

Ceramic Petrography and FTIR Studies of the Late Chalcolithic Potteries From Kuriki (Turkey)

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This study deals with the archaeometrical investigation of the representative Late Chalcolithic potteries from Kuriki using ceramic petrography and infrared spectroscopy. The mound is located near the village of Oymataş 15 km far from the city of Batman, southeastern Turkey (Upper Mesopotamia). The samples were analyzed by optical microscopy and fourier transform infrared spectroscopy (FTIR). Additionally, polarized energy dispersive X-Ray fluorescence (PEDXRF) and X-ray diffraction (XRD) were performed as complementary techniques in order to reveal the chemical and mineral/phase contents of the samples, respectively. The chemical analysis of the samples showed that SiO₂, Al₂O₃, CaO, MgO, K₂O and Fe₂O₃ were the main oxides forming the ceramic fabrics. According to the XRD analysis of the samples it was seen that quartz and feldspar/plagioclase minerals exist in all of the samples. Calcite, clay minerals and high temperature minerals were occasionally identified in different samples. The results obtained by ceramic petrography suggested that illite was the dominant clay mineral forming the initial raw material used in pottery production. The presence of grog in some samples and relatively the high aggregate content up to %45 vol. were attributed to reuse of faulty products and a poor raw material preparation, respectively. The wavelength frequencies obtained by FTIR analysis indicated the presence of physical water, carbonated minerals, clay minerals, pyroxene (augite) and iron minerals in various samples. Considering the whole data acquired in the present work, it was concluded that the samples were presumably subjected to a maximum firing temperature of 900-1000°C.

Keywords: Late Chalcolithic, Pottery, Archaeometry, Characterization, Batman (Turkey).