

Recent Findings of Late Bronze Age Mining and Archaeometallurgy Activities in the Mountain Region of Colchis (Southern Lechkhumi, Georgia)

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Abstract : The South Caucasus is one of the most important centers of prehistoric metallurgy, known for its Colchian bronze culture. Modern Lechkhumi - historical Mountainous Colchis where the existence of prehistoric metallurgy is confirmed by the discovery of many artifacts is a part of this area. Studies focused on prehistoric smelting sites, related artefacts, and ore deposits have been conducted during last ten years in Lechkhumi. More than 20 prehistoric smelting sites and artefacts associated with metallurgical activities (ore roasting furnaces, slags, crucible, and tuyères fragments) have been identified so far. Within the framework of integrated studies was established that these sites were operating in 13-9 centuries B.C. and used for copper smelting. Palynological studies of slags revealed that chestnut (*Castanea sativa*) and hornbeam (*Carpinus sp.*) wood were used as smelting fuel. Geological exploration-analytical studies revealed that copper ore mining, processing, and smelting sites were distributed close to each other. Despite recent complex data, the signs of prehistoric mines (trenches) haven't been found in this part of the study area so far. Since 2018 the archaeological-geological exploration has been focused on the southern part of Lechkhumi and covered the areas of villages Okureshi and Opitara. Several copper smelting sites (Okureshi 1 and 2, Opitara 1), as well as a Colchian Bronze culture settlement, have been identified here. Three mine workings have been found in the narrow gorge of the river Rtkhmelebisgele in the vicinities of the village Opitara. In order to establish a link between the Opitara-Okureshi archaeometallurgical sites, Late Bronze Age settlements, and mines, various scientific analytical methods -mineralized rock and slags petrography and atomic absorption spectrophotometry (AAS) analysis have been applied. The careful examination of Opitara mine workings revealed that there is a striking difference between the mine #1 on the right bank of the river and mines #2 and #3 on the left bank. The first one has all characteristic features of the Soviet period mine working (e. g. high portal with angular ribs and roof showing signs of blasting). In contrast, mines #2 and #3, which are located very close to each other, have round-shaped portals/entrances, low roofs, and fairly smooth ribs and are filled with thick layers of river sediments and collapsed weathered rock mass. A thorough review of the publications related to prehistoric mine workings revealed some striking similarities between mines #2 and #3 with their worldwide analogues. Apparently, the ore extraction from these mines was conducted by fire-setting applying primitive tools. It was also established that mines are cut in Jurassic mineralized volcanic rocks. Ore minerals (chalcopyrite, pyrite, galena) are related to calcite and quartz veins. The results obtained through the petrochemical and petrography studies of mineralized rock samples from Opitara mines and prehistoric slags are in complete correlation with each other, establishing the direct link between copper mining and smelting within the study area. Acknowledgment: This work was supported by the Shota Rustaveli National Science Foundation of Georgia (grant # FR-19-13022).

Keywords : archaeometallurgy, Mountainous Colchis, mining, ore minerals

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