

Conservation treatment considerations for coffin of Ahmed Ismail, Mohamed Ibrahim, Akram Abd El

Introduction

The Egyptian Museum in Cairo is home to a large collection of wooden coffins from early dynastic to Greek Roman period. Many of these coffins are not on display, but are stored at the Egyptian Museum basement in inappropriate preservation environment.

This poster describes the Conservation treatments of an Egyptian polychrome wooden coffin of a noble called 'PA- Mi ', which dates back to the 3rd Intermediate Period and was excavated by Alexander Moret in 1912.

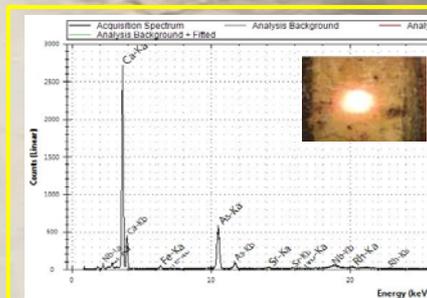
Qualitative analysis of a selection of materials from the coffin are also reported



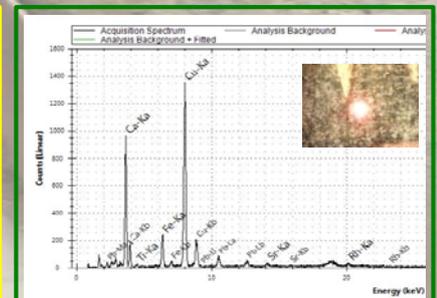
Fig 1 :Coffin Box and Lid before conservation

XRF is most widely used in the field of Archeometry as nondestructive analysis, due to it's high sensitivity and applicability to a wide range of samples.

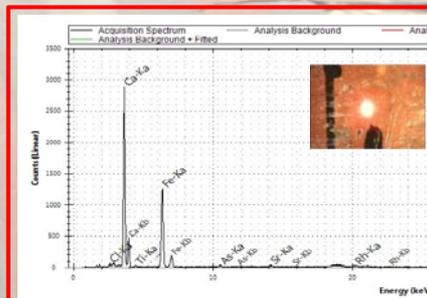
The Conservation Department at the Egyptian Museum in Cairo used portable XRF to identify inorganic pigments used in 'PA- Mi ' polychrome wooden coffin.



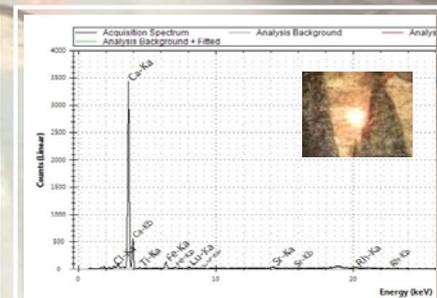
XRF analysis of yellow color shows that Orpiment (As_2O_3) was used.



Egyptian green came from Malachite a natural green copper, ($CuCO_3 \cdot Cu(OH)_2$).



Red color analysis shows the peak of iron (10.38%), which indicates the use of hematite (Fe_2O_3).



White areas, the presence of Ca indicates the use of calcite ($CaCO_3$).

Fig 3 : XRF patterns of the polychrome coffin components

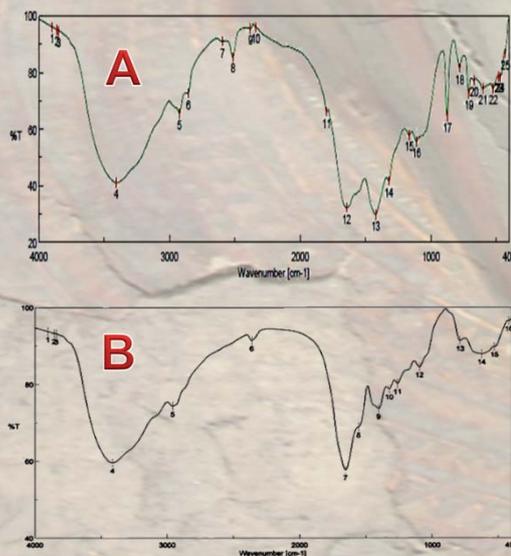


Fig 2 : Black resin samples were carefully chosen during conservation work from areas that had no aesthetic value and from areas which suffered from deterioration. They were identified by Fourier transform infrared spectroscopy (FTIR). Sample (A) was identified as Arabic gum, while sample (B) was identified as animal glue.

