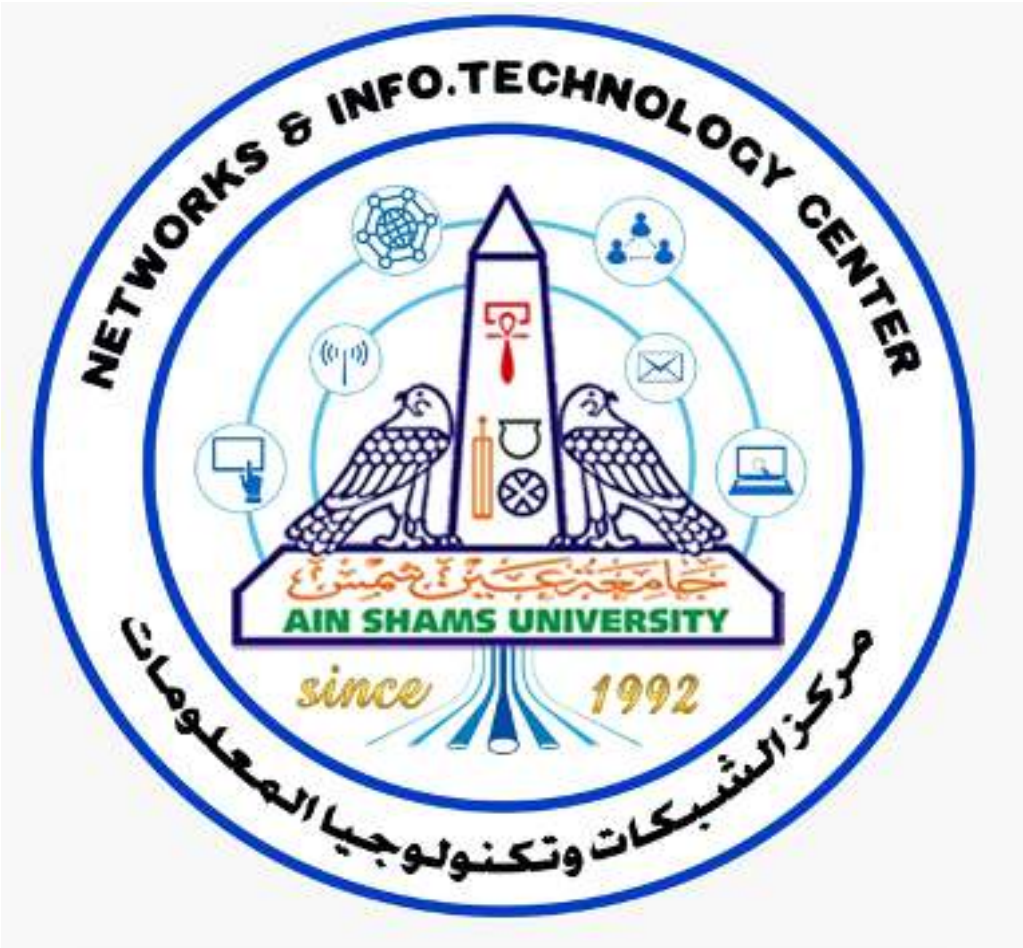
Mona Maghraby

بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



Mona Maghraby

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

Cairo University
Faculty of Archaeology
Conservation Department

Experimental Study for the Evaluation of the Efficiency of Cold Plasma Technique for the Cleaning of Historical Leather Bookbindings with application on a selected object

A thesis presented to Cairo University/ Faculty of Archaeology
In fulfillment of the requirements for
a Master degree in Conservation of Antiques

Submitted by

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Cairo

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Summary

Manuscripts and historical books represent a large part of the heritage of the nations in general and the heritage of Islamic nation in particular. Most of these manuscripts and historical books suffer from serious damage due to improper environmental storage conditions. Furthermore, there are many other factors affecting the permanence of manuscripts status such as inappropriate handling and poor display.

The leather bookbinding of manuscripts and historical books is the first to face the deterioration factors in the way to the manuscripts, it is as a protective shield in front of those factors, In addition to that mentioned in the principles of the International Federation of Library Associations and Institutions (IFLA) to care and deal with library materials that books with leather covers more damaged than others, So it was necessary to treat and preservation the leather bookbinding.

