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X-Ray Fluorescence Analysis of a Gold Ibex and other Artifacts from Akrotiri

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Abstract

In-situ X-ray fluorescence analysis (XRF) of ancient artifacts from the excavation area was performed using a novel X-ray instrumentation, composed of a portable silicon PIN thermoelectrically cooled X-ray detector, a miniature X-ray source, and portable data acquisition devices. The main objective of the analyses in Akrotiri was to explore the potential of the technique to provide answers to a wide range of archaeometric questions regarding the bulk composition of metal alloys, especially of gold, the characterization of corrosion products in bronze artifacts, identification of inorganic elements which are fingerprints of the minerals used in wall-painting pigments, and of the painting materials and techniques used for the decoration of clay vase surfaces. Among the analysed artifacts are a unique gold ibex, a bronze dagger and blade, various pigments from the wall paintings of room 3 in Xeste 3, decoration pigments from rosettes of faience, a bichrome jug, and other clay vases. The results of the *in-situ* XRF survey, primarily those of the bulk composition and soldering technology of the gold ibex, are discussed and compared with literature.