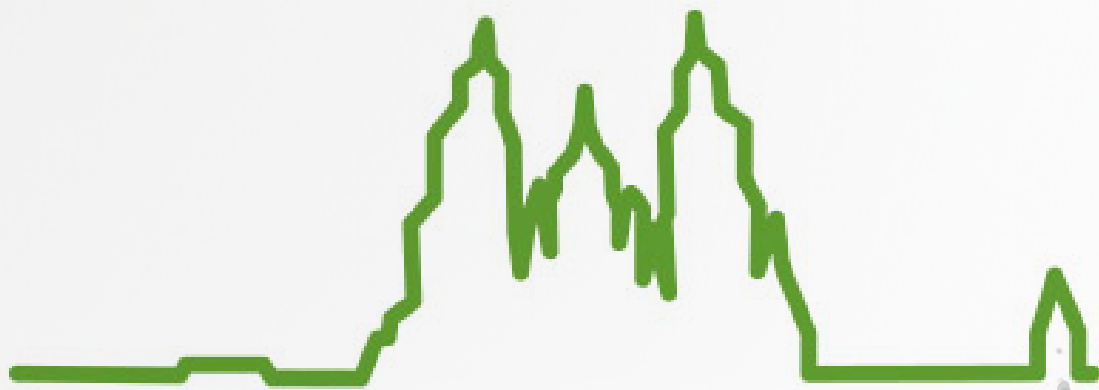




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Assessment of the effectiveness of consolidants for the preservation of *Tituli Picti* on amphorae from the Late Roman Ses Fontanelles Wreck (Mallorca, Spain): An Analytical Approach

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During the archaeological works of 2021/2022 on the late Roman shipwreck of Ses Fontanelles (Mallorca, Balearic Islands, Spain), several amphorae and fragments with painted inscriptions made with *atramentum* were discovered. These *tituli picti* are exceptionally well-preserved and hold great historical and archaeological significance. They are one of the few examples in the world that provide novel information about the product, weight, and the merchants from the region of *Carthago Spartaria* (modern Cartagena) involved in maritime trade in the late 4th c. AD [1]. The preservation of the tituli is a priority, and to achieve this, the Laboratory for Studies and Conservation of Historical Heritage (LEC-PH) collaborated with the Nanomaterials Group (TEP-243) of the University of Cadiz (UCA) to research and establish a conservation methodology. This methodology can be applied to the entire collection of amphorae from the wreck.

The types of amphorae found with inscriptions were Almagro 51c, Ses Fontanelles I and wine flat-bottomed amphorae. Accordingly, specimens of various types of pottery were selected to check if there was a difference in behavior between the consolidating product and the type of support. After a literature review of the most used consolidants in ceramics, it was decided to carry out tests with two types of products: one based on water-based silica nanoparticles (Nanoestel®), and another based on ethyl-methacrylate dissolved in acetone (Paraloid B72®). Ten types of analysis were performed on these samples, including surface hardness, microindentation, SEM, spectrophotometer, glossometer, water-accessible porosity, peeling test, and pycnometer.

This methodology of applying numerous experimental analyses in order to ask for the penetration capacity, strength, gloss and effectiveness of the treatments is a novelty in the field of this type of material. Ultimately, one of the two products was selected based on the principles of reversibility and respect for the original surface.

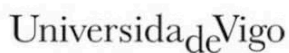
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- [1] A. Soler i Nicolau, A. Font, P. Berni, E. García, D. Bernal-Casasola, M.A. Cau, J. Cardell & S. Munar, «El singular conjunto de tituli picti del pecio de Ses Fontanelles (Mallorca, islas Baleares) y su contribución a la epigrafía anfórica tardorromana hispánica», Cuadernos de Prehistoria y Arqueología de la Universidad Autónoma de Madrid, vol. 47, no.1, pp. 287-317, 2022.



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