It should be noted that there are different methods and techniques used to clean the historical leather bookbindings such as: mechanical cleaning with brushes and scalpels, chemical cleaning with solutions and organic solvents, laser physical cleaning and others. In recent years, plasma technique has been successfully used for various purposes in the treatment and conservation of cultural heritage, which the most important are disinfection and cleaning. This plasma technology offers the possibility of enhancing or replacing currently used cleaning methods. Hence, the removal of stains from the historical bookbinding surfaces by cold plasma cleaning technique one of the important ways of application.

keywords

Manuscripts

Historical books

Leather bookbindings

Vegetable tanned leather

Stains

Cleaning

Cold plasma

Dielectric Barrier Discharge (DBD)

Restoration

Conservation

In the name of Allah, the Entirely Merciful, the Especially Merciful

“Recite in the name of your Lord who created (1) Created human from a clinging substance (2) Recite, and your Lord is the most Generous(3) Who taught by the pen (4) Taught human that which he knew not (5)”

[Holy Qur'an / Al-Alaq: 1-5]

“And say, My Lord, increase me in knowledge ”

[Holy Qur'an / Taha: 114]

Abu Hurairah (May Allah be pleased with him) reported: Muhammad the Messenger of Allah (Peace be upon him) said, "**When a man dies, his deeds come to an end except for three things: Sadaqah Jariyah (ceaseless charity), a knowledge which is beneficial, and a virtuous descendant who prays for him (for the deceased)**" [Sahih Muslim]

Imam Ahmad ibn Hanbal (may Allah have mercy on him) said: "**With the inkwell to the cemetery**"

Dedication

TO

MY DEAR FATHER
MY DEAR MOTHER
MY DEAR SISTERS

&

EVERY HUMAN LOVING
OF THE KNOWLEDGE

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I would like first and foremost to thank **Allah** Almighty who has made it possible to achieve the completion of this work. This is true to his saying almighty **"And whatever you have of favor - it is from Allah"** [Holy Qur'an / An-Nhal: 53]. And his saying almighty **"And has taught you that which you did not know. And has the favor of Allah upon you been great"** [Holy Qur'an / An-Nisaa: 113].

Then I must and the Prophet Muhammad (peace be upon him) said, **"He has not thanked Allah who has not thanked people."** [Sunan Abu Dawud 4811, Sahih (authentic) according to Sheikh Ahmad Shakir] to extend my sincere thanks and appreciation to my supervisors **Prof. Dr. Gomaa Muhammad Abd- El Maksoud,** Professor of Restoration and Conservation of Antiques and Dean for Faculty of Archaeology, and **Prof. Dr. Usama Mohammad Rashed,** Professor of Plasma Physics and Member of Plasma Technology Center, Faculty of Science, Al-Azhar University, for their continued guidance support, encouragement and advices throughout the entire thesis. This thesis would not be possible without their consistent guidance.

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List of Symbols and Abbreviations

AC	Alternative Current
AES	Augur Electron Spectroscopy
AF	Audio Frequency
AFM	Atomic Force Microscopy
AH	In the year o the Hijra
APPJ	Atmospheric Pressure Plasma Jet
ATR-FTIR	Attenuated Total Reflection Fourier Transform Infrared
BC	Before Christ
°C	Celsius
CCP	Capacitively Coupled
DBD	Dielectric Barrier Discharge
DC	Direct Current
DNA	Deoxyribonucleic Acid
EDX	Energy Dispersive X-ray
HF	High Frequency
Hz	Hertz
ICP	Inductively Coupled
IFLA	International Federation of Library Associations
K	Kelvin
L/m	Liter per minute
MHCD	Microhollow Cathode Discharge
MV	Microwave
n_e	Density electron
Ns	Nanosecond
PCR	Polymerase Chain Reaction
PDA	Potato Dextrose Agar
RF	Radio Frequency
SEM	Scanning Electron Microscopy
T_e	Temperature electron
T_g	Temperature gas
T_i	Temperature ion
T_p	Temperature plasma
UV	Ultraviolet

Table of Contents