

Preliminary results on archaeological materials from Miaswan Project (Mummies Investigations Anthropological and Scientific West Aswan Necropolis)

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The identification of the compounds utilised in the creation of painted objects of artistic and historical meaning is important, since it can give vital information such as the painting technique and the availability of natural pigments and/or the capability of the production of pigments from raw materials and, consequently, information concerning the technological expertise in a particular historical period.

Furthermore, the chemical-physical characterisation of materials can also permit the detection of possible previous restoration or conservation work. In some events, it can even supply information about the authenticity and/or dating of the artwork. Research studies conducted in this field were able to identify the array of colours the ancient Egyptians had at their disposal [1-6].

The following work aimed to investigate the nature and composition of the pictorial layers of four different Egyptian artefacts found in West Aswan, Egypt. In particular, spectroscopic analyses were performed on artefacts excavated in the area surrounding the Mausoleum of the Aga Khan, within the campaign of Miaswan Project and headed by Prof. Piacentini. The necropolis covers around 1000 years (6th cent. BCE-4th cent. CE). The analyzed artefacts were three different cartonnages and one piece of pottery.

Strict Egyptian laws prohibit the possibility of taking samples from artefacts and then transporting them to other countries, which is why the use of portable instrumentation was essential. The investigations were carried out by means of portable ATR/FTIR for in-situ analyses to highlight the nature of the pigments present on the samples. The artefacts analyzed with this technique were then moved from their original location (the tombs) to a storage room where the measurements were carried out.

In addition to FTIR, visible reflectance analyses were also performed by means of a portable spectrophotometer. In this case, it was possible to use the instrument directly on the artefacts at their place of discovery, so the colorimetric analyses were done on-site.

The analyses performed by infrared spectroscopy revealed several pigments, including red ochre, yellow ochre and Egyptian blue. A particularly interesting pink pigment was made mixing hematite and calcium carbonate. By studying the data obtained by reflectance spectroscopy, it can be deduced that the pigments applied on the studied cartonnage are the same for each colour and the palette remains confined to a limited range of pigments.

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