XRF comparative analysis of ceramics discovered in the multi-layered archaeological site Branisca-Pescarie Est; local production versus imports

V. A. Neacsu[1], M. Simion[2], A. Gheorghe[3], M. Georgescu[4]

[1]Dept. of Inorg. Chem., Faculty of Chemistry, University of Bucharest, Bucharest, Romania
[2]National Museum of Romanian History, Calea Victoriei 12, 030026, Bucharest, Romania
[3]Dept. of. Anal. Chem., Faculty of Chemistry, University of Bucharest, Bucharest, Romania
[4]National Museum of Romanian History, Center of Research and Scientific Investigation, 12 Calea Victoriei, 030026, Bucharest, Romania
vlad.neacsu2009@gmail.com

The aim of this approach is the comparative analysis of a series of samples of ceramic material covering about 4,000 years, originating from the site Brăni□ca–Pescărie Est (Hunedoara County, Romania). The preventive archaeological excavation of this site was occasioned by the construction of the Lugoj–Deva Motorway (sector 4) and took place in 2014. On the maps and surveys of the 18th – 19th c., on the spot of the existing piscatorial ponds is visible the stream of Târnavița, nowadays disappeared, the site no. 3 being situated on the first terrace of this ancient flow.

The physical, geographical and climate features of the region, apparently not very favourable to the habitation of human communities for long periods, have been yet not too adverse to the presence of certain habitation structures (from Prehistory to the Middle Ages), especially due to the existence of important sources of raw materials.

There have been investigated 114 archaeological features dated to distinct historic periods, from the end of the Copper Age to the $7^{th} – 9^{th}$ c. AD, the site no. 3 being only a periphery of a settlement of large size.

The samples were analyzed using XRF spectrometer. For each of the samples three measurements were taken (on the outer surface, inner surface and medium layer) and their average was further used. The analysis was focused on the concentration levels of major and minor elements (Ba, Ca, Ti, Fe) – with the concentrations level higher than 0.1% w/w - and trace elements (Mn, Pb, Rb, Sr, Zn, Zr) – with the concentration level lower than 0.1% w/w, respectively 1000 ppm.

The experimental results were statistically treated using Principal Component Analysis approach, in order to investigate which elements show major contribution in differentiating the given samples based on the historical period to which they belong. Through this method, we aimed to characterize the approximate chemical composition of the local ceramics, attempting to predict which samples have been imported.

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