Ph.D. student Șerban Constantin Grecu -narrative CV

From indoor radon to electron microscopy of rocks: Unearthing New Horizons in Environmental Radioactivity

Șerban-Constantin Grecu is currently a Ph.D. student under the supervision of Prof. Dr. Alida Timar-Gabor. He always had a keen interest in figuring out how things work in the natural world.

Starting with a bachelor on Environmental Engineering, during the undergraduate period, his academic trajectory underwent an introspective shift, delving into the insidious implications of radon infiltration into residential spaces. He actively engaged in multiple projects regarding the pervasive issue of residential radon. The initiation into research materialized with the collaboration with the ‘’Constantin Cosma’’ Radon Laboratory (LiRaCC Laboratory) within the Faculty of Environmental Science and Engineering, Cluj-Napoca. The first notable project "Smart systems for population safety through radon exposure control and residential energy efficiency optimization (SMART-RAD-EN)" laid his foundation in the research field. This activity focused on the processing of data obtained through the ICA prototype, a device developed in the project. In this regard, his contribution allowed the rapid processing of an impressive volume of data using the R progamming language. The results of this collaboration have been capitalized through the publication of an ISI article in the *Romanian Journal of Physics*. Eager to expand his horizons, in July 2019, Șerban attended the "Radioecology, Radiometric Dating, Nuclear Measurements" Summer School, held in Veszprem, Hungary. During the academic year 2019-2020, he received a special scholarship from Babeș-Bolyai University for scientific activities, allowing to continue his research and present at the VII. Terrestrial Radioisotopes in Environment International Conference on Environmental Protection, held in Veszprem, Hungary, where he obtained the Young Profession Award. The culmination of this scholarship was the publication of an article on radon temporal correction factors in *Scientific Reports*. His master's research focused on time series analysis of indoor radon concentration, contributing to the MoLiAIR project, aiming to increase accuracy in estimating annual radon concentration. Driven by the motivation of applying relatively new artificial intelligence techniques in the analysis of radon concentration, his dissertation delved into machine learning anomaly detection in indoor radon concentration time series.

Driven by desire for knowledge, Șerban recently joined a dynamic and professional team of the Centre for Environmental Radioactivity and Nuclear Dating at the Institute of Bio Nano Sciences, Cluj-Napoca and as a Ph.D. student, he is studying luminescence dating methods and electron microscopy under the guidance of Prof. Dr. Alida-Timar Gabor. Eager to contribute to the advancement of scientific knowledge, his journey continues with a commitment to excellence and continuous learning.

Annex-Career timeline and listed achievements

Personal information:

Family name, First name: **Grecu Șerban Constantin**

Date of birth: 28 April 1998

Researcher unique identifier(s) ORCID 0009-0001-4449-9144, Scopus ID 57215593567, Google Scholar: https://scholar.google.com/citations?user=I-tEQ70AAAAJ

Education:

2023 - present: Doctoral School ''Environmental Science'' - Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca

2021 - 2023: Master ''Risk assessment and environmental safety'' - Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca, Master thesis: ''Anomaly detection using time series analysis in the variation of Radon concentration''

2017- 2021: Bachelor Degree Certificate in Environmental Engineering, Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca. Bachelor thesis: ''Impact of physical factors on indoor radon concentration with application in determination of seasonal correction factors''

Current positions

2023 – present: Research assistant, at Babeș Bolyai University Cluj-Napoca, Romania, within ERC-COG-PROGRESS-101043356, Reading provenance from ubiquitous quartz: understanding the changes occurring in its lattice defects in its journey in time and space by physical methods

2023-present: Teaching assistant, Faculty of Environmental Science and Engineering, Babeș Bolyai University, Cluj-Napoca, Romania.

2022 – present: Research assistant, at Babeș Bolyai University Cluj-Napoca, Romania, within MoLiAIR- Increasing the accuracy in estimating the annual radon concentration by analysing the parameters with impact in temporal variations. Project PN-III-P1-1.1-TE-2021-0249 (https://moliair.granturi.ubbcluj.ro)

Previous positions: 2019 – 2020, Research Technician at Babeș Bolyai University, Cluj-Napoca, Romania, within SMART-RAD-EN - Intelligent systems for public safety by controlling and reducing radon exposure linked to the optimization of energy efficiency of dwellings in major urban agglomerations in Romania. Project POC Contract No. 22/01.09.2016, ID P_37_229, MySmis code 103427 (www.smartradon.ro).

Scholarships and awards

Scholarships: 2019-2020: Scholarship for scientific activity- Faculty of Environmental Science and Engineering, Babeş-Bolyai University, Cluj-Napoca

International awards: 2020: Young Profession Award – at VII. Terrestrial Radioisotopes in Environment International Conference on Environmental Protection (VII. TREICEP) Conference, Institute of Radiochemistry and Radioecology, University of Pannonia, Veszprém, Hungary

List of Publications

Articles in indexed journals

1. Dicu, T., Burghele, B.D., Botoş, M., Cucoș, A., Dobrei, G., Florică, Ș., **Grecu, Ș.**, Lupulescu, A., Papp, I., Szacsvai, K., & Sainz, C. **2021.** A new approach to radon temporal correction factor based on active environmental monitoring devices. ***Scientific Reports*** 11, 9925. https://doi.org/10.1038/s41598-021-88904-2, IF (2023): 4.996, Q2 AIS 2022
2. Tunyagi, A., Dicu, T., Cucoș, A., Burghele, B.D., Dobrei, G., Lupulescu, A., Moldovan, M., Niță, D., Papp, B., Pap, I., Szacsvai, K., Țenter, A., Beldean-Galea M.S., Anton, M., **Grecu, Ș.**, Cicoloa, L., Milos, R., Botos, M.L., Chiorean, C.G., Catalina, T., Istrate, M.A., Sainz, C. **2020.** An Innovative System for Monitoring Radon and Indoor Air Quality. ***Romanian Journal of Physics*** 65, 803. https://rjp.nipne.ro/2020_65_1-2/RomJPhys.65.803.pdf, IF (2023): 1.662, Q4 AIS 2022

Conferences and seminars

1. **2023 -** 16th INTERNATIONAL WORKSHOP GARRM (on the GEOLOGICAL ASPECTS OF RADON RISK MAPPING), Prague, Czech Republic

2. **2023 -** ENVIRONMENT & PROGRESS Symposium - Sustainable Development: Approaches and Solutions for Resilient Communities, Faculty of Environmental Science and Engineering, Babes Bolyai University, Cluj-Napoca, Romania

3. **2020** - Terrestrial Radioisotopes in Environment International Conference on Environmental Protection (VII. TREICEP) Conference, Institute of Radiochemistry and Radioecology, University of Pannonia, Veszprém, Hungary,