

STUDY OF COLOR CONVERSION BY TIME IN ANCIENT EGYPTIAN FAIENCE ARTIFACTS

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ABSTRACT

The Ancient Egyptians manufactured faience beads, amulets, rings, bracelets, scarabs, small figurines, bowls, tiles, as well as pieces for inlayment of their ornaments, since the predynastic age (3050 B.C.), and continued through the Roman period (30 B.C). That industry was developed through old, middle kingdoms, and reached its highest level in the New Kingdom. In the previous 20th century, serious deterioration phenomenon was observed on ancient Egyptian faience artefacts. There is a continuous transformation of the blue color of faience into pale green, and from red color to nearly white. The aim of the present study is diagnosis and interpretation of this phenomenon, so saving these artefacts from complete distortion. Scanning electron microscope attached with EDX unit, inductively coupled plasma atomic emission spectrometry ICP-AES, Raman microscope attached to FTIR, infrared spectrometry, and x-ray diffraction analyses were carried out on faience fragments. Experimental laboratory work was done on new manufactured faience models after exposure to artificial weathering cycles. The obtained data showed that the causes of transformation in colors are due to the presence of chlorine ions and decomposition of the precipitated phases which led to change in the chemical composition of the coloring compounds in blue and red faience respectively.