Poster

Earth-based mortars in the built heritage: recovering the urban heritage of the Canary Islands, Spain

I. Díaz-Ramos[1-2], S. Dilaria[1-3], G. Artioli[1-2]

[1]Inter-Departmental Research Centre for the Study of Cement Materials and Hydraulic Binders (CIRCe), Via G. Gradenigo, 6. University of Padova, Padova, Italy. [2]Department of Geosciences, Via G. Gradenigo 6, University of Padova, Italy. [3]Department of Cultural Heritage (DBC), Piazzeta Folena 1, University of Padova, Padova, Italy

isolinadelpino.diazramos@unipd.it

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Traditional earth-based mortars used in buildings of the 17th and 19th centuries placed in the historical centres of Vegueta and Triana, emblematic districts located in the city of Las Palmas of the volcanic island of Gran Canaria (Spain), have been characterized through a multi-analytical study.

Such traditional earth-based mortars were both filling the masonries and coating the façades [1]. On the basis of the macroscopic and microscopical (by Polarized Optical Microscopy, POM) observations, two main types were distinguished:

- Mortars of reddish clay earth (NCS: S1010-Y50R) and quite good cohesion with abundant lime pellets, revealing a poor production technology [2], and some volcanic rock fragments. This type of mortar was applied as coating in buildings that were built during the 17th and early 19th centuries.

- Mortars of brownish sandy earth (NCS: S4020-Y30R) with fine sand temper and tenacious cohesion. They are composed by a high amount of limestone grains and many volcanic rock fragments, chiefly corresponding to trachyte and basalts. This type of mortar was used to fill in the stone blocks and it has been found in constructions dating to the end of the 19th century.

Besides, quartz, plagioclase and opaque minerals are common aggregates in both type of mortars.

These initial results are currently being completed with mineralogical, chemical and micro-structural analysis. Through X-Ray Powder Diffraction (XRPD) and X-Ray Fluorescence (XRF) the petrological observations will be confirmed, and by means of Scanning Electron Microscopy coupled with Energy-Dispersive X-Ray Spectroscopy (SEM-EDS) the micro-structure of the earth-based mortars will be described and the chemical composition of both binders and aggregates will be determined.

The final aim of this study is to provide information about the production technologies, the constructive techniques and the geological resources that were used, in order to preserve such valuable earth-based mortars used in the construction of the built heritage of the Canary Islands (Spain).

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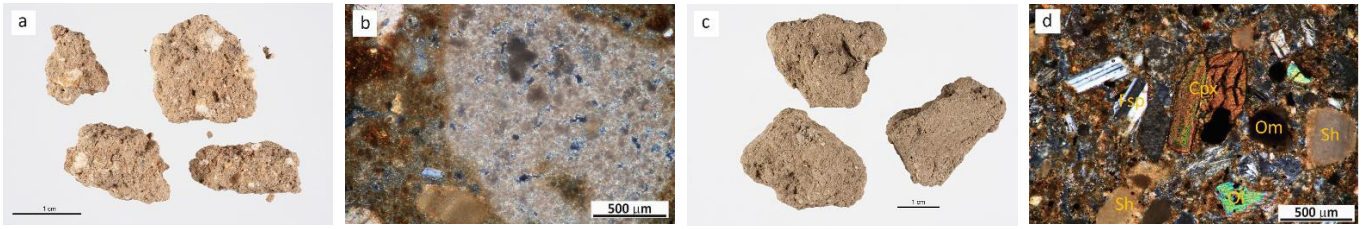

Figure 1. a) First group of reddish clayey mortars NCS: S1010-Y50R. b) Photomicrograph in crossed-polarised light (1st group): lump and microsparitic matrix of calcite. c) Second group of brownish sandy-earth mortar NCS: S4020-Y30R. d) Photomicrograph in crossed-polarised light (2nd group). Abbreviations: Fsp= feldspars, Ol= olivine, Cpx= clinopyroxenes [3]. Om= Opaque minerals, S= shells (abbreviated by the authors)

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