

COLOUR, MORPHOLOGY AND COMPOSITION OF PARTHIAN AND SASANIAN GLAZED POTTERY

M. Pace -- A. Bianco Prevot -- P. Mirti

Dipartimento di Chimica analitica, Università di Torino, via Giuria 5, I-10125 Torino, Italy

Samples of Sasanian glazed pottery from Veh Ardašīr in central Iraq (third-sixth century) have been studied by scanning electron microscopy coupled with an energy dispersive X-ray detector (SEM-EDS), together with a few samples of Parthian pottery from nearby Seleucia (first-third century).

Analysis of ceramic bodies reveals a general homogeneity in composition among the studied samples, characterized by high total contents of calcium and magnesium (20-25% CaO+MgO), and sodium contents generally exceeding the potassium ones (mostly 2-4% Na₂O and 1-2% K₂O). Despite relatively high iron contents (mainly 7-8% Fe₂O₃), all the pastes show a low colour saturation, as expected in the case of calcareous bodies.

SEM images show a high variability of the glaze thickness among the various samples (some 400-1200 μm), and a generally regular glaze to body contact surface; furthermore, they highlight the presence in most samples of gas bubbles, relics of undissolved raw material and crystals separated from the molten glaze, together with weathering products.

Most of the studied glazes are characterized by Na₂O contents in the range 8-13% and relatively high MgO and K₂O contents, both generally above 3%; however, some Parthian and early Sasanian glazes show a mixed alkali composition with Na₂O contents in the range 6-8% and K₂O contents around 5% or higher. These data point to the use of different kinds of plant ash as a flux.

Iron is the only colouring agent found in yellow and yellow-green glazes, while blue, blue-green and green glazes contain both copper and iron; EDS data indicate that a progressive shift from blue to green hues is matched by a decrease of the Cu/Fe atomic ratio. Fe₂O₃ contents generally higher than 1% would point to the use of an impure silica source; however, the analysis of relics of undissolved material suggests addition of haematite in some early and middle Sasanian glazes with Fe₂O₃ contents exceeding 2%. Inclusions of SnO₂ further point to the use of bronze scraps in the production of copper containing glazes (1-4% CuO).

The surface of the internal glaze of a Sasanian sample features a peculiar red hue; SEM images reveal the presence of a 2-3 μm thick layer at the glaze surface, whose composition suggests the presence of elemental copper as the colouring agent.