

## MOBILITY MISSION REPORT

*This work has been partially supported by the EURAD project that has received funding from H2020-EURATOM 1.2 under grant agreement ID 847593.*

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- *This template consists of “sections” (fixed headings) and “fields” (text boxes for custom information)*
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- *Appendix “A. Mission journal” should be prepared during the course of the mission*
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### MISSION TITLE

Attendance and poster presentation at the EURAD final meeting

### DESCRIPTION

#### Concerned organisations

- CIEMAT

#### Keywords

Final event, ConCord, Radioactive waste management.

## EXECUTIVE SUMMARY

The main purpose of attending the EURAD final event was to present a poster showcasing my recent research within the EURAD project. Additionally, I aimed to participate in the congress, with a particular focus on the final reviews of the work packages (WPs) presented by their leaders.

The presentations showed that the different WPs have achieved impressive results in their respective areas. Nonetheless, ongoing research is essential. Some WPs will transition to the EURAD-2 project, providing an opportunity for further investigation into topics related to nuclear waste management.

Having been involved in the workpackage 15 - ConCord, I was particularly interested in the final results achieved over the past five years of corrosion processes in the conditions of a deep geological repository (DGR). Also, it was emphasized the need for further research to understand these systems in order to understand and model the effect of coupled processes on corrosion phenomena in different types of barriers.

Additionally, the discussions in the student sessions were of great interest to me. As a PhD graduate from the EURAD project, I was keen to learn about future career opportunities and the need for postdoctoral researchers in EURAD-2.

Overall, attending EURAD's final event was an enriching experience, and the knowledge I gained is of significant interest to me.

## 1. MISSION BACKGROUND

### 1.1. R&D background

I am currently developing my PhD thesis at CIEMAT, which is focused on the study of coupled phenomena and their influence on the stability of different barriers (clay, cement, metal container) in a deep geological repository (DGR). With the development of my research work, multiple experiments have been carried out in which physicochemical and irradiation conditions have been simulated in DGR, in order to provide information about the stability of the barriers in operational time scales.

Therefore, the attendance to the final EURAD meeting is intended to communicate these results as well as to connect with other scientists in the area, in order to discuss and analyze them in the context of radioactive waste. Additionally, it is necessary to coordinate and inform the EURAD scientific community on the next research steps to be followed for the EURAD 2 project, being of special importance the attendance to these meetings.

### 1.2. Mission objectives

- 1) Attendance at the final EURAD Meeting
- 2) Poster presentation with results of the WP-15 CONCORD

### 1.3. Mission request

The main activity for the EURAD final event that I would develop is a poster presentation about my recent work in EURAD's WP15-CONCORD.

### 1.4. Mission composition

#### Host organisation

EURAD

#### Host facility

Pullman Hotel, Bucarest (Romania)

#### Mission dates

23<sup>rd</sup> to 25<sup>th</sup> of April 2024

## 2. MISSION FINDINGS AND CONCLUSIONS

### 2.1. Lessons learned and conclusions

With the presentation of the poster entitled "Impact of gamma radiation on the metal corrosion at the canister / bentonite interface" the following information was obtained.

- Slower corrosion observed in copper specimens compared to C-steel.
- Higher corrosion rates in gamma-irradiated samples in contact with bentonite at lower compaction density, indicating increased availability of porewater.
- Corrosion rates higher in irradiated samples compared to unirradiated ones.
- Minimal difference in corrosion rates between samples irradiated with 14 kGy or 140 kGy, suggesting an inhibiting effect at higher doses. Suggesting that the water content and salinity are the main corrosion agent under experimental conditions.

### 2.2. Relevant findings and conclusions for home and host organisation

As presented at the meeting, the results of the various EURAD corrosion studies should and will be extended to different materials and conditions with the continuation of the EURAD 2 project, in which the understanding of corrosion and barrier stability in DGR will be extended and deepened.

## APPENDICES

### Mission journal

Tuesday 23<sup>rd</sup> April 2024: Attendance to the first day of congress.

Wednesday 24<sup>th</sup> April 2024: Attendance to the second day of congress and poster presentation.

Thursday 25<sup>th</sup> April 2024: Attendance to the third day of congress.

### Mission bibliography

King, F., & Behazin, M. (2021). A Review of the Effect of Irradiation on the Corrosion of Copper-Coated Used Fuel Containers. *Corrosion and Materials Degradation*, 2(4), 678-707. <https://doi.org/10.3390/cmd2040037>

Sarrasin L., Tisyadi M.F., Abdelouas A., Šachlová Š., Kašpar V., Dobrev D., Götz D., Kolomá K., Večerník P., Zuna M., Alonso U., Diéguez M., Soto C., Fernández A.M., Gutiérrez M.G., Valdivieso P., Missana T. (2024): Synthesis of irradiation results under repository conditions. Final version as final deliverable D.15.8 of the HORIZON 2020 project EURAD. EC Grant agreement no: 847593

## MISSION BENEFICIARY

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## REPORT APPROVAL

Date	Beneficiary	Home mentor/supervisor	Host mentor/supervisor
27/05/2024	Mikel Dieguez	Tiziana Missana	
	Visa	Visa	