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CULTURAL HERITAGE AND PROTECTION OF HAND-WHEELED POTTERY MANUFACTURE IN WESTERN SERBIA: CHARACTERISTICS OF ZLAKUSA POTTERY BASED ON SEM-EDS AND OPTICAL MICROSCOPY

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Introduction

Traditional coiling and hand-wheel manufacture of pottery from the locally sourced raw clay is characteristic for Western Serbia (DJORDJEVIĆ, 2013) and especially well known in Zlakusa. Pottery from Zlakusa is on the UNESCO Representative List of the Intangible Cultural Heritage of Humanity. In technological terms, it is a unique phenomenon that actively coexists with discovery of new techniques and production processes. This brings to a rise in imitations of this pottery manufacture due to its enlarged popularity. The main goal of this work was to show characteristics of the pottery manufacture based on mineralogy [scanning electron microscopy (SEM-EDS) and optical microscopy] and applying the obtained knowledge in the preservation of this type of cultural heritage in Serbia.

Results and discussion

Clay paste is a mixture of raw clays, consisted of kaolinite/halloysite, illite and smectite minerals followed with smaller amounts of quartz, feldspar and iron oxy/hydroxides and large calcite grains, which is consistent with the previously reported data (MILOŠEVIĆ *et al.*, 2019). Sample 1 was prepared by the traditional coiling method on a hand rotated wheel, while sample 2 was made with the application of a modern mould technique. A microscopic examination of the thin sections revealed a uniform mineral composition. No significant differences were observed regarding the inner sections of the pots and their outer rims. Observed pores in sample 1 are of random orientation and size, indicating slower rotations of the potter's wheel during the manufacturing process. Sample 2 has a specific fluid-structure that is consistent with the way it was fabricated. By the size and orientation of the pores, it is evident that the pot was manufactured by the application of a mould. SEM-EDS analysis was performed on the inner parts of the walls of the investigated samples and their surface area. When samples are compared slight difference can be observed. Larger, randomly oriented calcite grains are noted in

sample 1. Ground mass is a clay mixture uniformly distributed with larger, mostly rounded pores, consistent with microscopical observations. Sample 2 has a fluid-like structure where both groundmass and pores have a directional appearance, consistent with previous observations, and a slightly higher amount of calcite grains. EDS analysis gives clear differences in the chemistry of the samples. Sample 1 has a higher content of most investigated elements when compared to sample 2, except K and Ca. Amount of K and Ca elements could indicate the presence of a higher amount of illite minerals and carbonates in the clay mixture which is not following sample 1.

Conclusion

How to differentiate traditional pottery products from imitations was the real problem because of their close physical resemblance. The analysed samples of Zlakusa pots showed significant differences from the mineral composition, especially in the terms of elemental composition observed by EDS, to the distribution and appearance of pores concerning the manufacturing process. Further investigations are necessary for an establishment of the standards that will guarantee and protect the originality together with the cultural heritage of the Zlakusa pottery.

Acknowledgment

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