Examination, Analysis and Conservation of Some Archaeological Pottery Vessels from Saqqara Excavation

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Abstract

This study deals with one of the important topics related to the conservation of excavated pottery. Due to their presence in various excavation sites and the great importance in the history of many archaeological sites. Therefore, it was necessary to use different methods of examination and analysis to identify the damage of pottery, in addition to applying proper conservation methods to the selected objects. A visual examination and documentation by AutoCAD were used to clarify the deterioration, such as the spread of salt and dust on the surface and the presence of missing parts. USB digital microscope, polarizing microscope, SEM-EDX and XRD were applied to identify the chemical and mineralogical composition of these objects. The results of the investigation showed that the selected pottery suffered from black spots, different cracks, high porosity, and heterogeneity in the grains size. The results of the polarized microscope investigation revealed the presence of quartz, calcite, pottery powder (grog), and plagioclase feldspar mainly Anorthite. SEM-EDX analysis showed that a high percentage of aluminum oxide and silica as the main components in the clay used in pottery making. XRD analysis revealed that the samples consist mainly of Quartz, Diopside, Illite, Muscovite, Orthoclase, Anorthite, and Hematite that are the main components in the manufacture of these objects. The treatment included mechanical and chemical cleaning. Paraloid B72 was used for joining one of the pots at 60% in acetone. Additionally, the missing parts were completed with a paste of pottery powder, dental gypsum, and primal AC33. Besides, Paraloid B72 consolidated these objects at 5 %.

Key words:

pottery, deterioration, conservation, XRD, SEM-EDX.

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