

A multi-analytical approach to investigate pottery manufacture and production at Helawa (Kurdistan Region of Iraq) during the Chalcolithic period (c. 5300-3800 BCE)

Morabito G., Vacca A., Peyronel L., Gatta G.D.

The archaeological excavations carried out by the Italian Archaeological Expedition of the University of Milan in the Erbil Plain (Kurdistan Region of Iraq) are providing new information for the exploration of the societal transformation that occurred from the prehistoric phases up to the medieval period. Tell/Girdi Helawa is a pre- and proto-historic site with a substantial occupation spanning from the Halaf to Late Chalcolithic periods (VII-IV millennium BCE). The excavation along the southern slope of the mound brought to light a thick stratigraphic sequence of in-situ structures and deposits with associated pottery, that allowed an assessment of the ceramic pottery typology, and the investigation of the changes in production and manufacture through times.

The aim of this study is an archaeometric characterization of a set of 67 ceramic fragments coming from the Helawa site. A multi-analytical approach was adopted, in order to provide a complete picture of the raw materials used, manufacturing processes, and firing technologies of these ceramic materials. Mineralogical and texture analyses were performed by means of petrographic thin-section observations under the polarised light microscope, X-Ray powder diffraction with Rietveld full-profile fit to the diffraction patterns (providing quantitative phase analysis, along with the amorphous fraction estimation) and scanning electron microscopy investigations with chemical microanalysis (by SEM-EDS, EPMA-WDS). The preliminary crystallochemical and textural data are providing unambiguous markers for the reconstruction of the raw materials assemblages and the firing conditions, which appear to be different in diverse periods.