

CORTI CRISTINA
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DEVELOPMENT OF ANALYTICAL METHODOLOGIES FOR THE STUDY AND THE CHARACTERIZATION OF CULTURAL HERITAGE

In recent years, the investigation of artworks has increasingly been characterized by a cross cutting approach. Archaeologists, art historians, conservators and applied scientists collaborate on issues such as the evaluation of the artistic techniques, provenance and dating studies, diagnostic campaigns. The present thesis, inspired by this philosophy, was focused on two research branches: the investigation of ancient mortars and the elemental analysis of archaeological bones by means of different analytical techniques, defining and optimizing the experimental parameters.

Historical mortars are among the most widespread building materials since ancient times. The uncovering of their composition is a challenge for chemists, being constituted by a binder and an aggregate phase, sometimes with additives. Three case studies were considered: the Mediaeval Arsenal of Amalfi (SA), the Roman Castrum of Laino in Val d'Intelvi (CO) and the archaeological site of Baradello Castle in Como. A key point emerged: the analytical method has not yet been standardized, preventing reliable and robust results. Thus, a protocol of chemical-mineralogical analysis was set up in collaboration with geologists.

Coming to bones, the study of archaeological human remains is an important tool to discover information about past civilities. Some trace elements such as zinc and strontium are markers of the so-called paleodiet and can be used to reconstruct whether it was characterized by vegetables or meat. A whole analytical protocol was set up for the determination of trace elements in bones by Inductively Coupled Plasma Mass Spectrometry and then applied to samples coming from the prehistorical Necropolis of San Giorgio Valdaro (MN).

KEYWORDS

Cultural heritage, historic mortars, archaeological bones, paleodiet, ICP-MS, FTIR, trace elements