haute école
neuchâtel berne jura
conservation
restauration
neuchâtel

Espace de l'Europe 11 — CH–2000 Neuchâtel
+41 32 930 19 19 — www.he-arc.ch/cr-rad

GET ON BOARD!

MICMAC II

MICrobes for the Archaeological wood Conservation

Whitish efflorescences observed on the 17th century warship Vasa

OBJECTIVES

The project MICMAC II, as follow-up project of MICMAC (MICMAC), focuses on innovative biological methods of extraction for the preservation of waterlogged wood suffering from salt precipitation and acidification.
Sulfur and iron species formed during burial of wood artefacts turn unstable once exposed to oxygen and lead to serious chemical and physical damages on wood substrates. In the preceding project, we proposed to exploit biomineralization capacities of some bacteria for anticipating the extraction of iron and sulfur compounds when wood is still wet.
Based on the results achieved so far, we will optimize the extraction method focusing on bacterial extracts and siderophores that are easiest to be handled by end-users. These metabolites will be applied on additional altered wood species from both freshwater and marine environments.

PROGRAM

- Study of the relevant chemical processes in microorganisms
- Definition of an application protocol on model samples
- Evaluation of the treatment's performance : efficiency, durability and impact
- Assessment of the extraction performances on wood objects from museum collections

RESULTS

A toolkit will be defined to ascertain the presence of harmful species as well as the efficiency of conservation interventions on waterlogged archaeological wood.
A real progress is expected in terms of stability, effectiveness and decreased toxicity.

The aim is to open new trends in the development of methods and materials for conservation. Indeed, the bioremediation of sulfur and iron represents a pioneering and inventive research for the long-term preservation of waterlogged archaeological wood.

FUNDING

Swiss National Science Foundation

PROJECT LEADER

Edith Joseph
edith.joseph@he-arc.ch

PARTNERS

Archaeological Service of the Canton of Bern; Swiss National Museum and Conservation research laboratory Arc'Antique (France)

DURATION

30 months
1.8.2020 – 31.1.2023