

Eneolithic pottery from Southern Carpathians (Romania): An archaeometric study

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The beginning of the Eneolithic in Banat and Transylvania (Romania) is marked by the so-called “Foeni Group” population, which has been described from more than twenty archaeological sites. The radiocarbon dating indicates a time span between 4,750 and 4,400 B.C. for this group. Burnished and black-topped pottery is characteristic. No remains of pits, surface clumps or kilns related to pottery production were found in the area.

The semifine to coarse ceramic sherds, included in this study, are assigned to the Foeni cultural group and were exhumed at the Great Cave of Cerișor, in Southern Carpathians (Romania). The sherds were investigated by polarized light optical microscopy (OM), X-ray powder diffraction (XRPD) and electron microprobe analysis (EMPA), in order to describe the ceramic composition and fabric, the type and origin of the raw materials as well as the technological knowledge of the potters.

The surface of the sherds is covered by a black or dark grey slip and has a shiny appearance due to burnishing. Two sherds seem to belong to black-topped pots, i.e. with the upper part black, and the lower part reddish-brown. Most of the sherds have a homogenous reddish-brown ceramic body, only a few show a sandwich or a bi-zonal structure. Generally, the sherds show mostly an anisotropic matrix, with rare isotropic areas. The aplastic components are fragments of quartz, muscovite, plagioclase, rarer potassic feldspar, biotite and heavy minerals. Lithoclasts (quartzite, micaschists and quartzo-feldspathic fragments), pedogenic concretions, ferruginous grains, clay pellets and ceramoclasts are found as well. The XRPD indicates a fairly uniform mineralogy, with quartz, illite/muscovite and feldspars as main phases. The intensity and width of illite/muscovite 1 nm peak is variable, with some samples producing intense and narrow peaks, others showing only small and wider peaks.

The secondary electron images and the EMPA data show an inhomogenous and porous ceramic body, affected mainly by sintering processes. The matrix, with SiO₂ ranging from 43.40 to 58.41 mass%, Al₂O₃ from 18.59 to 29.30 mass%, FeO_{TOT} from 2.15 to 9.39 mass%, CaO from 0.88 to 2.99 mass% and K₂O from 1.25 to 7.87 mass%, suggests that a Fe-rich illitic-muscovitic mudstone was used as main raw material. Mudstones of Miocene age, with a similar composition, crop out north of the cave. The mineralogy and petrography of the clasts indicate a silty to sandy material occurring in the vicinity of the cave, as temper.

The pottery was fired mostly in oxidizing conditions, a few (including the black-topped one) recording a variable atmosphere. The thermal transformations, restricted to sintering and reduced vitrification, suggest that the pottery was fired between ~800 °C and ~850 °C, most likely in temporary structures (e.g., clamps, bonfire).

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