

STUDY OF THE ELEMENTAL COMPOSITION OF BRONZE STATUES FROM THE COLLECTION OF THE STATE MUSEUM OF FINE ARTS A.S. PUSHKIN

The results of research on 17 bronze statues from a collection of the State Museum of Fine Arts A.S. Pushkin are presented.

The analyses of the metal elemental composition in sculptures and objects of decorative and applied art is a relatively young and rapidly developing area of scientific knowledge. This method is effective for identifying the "non-standard" alloy compositions [1]. Analysis of the alloy composition by inductively coupled plasma mass spectrometry (ICP-MS) allows determine the basic elements as well as micro- and trace impurities excluding carbon, nitrogen, oxygen, fluorine, chlorine and noble gases. The sample preparation corresponded to protocol reported in [2].

The variability of the metal compositions was assessed by the statistical analysis of the obtained ICP-MS data, performed in the program "StatSoft STATISTICA 10.0.1011.0" by the K-means method using several variations in the number of clusters. In order to involve into cluster analysis of all micro- and trace impurities in addition to base elements, all ICP-MS data on elements content were standardized. It made possible to identify several groups of alloys among the samples studied.

Comparison of data on statues alloys with metal compositions of exhibits of known attribution and with published data of Renaissance metal sites and later ones, made it possible to clarify the time periods for making the statues.

References:

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