

Research Trip Summary Report

Task 2. Foreign mobility of WUST doctoral students

I. Data of the doctoral student

1. Full name: Natalia Szemiot-Jankowska
2. Year of studies: 2
3. Educational discipline: Civil engineering, geodesy, and transport

II. Foreign research trip (research visit)

1. Research institute in which the foreign research was implemented: Massachusetts Institute of Technology, Boston, USA.

2. Name and surname of the host person (mentor): Prof. Admir Masic.

3. Dates of the research trip: 01.10.2023 – 22.12.2023.

4. Title and date of a seminar delivered during the research trip:

Effectiveness of protecting brick heritage walls against rising damp with chemical injection: the importance of the microstructure and chemical composition within the interphase between brick and injection material. 17.10.2023

5. Description of work carried out during the research trip:

Chemical analysis of the interphase between the injection material and the brick. The analysis of the brick microstructure and porosity of the samples, the elemental composition of the bricks, and the determination of chemical and crystallographic composition. Determination of the presence and concentration of the substance in the sample. The research was performed using SEM electron microscopy and Raman spectroscopy.

6. Description of the main results obtained:

During the research project, the student focused on comparing bricks in which injection cream was applied and bricks in which no chemical injection was performed. Each of the bricks contained salts. At the preliminary analysis stage, the difference between the compared bricks was noted. Among other things, the difference is found in the elemental composition of the bricks. The research performed during the research trip is fundamental for future observations.

7. Future collaborations (if applicable):

Preparation of the future manuscript.



8. Title and date of a seminar presenting the results of the trip delivered at Wrocław University of Science and Technology after returning from the research trip:

The effect of salts on the effectiveness of secondary anti-damp insulation by chemical injection.

Proposed date: 02.01.2024.

III. Doctoral student's signature

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(Date)

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(doctoral student's signature)

IV. Confirmation and information from the host

1. Confirmation of compliance of the information contained in the report: I CONFIRM / ~~DO NOT CONFIRM~~. (In justified cases, the confirmation of the host may be sent by e-mail to the Dean's Office of the Doctoral School email: interdocschool@pwr.edu.pl)

2. Additional information and comments

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(Date)

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(signature(s) of Host)