



# NEWSLETTER

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## THE SURRI NEWS

### SUMMER EDITION 2024

brings you the latest highlights and achievements from SURRI project activities. Stay in touch and don't miss any news.

Dear SURRI fans,  
welcome to the 3rd edition of our SURRI team newsletter. We're here to update you on our project's latest highlights and results. Curious about what's new? Let's dive in!

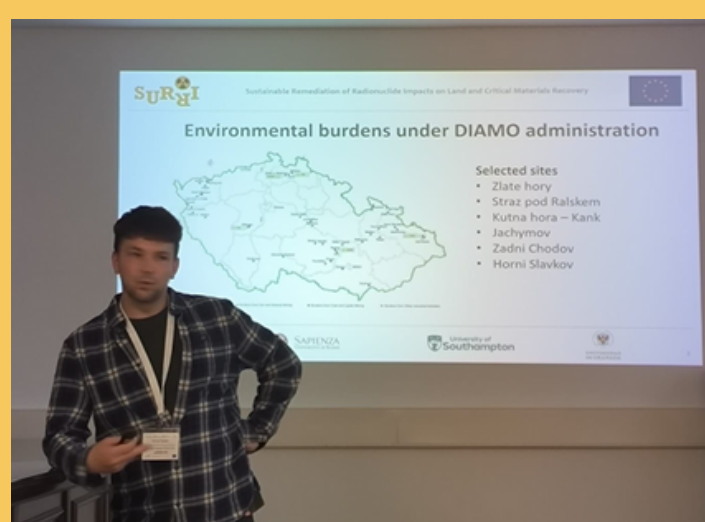
### FIRST SURRI SUMMER SCHOOL IN GRANADA: THE LATEST IN BIOREMEDIATION AND LEARNING

A team from the University of Granada (UGR) organised the first summer school for the SURRI team. Held in Granada from 3 to 6 June 2024, the event, organised by Professor Mohamed L. Merroun's group, brought together around 40 participants, including early career researchers, PhD students and Masters students from partner universities such as UGR, UoS, TUL and SAP.

Participants heard a series of lectures on bioremediation of toxic metals and recovery of critical elements in the circular economy concept. They also had the opportunity to tour the experimental units at the Centro de Instrumentación Científica, where they saw equipment such as the flow cytometry laboratory, the scanning electron microscope laboratory and the transmission electron microscope laboratory. In addition, the summer school provided valuable training in international project management and equipped participants with essential skills for their growth and future careers.

Read more at:  
<https://cxi.tul.cz/en/event/366/detail>

Huge thanks to our hosts, Mohamed L. Merroun and his team!



Photos by: Archive OABI CXI TUL

"Sustainable Remediation of Radionuclide Impacts on Land and Critical Materials Recovery" - GA No 101079345



## CURRENT NEWS FROM THE WORLD OF SURRI - NEWS FROM LABS

### What does the CXI TUL team work on in Liberec?

Veronika Hlavackova and Vira Velianyk are currently immersed in pioneering research aimed at elucidating the mechanisms underlying nanoparticle production in metal-tolerant bacteria. Their focus stems from initial findings, which highlight the need to develop effective methodologies for extracting these nanoparticles. Under the auspices of the SURRI project, their work has spanned extensive studies across six former mining sites in the Czech Republic. This research has involved meticulous microbiological analyses of water, sludge, and sediment samples sourced from mines, water treatment facilities, and tailing sites. A significant milestone includes the successful isolation of multiple monocultures of metal-tolerant bacteria. Notably, their findings underscore a remarkable resilience among these bacterial species, with 70% demonstrating robust tolerance to various toxic metals—a pivotal insight into their adaptive capabilities in challenging environmental conditions.



Photo by: Archive OABI CXI TUL

Huynh Anh Nhung Nguyen is engaged in isolating fungi from mining sites and assessing their potential for heavy metal recovery. Her ongoing efforts have identified approximately 20 fungi from a single site, all exhibiting tolerance to multiple heavy metals such as Mn, Zn, Co, Cu, Pb, Se, and As. Moving forward, she aims to expand her research to explore the metal tolerance capabilities of fungi further. An intriguing observation from her studies is that fungi demonstrate their metal tolerance through changes in morphology and colouration, particularly noticeable in colder conditions (4°C) compared to standard laboratory temperatures (28°C), indicating adaptations in response to the metal presence and environmental stressors.

### What does UGR team work on?

- Isolation and maintenance of fungi from various mine samples in Czech Republic

Currently, the UDG team is actively engaged in several key research areas focused on environmental bioremediation and microbial ecology. They are isolating and maintaining fungi collected from diverse mining sites across the Czech Republic. These fungi are being studied for their potential in bioremediation, particularly in the context of metal-contaminated environments.

