-Gabor, A., & Begy, R.-C. (2023). A comparative study on digestion methods for ^{210}Po determinations by Alpha Spectrometry on peat bog samples. *Journal of Radioanalytical and Nuclear Chemistry* <https://doi.org/10.1007/s10967-023-09157-z>
- Begy, R.-Cs., **Savin, C.-F.**, & Ruskál, A. (2023). Recent carbon sequestration dynamics in four temperate se European peatlands using ^{210}Pb dating. *Journal of Environmental Radioactivity*, 264, 107208. <https://doi.org/10.1016/j.jenvrad.2023.107208>
- Savin, C. F.**, Forray, F. L., Tănăselia, C., & Begy, R.-Cs. (2023). Radiological assessment of carbonated spring waters in regard to the lithological characteristics of Harghita County, Romania. *The European Physical Journal Special Topics*, 232(10), 1563–1581. <https://doi.org/10.1140/epjs/s11734-023-00879-5>
- Begy, Robert-Cs., **Savin, C.-F.**, Süle, D. K., & Giagias, E. (2023). Radiological Survey of Geothermal Water Resources in Romania and dose estimation from their use in balneotherapy. *The European Physical Journal Special Topics*, 232(10), 1595–1605. <https://doi.org/10.1140/epjs/s11734-023-00883-9>
- Begy, Robert-Csaba, **Savin, C.-F.**, & Timar-Gabor, A. (2022). Correction of the effects of carbon dioxide and hydrogen sulfide on electrostatic cell monitors measurements of radon in water. *Journal of Environmental Chemical Engineering*, 10(1), 107040. <https://doi.org/10.1016/j.jece.2021.107040>
- Begy, R.-Cs., **Savin, C.-F.**, Süle, D.-K., Nuhanovic, M., Giagias, E., & Kovács, T. (2022). Radiological investigation of natural carbonated spring waters from Eastern Carpathians, Romania. *Journal of Radioanalytical and Nuclear Chemistry*, 331(3), 1439–1450. <https://doi.org/10.1007/s10967-022-08195-3>
- Begy, Robert-Csaba, **Savin, C. F.**, Kelemen, S., Veres, D., Muntean, O.-L., Malos, C. V., & Kovacs, T. (2021). Investigation of the effect of anthropogenic land use on the Pănăzii Lake (Romania) catchment area using ^{137}Cs and ^{210}Pb radionuclides. *PLOS ONE*, 16(6). <https://doi.org/10.1371/journal.pone.0251603>