



EXAMINATION AND ANALYSES OF A WOODEN FACE AT THE MUSEUM STORAGE AT THE FACULTY OF ARCHAEOLOGY, CAIRO UNIVERSITY

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1. ABSTRACT

The aim of this paper is to examine and analyze a wooden face that was covered with a transparent layer of wax after finishing the mask. The use of wax and encaustic painting was used in Ancient Egypt during the Greco - Roman, but it was an extremely rare technique in the Egyptian dynasties.

The wooden face that was chosen for this study was carefully examined using light microscopy to identify the wood, which proved to be native sycamore (*Ficus sycomorus*). Digital microscope and Scanning Electron Microscope (SEM) were used to assess decay of the outer exposed surface that had been covered in the past with a preparation layer composed of calcium carbonate. SEM micrographs showed clear decay of the cell walls due to the penetration of both the preparation layer and fungal hyphae.

Microbiological investigation indicated the presence a bacterial and fungal infestation. The wood was infected by *Aspergillus niger* and *Ulocladium sp* fungi and *Pediococcus dextrinicus* bacteria.

Further assessment was done by X- Ray Diffraction (XRD) to calculate the decrease of cellulose crystallinity according to Segal and Fourier Transform spectroscopy (FTIR) to detect the changes of the main wood components (cellulose, hemicellulose, lignin).

KEYWORDS: *Wood Decay, XRD, FTIR, SEM, Microbiology, Cellulose Crystallinity*