- Bioremediation studies of metal-contaminated environments

The team is conducting extensive studies to determine the Minimum Inhibitory Concentration (MIC) of various metals, assessing the tolerance levels of fungi and bacteria isolated from different samples. Additionally, they are investigating the bioremediation potential of bacterial strains isolated from mine samples, specifically targeting selenium contamination.



In terms of accomplishments, the team has successfully isolated and identified 16 distinct fungal strains from their samples. These strains have been characterized both phenotypically and at the molecular level, including sequencing the ITS region of fungal DNA. The isolated strains are now maintained in the laboratory for ongoing research purposes.

Moreover, significant findings from their MIC studies indicate that the isolated fungi exhibit high tolerance to selenium and lead, with MIC values of 16 mM for selenium and over 8 mM for lead.

In parallel, their investigation into bacterial metal tolerance has identified seven strains with MIC values exceeding 16 mM for selenium.

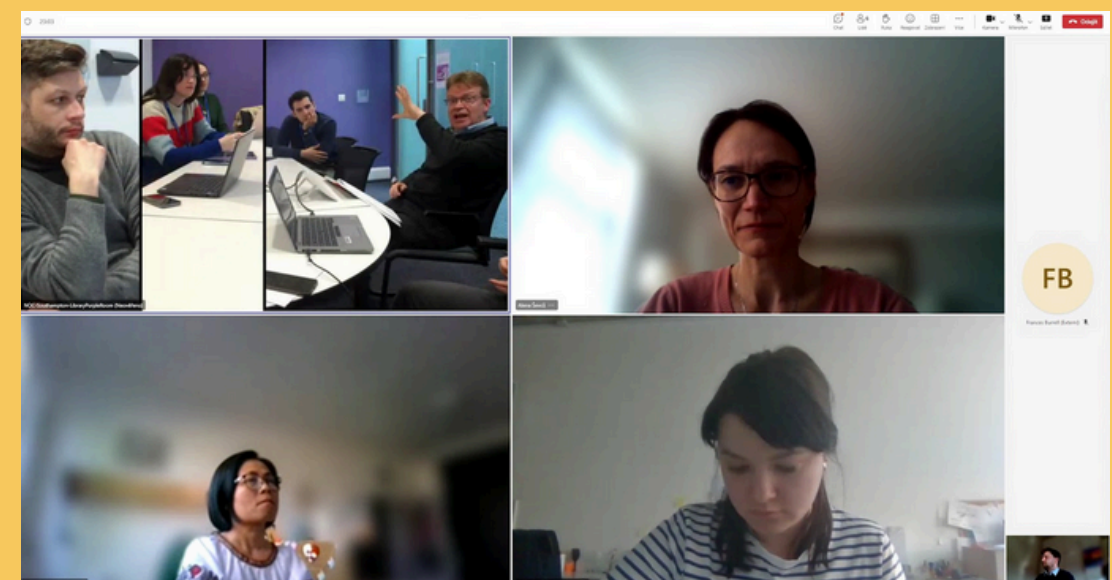
Using transmission electron microscopy, they have further characterized the reduction of selenium by these bacteria, revealing the formation of diverse Se(0) crystalline nanoparticles—a promising advancement in bioremediation technology.

## WORKSHOP AND PROJECT MEETING IN SOUTHAMPTON IN SPRING

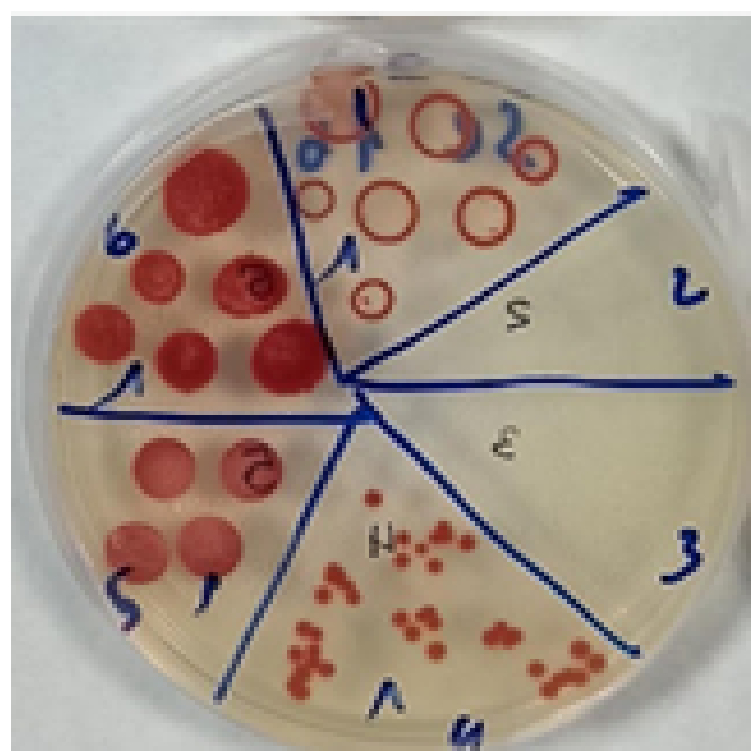
From March 18th-20th, the SURRI team convened at the University of Southampton, diving deep into discussions on Science Management and Knowledge Exchange. Highlights included sessions on GAU-Radioanalytical and the National Nuclear User Facility EXACT.

