

Abstract

This study addresses a longstanding archaeological question on the clay-sources used for the Attic pottery production in Attica and draw conclusions on the organisation of pottery workshops from sixth to fourth century BCE. Emphasis was given on the red ferruginous-clays used for the clay-paint decoration of the black-glazed (BG) ceramic production. The aim is to study the raw materials, record the chemical and mineralogical changes that take place during the refinement and preparation process of the colloidal suspension, from which the clay paint (CP) is produced, as well as to document the after firing results and compare them with the BG of the archaeological fragments.

The first stage of the project focused on the direct analytical innovative comparison (mXRF, μ XRF, μ PIXE, XRD and SEM/EDX) of archaeological BG ceramic sherds from excavations at the Acropolis and at Kerameikos, with modern BG specimens, produced in the laboratory following the original process of the “iron-reduction technique”, within modern facilities. 37 laboratory BG specimens were produced from various clay-soils in Attica. The results revealed 5 clay deposits that are compatible with the ancient BG samples in terms of macroscopic appearance micromorphology and chemical composition of the BG layer, located in the areas of Panakton-Skourta plain, Parnis, Hymettus, Mesogaia and Laurium. Moreover, the comparative study of clay-soils/clay-paints/BG brought to light significant results with respect to trace elements composition and the mineralogical analysis of the CP. A set of phenomenological features of the ancient BG samples, such as characteristic star-like micro-cracks and colour shades present also in prominent museum exhibits, appear to correlate with specific clay deposits. In addition, modern and ancient BG samples compare well in terms of trace element composition and an increased Zn content in the BG is compatible with an origin from Laurium.

In order to study further these differentiating features a group of ~100 geometric, archaic and classical decorated sherds from the 19th century Acropolis excavations by Graef and Langlotz (1933) were analysed non-destructively and *in-situ* with the use of a Bruker/hh-PXRF system. Comparable material from Boeotia was also included in the analytical part, as well as sherds from a special deposit at the Acropolis hill and test-pieces bearing brush-strokes from the potter’s district in ancient Corinth.

The analytical and technical data of this research, allow the conclusion that the procurement of the adequate red clay-soil for producing a successful BG, requires specialised personnel. The absence of archaeological data related to the production of the CP, along with the large quantities of CP needed for the production of the BG Attic pottery, suggest an “accessible” material for BG of Attic BG pottery production. The existence of abundant clay deposits in Attica that could have been exploited for this purpose, as well as the possibility of collecting the clay suspension directly from natural clay pools, further support the case of an accessible product in terms of monetary value in the Archaic and Classical era, and reinforce the proposal for the existence of a separate profession and commercial network related to the production and distribution of CP in the workshops in Athens.