Report on the outcomes of a Short-Term Scientific Mission[1]

Action number: COST 20130

Grantee name: Edna Yamasaki Patrikiou

Details of the STSM

Title: **MIC and biofouling analysis from theory to bench**

Start and end date: **11/09/2023 to 18/09/2023**

Description of the work carried out during the STSM

Description of the activities carried out during the STSM. Any deviations from the initial working plan shall also be described in this section.

Following the suggestion of Dr Torben Lund Skovhus, I first attended a MIC summer course in Prague (August 2023), that allowed me to have a broader overview of MIC, as well as an introduction to the different multiple lines of evidence (MLOE) that should be adopted, when trying to confirm the involvement of MIC in corrosion.

I then traveled to Horsens, Denmark in early September to carry on my COST STSM.

The work that was carried out, as described in the work plan was accomplished.

I had the opportunity to visit the different laboratory facilities at VIA University College and to the Truelsbjerg Water Works (Aarhus Water) and the DNA Sense Company (https://dnasense.com) at the University of Aalborg.

I had hands-on experience using several different techniques used for the analyses of corrosion with the potential involvement of MIC, and followed by discussions on their importance and how those results should be integrated and interpreted. The techniques that I had the opportunity to learn and utilize in the laboratory are:

- Portable X-Ray machine to analyze the composition of different materials,
- 3D Scan for the analysis of corrosion pits
- Stereomicroscope attached to a camera for image analysis
- ATP analysis

[1] This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the GH for payment of the Grant.

- E. coli (bacterial) determination

The visit to the Truelsbjerg Water Works (Aarhus Water) gave me the opportunity to observe the set up that Dr Skovhus have there to perform a longitudinal evaluation of the biofilms since 2016 and their potential beneficial effects to the water quality (https://www.ucviden.dk/ws/portalfiles/portal/167550487/IWA_Poster_TOLS.pdf).

At the DNA Sense, we were able to follow the different steps that are done from the receipt of the biofilm sample to the final analysis and interpretation of the sequence data.

Description of the STSM main achievements and planned follow-up activities

Description and assessment of whether the STSM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the STSM. Agreed plans for future follow-up collaborations shall also be described in this section.

(max. 500 words)

When Dr Tugce Tuccar joined the laboratory towards the end of my STSM, where we then discussed the possibility of a joint publication on the MLOE to investigate MIC.

With Dr Skovhus, we also discussed two potential joint research grant submissions with a deadline in early November 2023.

One more positive outcome from this STSM is the offering of a Human Biology Program final year research project on the use of ATP to evaluate microbial presence in several water bodies, and to begin evaluating for their presence in water pipes that are being replaced. This is a joint effort between the School of Life and Health Sciences (Prof Edna Yamasaki) and the School of Sciences and Engineering (Dr Constantinos Hadjistassou).

As additional outputs from the STSM, I have posted my MIC journey on LinkedIn (https://www.linkedin.com/in/edna-yamasaki-patrikiou-62909687/)