
LESACCHO

Localised electrochemical stabilisation of active corrosion on copper-based heritage object

OBJECTIVES

Collection managers value the natural corrosion layer that forms on the surface of copper-based heritage objects, whether historical or archaeological. In addition to its colour and pleasing appearance, it accentuates their authenticity and historicity. However, these objects can be subject to active corrosion when their immediate environment or the corrosion products in place are contaminated by chlorinated species. Active corrosion is generally localised and concentrated close to the residual metal, making it difficult for professionals to detect. It takes the form of a waxy, whitish, extremely reactive and unstable compound: nantokite (CuCl). The aim of the LESACCHO project is to develop various approaches for electrochemically and locally stabilising active corrosion on the surface of copper-based objects, while ensuring minimal modification of the entire natural corrosion layer covering them.

PROGRAM

Copper, brass and bronze coupons covered with artificially formed cuprite, nantokite, atacamite, paratacamite, brochantite, and chalcocite will be stabilised in 1% sodium sesquicarbonate using Pleco electrolytical pen. Corrosion potential monitoring and cathodic voltammetries, accompanied by conventional analytical techniques, will enable transformations and chloride extraction to be assessed. Optimized protocols will be applied to museum objects, to assess the impact of alloying elements. The results will be disseminated through publications, conferences, and training sessions, providing conservators and researchers with innovative stabilisation strategies tailored to heritage metals.

RESULTS

The LESACCHO project offers an alternative to localised stabilisation of active corrosion on heritage objects, while preserving their natural corrosion layer. Unlike global stabilisation, which alters surfaces, this method reduces intervention time and is suitable for short-term mandates. It also extends Pleco's applications beyond silver tarnish removal and lead stabilisation.



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FUNDING

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PROJECT TEAM

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DURATION

18 months
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