**GREEN SOLUTIONS AGAINST METAL CORROSION**

Edith Joseph1, Patrycja Petrasz1,2, Qing Wu1

1 Haute Ecole Arc Conservation Restauration, University of Applied Sciences and Arts HES-SO, Neuchâtel, Switzerland. edith.joseph@he-arc.ch; patrycja.petrasz@he-arc.ch; qing.wu@he-arc.ch

2 Laboratory of Microbiology (LAMUN), University of Neuchâtel, Neuchâtel, Switzerland.

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Climate change is defined by UNESCO among the greatest threats and there is a crucial need to preserve and transmit not only cultural but also natural heritage for next generations. Conservation science should address both these societal challenges focusing on solutions that would replace methods and materials from now on outdated in terms of environmental sustainability.

Based on a green conservation approach, the proposed research aims to act against corrosion on archaeological and historical metal objects and tackle this issue on copper-, iron- and silver-based objects. Controlled cleaning can be achieved using secondary metabolites (e.g. siderophores, organic acids) capable of complexing metallic ions with performance yields similar to chemical alternatives (e.g ethylenediaminetetraacetic acid, EDTA)[[1]](#footnote-1), [[2]](#footnote-2). Also, stabilization is performed exploiting biomineralization processes, such as a fungal treatment (biopassivation) for protecting copper alloys[[3]](#footnote-3), or a bacterial desalination method for archaeological iron[[4]](#footnote-4).

Pioneering solutions are thus obtained towards more compatible and greener nature-inspired methods in metal heritage.

1. Cuvillier, L., et al. (2023). The European Physical Journal Plus, 138, 2023. [↑](#footnote-ref-1)
2. Passaretti, A., et al. Frontiers in Materials, 10, 2023. [↑](#footnote-ref-2)
3. Joseph, E. Frontiers in Materials, 7, 613169, 2021. [↑](#footnote-ref-3)
4. James, S., & Joseph, E. Corrosion and Materials Degradation, 2, 2021. [↑](#footnote-ref-4)