A NEW MULTIDISCIPLINARY APPROACH FOCUSED ON THE CONSERVATION OF "*VILLA DEI PAPIRI*" IN HERCULANEUM ARCHAEOLOGICAL SITE (NAPLES, ITALY)

Comite, V.[1]*; Ricca, M. [1]; Rovella, N. [1]; Ruffolo, S.A. [1]; Urzì, C. [2]; Arcudi, A. [3]; Silvestri, C. [3]; La Russa, M.F. [1]

[1]Department of Biology, Ecology and Earth Sciences (DiBEST), University of Calabria, Arcavacata di Rende (Cs), Italy. [2]Department of Biological and Environmental Sciences, University of Messina, Messina, Italy. [3]Conservation Cultural Heritage (C.B.C.), Rome, Italy

Topic: Materials

Herculaneum ruins and their associated villas, represent one of the most important and best preserved memorials of ancient Roman life. This important town was covered by a series of pyroclastic surges and flows from the famous eruption of Vesuvius in 79 A.D. that destroyed also Pompeii.
Nowadays many buildings of the area are affected commonly by alteration and decay phenomena threatening their stability and conservation. In this regard, the *Villa dei Papiri* is one of the most impressive examples of architecture in Herculaneum and existing before the volcanic eruption of 79 A.D. It was discovered almost by accident in April 1750 during the digging of a well. The stone materials constituting the building show decay phenomena.
This research was focused on the plasters from walls located outside the villa, which show strong biodeterioration phenomena and salt efflorescence. The characterization of the plasters and their degradation phases allowed us to determine the state of conservation of such materials and identify the biological species. It has been monitored the microclimatic parameters of the area in order to correlate them to the degradation patterns.
Plaster specimens, having similar composition of the original ones, have been prepared in laboratory and treated with different nanoproducts with photocatalitic features, and placed next to the original plasters in a sample holder. The biological activities of the sample surfaces have been monitored over time in order to assess the bio-inhibition capability of the nanoproducts in a specific microclimatic condition. Results allowed to identify the most suitable material to be applied on the restoration procedure, in a second stage experimentation.
This research is funded by POR Calabria FESR project "NANOPROTECH" (NANO PROtection TEchnology for Cultural Heritage).

* Corresponding author: V. Comite valeria.comite@gmail.com