

## ABSTRACT:

### **From Development to In-Situ Assessment of Nanostructured Formulations for the Conservation of Frescoes in Hypogea**

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Intervention strategies for the conservation of cultural heritage in environments with critical thermo-hygrometric conditions have always posed significant challenges for restorers. Hypogeal environments and archaeological sites, where environmental parameters are difficult to control, often lead to the deterioration of artefacts. This study presents the results of research conducted on two case studies: the frescoes at the Complex of S. Maria della Grotta and the Crispia Salvia Hypogeum, both part of the Archaeological Park in Marsala (Trapani, Italy) [1]. The research encompassed multiple phases, including the investigation of the frescoes to understand their constituent materials, substrates, and degradation phenomena; environmental monitoring; the development of nanostructured formulations based on barium hydroxides; testing on laboratory mock-up samples made ad hoc and aged simulating a real context; and in situ

[1] <https://www.parcopolibeo.it/>

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