PETRO-ARCHAEOMETRIC CHARACTERIZATION OF KILN POTTERY WASTES FROM ADRANO, SICILY

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This work is part of a wide scientific project finalized to characterizing the Sicilian pottery productions from Greek to Roman Age [1-2]. In this prospective, imported [3-5] and local reference groups [6] have been analyzed in order to create a database of the circulation and production centers in Sicily during this period. In particular, reference groups represent an important procedure in archeometric provenance studies of archaeological pottery [7]. In this framework, a set of 28 medium-coarse kiln pottery wastes (III-II century B.C.) from a pit excavated at the fortification of Adrano (Sicily) [8] have been studied (Fig. 1). The importance of the Greek settlement is primarily due to the presence of a flourishing craft center from IV to II century B. C. Characterization of the samples has been obtained by petrographic (OM), mineralogical (XRD) and chemical (XRF) analyses with the aim of provide a technological study of local pottery production through also to the comparison with locally outcropping clay sediments (PRIN 2005-2007).

Macroscopic analysis allow to distinguish four groups on the basis of grain size, porosity and clay paste color. Petrographic analysis are carried out on a selection of representative samples. All analyzed samples are characterized by dominant quartz and low groundmass birefringence; however, further features allow to identify three sub-fabrics (see Fig. 1): i) micaceous and poorly fossiliferous groundmass (samples AD8, AD10, AD13, AD21 - coarse pottery); ii) fossiliferous and poorly micaceous groundmass (AD19 - coarse pottery); iii) micaceous groundmass (AD22 - very fine pottery).
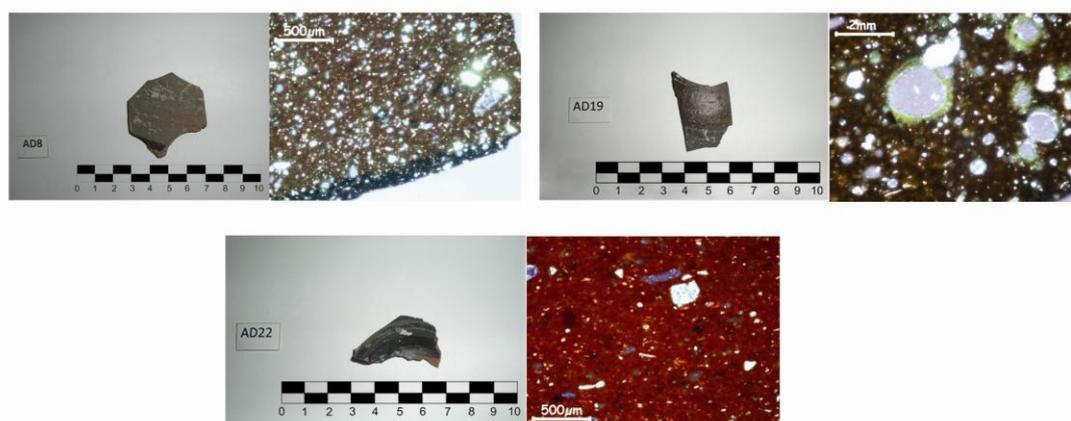

Fig. 1. Macro- and microphotographs of representative samples (a) sub fabric i; (b) sub fabric ii; (c) sub fabric iii;

Mineralogical analyses have been carried out on a selection of 12 representative samples. All the samples show similar mineralogical composition with dominant quartz and presence of new formed Ca-silicates, suggesting high firing temperatures, according to petrographic data.

About chemical analyses, a first group of samples namely A (AD1-9, AD 11-15, AD 17-22, AD 27-28) is characterized by high CaO (6.5 - 9.5 wt%), high TiO_2 and Fe_2O_3 and low SiO_2

content. A second group namely B (AD 10, AD 16, AD 23- 26) is characterized by low CaO (5- 6%), low TiO2 and Fe2O3 and high SiO2 content; moreover, the second group shows low Sr, V, Cr, Ni, Co, Rb, Y, Zr, La e Ce content.

Finally, data have been treated with multivariate statistical approach [9] and have been compared with locally outcropping clay sediments (PRIN 2005-2007). The obtained results (Fig. 2) allowed to hypothesize that samples of chemical group A were made with a local CaO-rich clayey sediments and group B with a Ca-poor sediments.
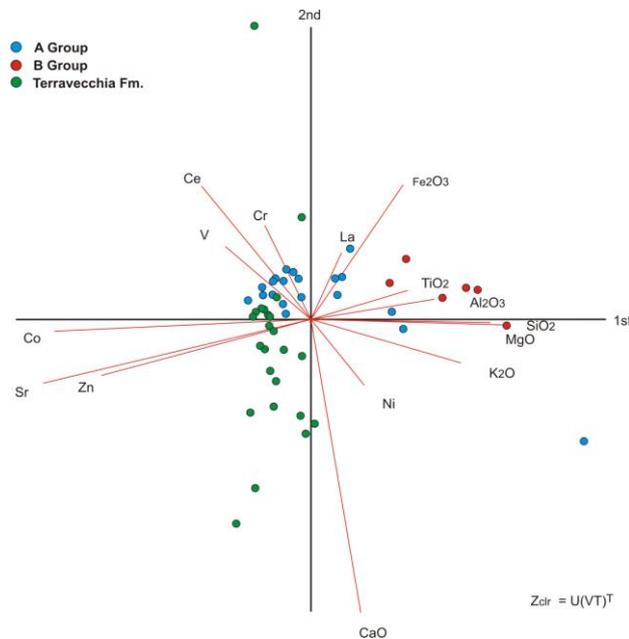

Fig. 2. Biplot of the two principal components.

In conclusion, petrographic and mineralogical results suggest a good technological level of local production considering the high firing temperature esteemed. Furthermore, chemical data suggest a local provenance of raw materials for the specimens made with Ca-rich clays sediments (Terravecchia Fm.), while Ca-poor clays sediments have not identified until now. Therefore, this work provide a valuable contribute in defining the local scenario of ceramic production in Sicily during the Hellenistic Age and in producing a reference local group in petro-archaeometric studies of archaeological pottery. In particular, the obtained data may validate the hypothesis on the local production of the relevant red-figure vase painting pottery class widely found in the Adrano archeological site.

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