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An Applied Archaeometric Study on the Evaluation of Chemical Degradation of Wooden Icons Due to the Stratigraphic Structure and the Appropriate Treatment Methods Applied on a Selected Object Dating Back to the 18th Century

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Abstract

Wooden icons represent an essential part of Egyptian cultural heritage and have a major historical and artistic significance. This type of icons is to be found in most churches, monasteries and museums, however, historical, archaeometerical and conservation studies have not been carried out to date.

Differences between the wooden icons and the other types of icons are known. The paint layers of the wooden icons are either executed on the wooden panels or on thin gesso layers with the absence of a canvas layer. On the contrary, the other types of icons are applied either on gesso, leather or paper ground layers applied on top of a canvas layer.

Deterioration phenomena of wooden icons are also different. The main aims of this thesis are to study the chemical degradation of the wooden icons due to their specific overlapping structure and to set conservation methodologies which are compatible with their chemical and physical status

The adequate conservation of wooden icons requires good knowledge of the chemistry and deterioration mechanism of objects of complex structure. This knowledge can only be acquired through appropriate analyses of the materials used. Among the available analyses, the suitability of the vibrational spectroscopy and ultraviolet–visible spectroscopy have not yet received full assessment. This dissertation aims to fill up this gap in Egypt

Among the different methods of spectroscopy techniques used for conservation purposes, the application of ultraviolet–visible spectroscopy on composed objects is uncommon, while Raman spectroscopy is usually employed for inorganic materials. It would thus be interesting to test the pertinence of these two methods in the analysis of organic composed samples. The present dissertation proposes to apply them on the protein-based media and other components of wooden icons. Their advantages shall be evaluated, with a view of elaborating the treatments best compatible with wooden icons.

Key Words

Argentine

Consolidants

Egg white

Egg yolk

Fluorescence spectroscopy

Fourier transform infrared spectroscopy

Raman Spectroscopy

Ultraviolet–visible spectroscopy

Vibrational spectroscopy

Wooden Icon

DEDICATION

I praise almighty Allah for giving me
the strength, passion, courage and guidance to achieve this work,
despite all difficulties.
I would like to express my profound gratitude
and love to my parents who have supported me
emotionally, organisationally and financially in various ways
throughout the daunting yet entertaining time I have spent with this research.

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