



ANCIENT BUILDING MATERIALS: ARCHAEOMETRIC STUDIES, CONSERVATION AND RESTORATION SOLUTIONS

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Abstract: For centuries, the architecture of the Romanian monuments represented the highest standard of European architecture. It consisted of many masonry buildings built using bricks, wood, roof tiles and various mortars. The characterization of the construction materials has become of



Fig. 1. Corvins' Castle (personal photo)

primary importance, in order to obtain information about the raw ingredients and building technology of the mortars, and the history of possible previous restorations. In this paper, different samples representing three types of mortar-based materials—namely, jointing mortars between the bricks on the wall, and surface plasters as well as mortars used on the roof—were collected for analysis from the Loggia Matia, Tower, and Master House buildings, all being inside of Corvins' Castle yard. The composition, structure, organic and fibre additives and testa of the mortar density

and water absorption will be presented. Also, the paper will present by demonstrative examples of the composition and surface characterization of Romanian cultural heritage surface of Corvins' Castle^{1,2}. The effects of materials of XXth century on architectural heritage surface (reinforced concrete, decorative mortars) will be discussed and new formula for repair ancient mortars, will be presented. The following spectroscopic techniques (UV-VIS, FTIR, Raman, XRD and EDXRF, ICP-MS, chromatographic techniques (GC-MS), thermo-analytical techniques (DSC, TGA), microscopic investigations (SEM, AFM) for samples from different monuments, will be discussed, too. Such results are crucial when designing and implementing the interventions and materials for the safeguard of cultural heritage.

References

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