Day 2 was packed with insights from SURRI researchers, covering topics from phytoremediation to electrokinetics. Discussions also delved into future plans, focusing on the nuclear industry and waste management challenges.

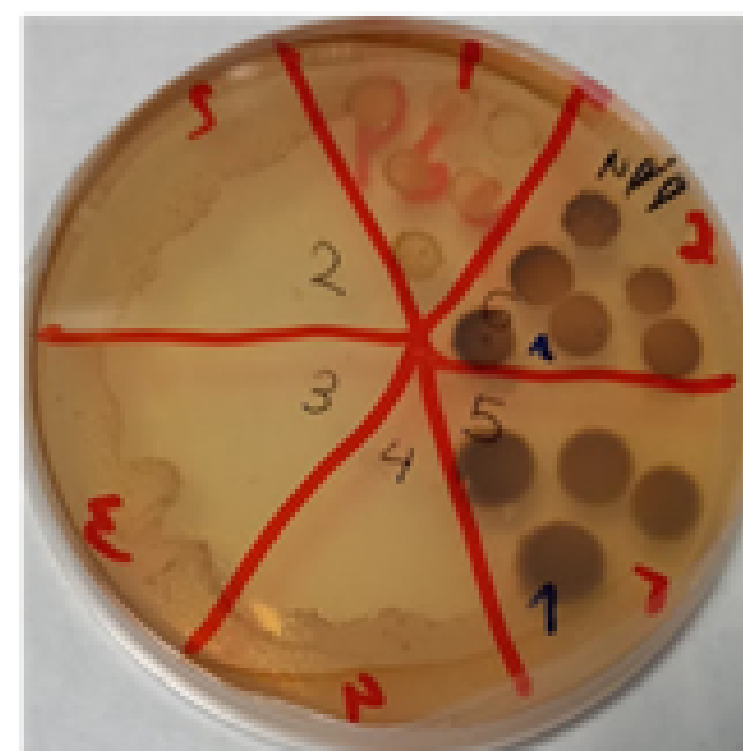
Huge thanks to our hosts, Andy Cundy and his team!



Se



Pb



Determination of the growth of different bacteria in the presence of selenium and lead. The colonies develop a reddish color in the presence of selenium and a blackish color in the presence of lead.

Photos by: Archive UDG team, Mohamed L. Merroun

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Our work is very important. The whole SURRI team, including members from Italy and the UK are trying to contribute to sustainable remediation and integrate the available resources. We want to protect the environment while finding innovative ways to extract valuable raw materials from these water resources.

#SURRI #project #mininglocality #bioprecipit #team #work #collaboration #research  
#cxiliberec #TeamWork #InternationalCollaboration

**WE WISH YOU A WONDERFUL SUMMER AND HOLIDAY.**

Thank you for subscribing to the SURRI Newsletter.  
Stay tuned for more updates on our activities and progress.

Kind regards  
SURRI team | [surri@tul.cz](mailto:surri@tul.cz)



Great job: Miroslav Černík, [Alena Ševců](#), [Martin Palušák](#), [Veronika Hlavackova](#), [Nhung H.A. Nguyen](#), [Marco Petrangeli Papini](#), [Andy Cundy](#), Mohamed L. Merroun, Milan Hokr, Zuzana Musilová, Lenka Hanušová, Rafael O. M. Torres, Trung le Duc, Rojina Shrestha, Kateřina Černá, Stanislava Vrchovecká, Stanislaw Wacławek, Olha Starostina, Pavla Švermová, Richard Marsh, and Cristina Povedano Priego and all other team members, including those not on LinkedIn.