

BRONZE AGE POTTERY FROM TRANSYLVANIA (ROMANIA): A MINERALOGICAL STUDY

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Middle Bronze Age ceramic potshards found in the NW Transylvania (Romania) were studied by plan-polarized light microscopy, XRD, SEM, DTA-TGA and electron microprobe. Microscopically, the ceramic body consists of a clayish matrix, in which nonplastic inclusions and voids occur. Various fabrics of matrix can be seen, as function of firing temperature: microcrystalline, microcrystalline-amorphous, amorphous-microcrystalline and amorphous. The inclusions are represented by various crystalloclasts (quartz, plagioclase feldspar, muscovite, calcite, and heavy minerals), lithoclasts (quartzite, micaschist, gneiss, andesite, rhyolite, granite, granodiorite, sandstone, clay) and potshards. Granulometrically, the samples are either semifine, or coarse. The major and trace elements analyses show a homogeneous chemical composition: 66-69% SiO₂, 14-15% Al₂O₃, 5-6% Fe₂O₃, ~1.4% MgO, ~2% CaO, ~1% Na₂O, ~ 2% K₂O, <1% TiO₂, <0.4% P₂O₅. Relatively high amount of Au (4.5-5.2 ppb, Th (7.8–11.1 ppm) and U (1.7-3.1 ppm) as well as REE, may be explained by the adsorption capacity of the raw clays. The source of these elements could have been the metamorphic rocks of the Meses Mts. and the Neogene volcanics of the Eastern Carpathians, respectively. The high value of LOI, ranging from 2.6 to 6.6%, is due to the burial alteration.

BSEI show the presence of new phases, such as melt and reaction rims, as well as newly-formed feldspar. Based on the optical microscopy, the modification of the XRD lines of clay minerals, SEM and thermal analyses, a large range of firing temperatures between 750 and 950°C was inferred. Most likely reddish Pleistocene clays occurring west of the site were mixed with alluvial sands from the nearby-located river to obtain the ceramics.