

Rojina gained her bachelor degree in Microbiology from Tribhuvan University in Nepal and then she moved to United Kingdom to study at the University of Bedfordshire. She successfully finished undergraduate program with the title Master of Science in Biotechnology in 2011. After that, Rojina worked for Japanese food company in London until May 2015, and then she began to study at the Technical University of Liberec.

The research related to microbiology in radioactive waste repository is rather new, first studies were published in the nineties of the last century. In the Czech Republic, our research group at CXI was the first to begin with this topic. Therefore, we had to establish cooperation with scientists from Research Center Řež and Institute for Nuclear Research in Prague that are experts in radioactive waste research. Rojina then studied microbial activity in clay, cementitious, and on canister material. She also explored effect of irradiation, swelling pressure and temperature on microbial communities. Most of the experiments were related to Czech radioactive waste repository concept, so the outcomes could be used by the Radioactive Waste Repository Authority, SÚRAO.

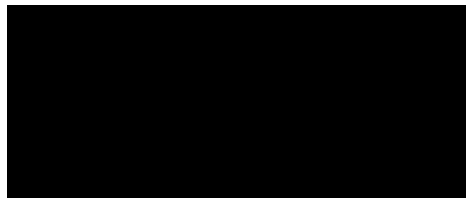
Rojina quickly became an important team member in an international Euratom/Horizon2020 project MIND focused on microbiology in radioactive waste repository. Her main duties included molecular biology analyses of the samples from long term experiments that were held in laboratories at the Research Centre Řež in Praha. She closely worked with her tutor Jana Steinová and later with Kateřina Černá. Her results were used in numerous presentations at international conferences, project deliverables, a book chapter and were published in high-ranked scientific journals.

Rojina attended scientific courses (e.g. training on qPCR, experimental design and statistical data analysis for qPCR at TATAA Biocenter) and also visited well known institutes (Helmholtz-Zentrum Dresden-Rossendorf, Faculty of Science and Engineering at the Manchester University, Belgian nuclear research centre SCK-CEN). At the Faculty of Science in the University of Granada, she studied an impact of microbial processes on the speciation of Se(IV) in the presence of bentonite under supervision of prof. Mohamed Merroun during spring 2020. Although the stay was complicated by the coronavirus pandemics and had to be interrupted, the experiment has not been stopped and the results obtained to date seems to be very interesting. Moreover, Rojina was involved in other experiment in prof. Merroun's group and her results were used in a paper currently submitted to Journal of Hazardous Materials.

Importantly, Rojina was also a lecturer of an advanced training course entitled Geomicrobiology in radioactive waste disposal in SCK-CEN in Belgium in October 2018 that proved her teaching abilities.

The thesis is partly based on published papers and project deliverable reports and at least three more papers are being prepared, one co-authored book chapter will be published this autumn.

The thesis is divided in introductory part Literature overview and an Experimental part containing four chapters. The thesis is well written and the main findings are highlighted in the Conclusions part. Rojina have done highly proficient research leading to better understanding of the microbial activities that could be important for the safety of the deep geological radioactive waste repository and I can fully recommend her thesis for defense.



RNDr. Alena Ševců, PhD.