Red Pigment		Green Pigment		Yellow Pigment		white Pigment	
Element	%	Element	%	Element	%	Element	%
Ca	82.05	Cl	44.62	Ca	92.48	Ca	94.24
Fe	10.38	Cu	18.35	As	2.67	Cl	4.18
Cl	6.87	S	21.49	Cl	4.39	Fe	0.94
Ti	0.55	K	9.71	Fe	0.37	Ti	0.43
As	0.08	Fe	4	Sr	0.08	Cu	0.13
Sr	0.07	Ti	1.04	Nb	0.01	Sr	0.09
		As	0.79				

Table 1 : showing principal pigments identified on the coffin box and lid.

the Egyptian polychrome wood 'PA - MI'

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Documentation

Deterioration map of the coffin was done by using 2D Autocad drawings showing the main problems.

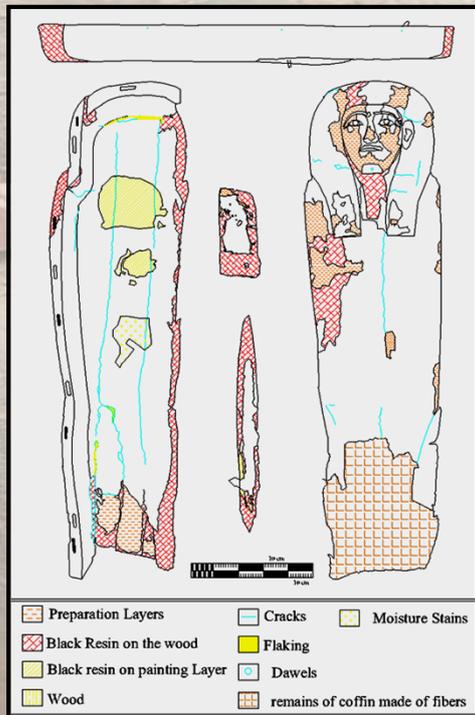


Fig 4 : Deterioration Map

Description

The coffin is constructed from several pieces of wood joined with wooden dowels, there are a number of gaps in the original joints between the wooden planks of the coffin and some wood pieces were shifted out of plane, causing cracking and flaking of gesso and paint, as well as numerous areas of gesso and paint loss. Heavy dust accumulated on painting layer

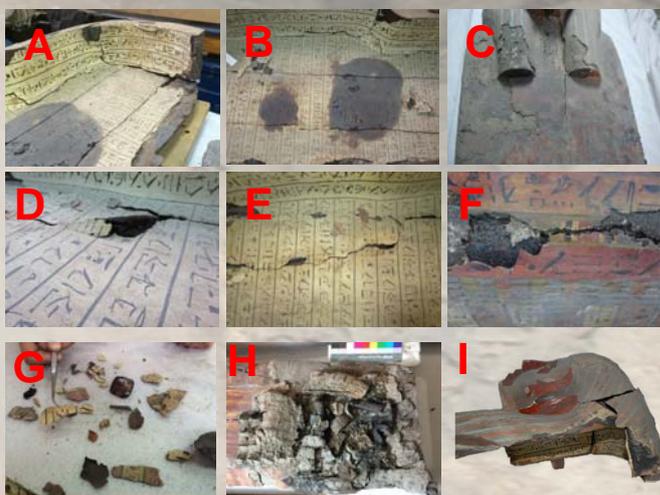


Fig 5: Deterioration features of the coffin, deattached piece of wood (A), Cracks (B&C), Flaking (D), painting layer loss (E&F), Fragments (F) , bone remains (G), dislocation of wood (I)

Treatment

Mechanical cleaning was applied by using a soft brush in order to remove the accumulated superficial dust deposit. A rubber sponge was used to remove the additional surface dirt. In some spots where mechanical cleaning was not applicable, chemical cleaning with solvents was applied. During the conservation work, in some cases it was necessary to use strips of Japanese tissue paper with Klucel G 3% to hold and support the fragile painted layer. The edges of losses in the gesso and filling were sealed with Paraloid B72 bulked with equal amounts of glass microballoon. Broken pieces/parts were rejoined by using Paraloid B72 40% with new dowels beside the old dowels to hold the coffin weight.



Fig 6 : Treatment procedures entailed Mechanical cleaning (A) , Chemical cleaning (B), Temporary Consolidation of Fragile areas (C), using old and new dowels to re- attach coffin chest broken pieces (D&E) , using suitable gap filler with lower surface level than original surface (F&G), retouching (H)



Fig 7 : Coffin Box and Lid After conservation

References

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