بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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Study of Various Deterioration Phenomena in Archaeological Stone Minbar, Its Causes and Treatment Methods

Applied on a selected object

Thesis presented for the fulfillment of M.SC in Conservation of Monuments

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1441 A.H - 2020 A.D

Background

Minbar is a raised platform in the front area of a mosque, from which sermons or speeches are given. The speaker walks up the steps and either sits or stands on the minbar while addressing the congregation. The minbar is usually made of carved wood, stone, or brick. The minbar includes a short staircase leading to the top platform, which is sometimes covered by a small dome.

Stone minbar is considered one of the most interested elements that back to Mamluk and Ottoman period. That often made of carved limestone, marble and alabaster. To understand the deterioration mechanisms firstly we must study lithology and petrography description of minbar building materials and realizing physical, mechanical and other properties of these materials.

Study of deterioration factors in addition to determination minbar building materials properties contributing to understand the nature of deterioration phenomena.

Evaluation of Physical and chemical Properties of proposed Reinforcement, Stabilization and Joining Materials, cleaning materials and methods and Consolidation, filling cracks and completion materials through an experimental study are very interested to have a satisfied results for carrying out an active conservation process.

Finally, conservation and preservation applications related to the present study depending on the previous studies to perform an effective conservation plan. Archaeological stony minbars has been affected the last conservation works which were not effective. Preventive conservation is considered the important method to protect such archaeological elements.

Key Words

- **Carrara Marble**
- **Citadel of Salah Al-Din**
- **Nano-Lime**
- **Nano-Titanium**
- **Physical Properties**
- **Sariet El-Gabal minbar**
- **Stone minbar**
- **Ultrasonic Pulse Velocity**
- **Wacker OH 100**
- **Wrong Conservation**

Dedication

I would like to dedicate this work to our deceased professor

Mohamed Abd El-Hadi

To my parents, sisters, my wife and my daughter Hoor

Acknowledgment

In the name of Allah, the Most Gracious and the Most Merciful Alhamdulillah, all praises to Allah for the strengths and His blessing in completing this thesis. Special appreciation goes to my **late** supervisor, **Prof. Dr. Mohamed Abd El-Hady Mohamed**, for his supervision and constant support. His invaluable help of constructive comments and suggestions throughout the experimental and thesis works have contributed to the success of this research. Not forgotten, my appreciation to my co-supervisor, **Prof. Dr. Sayed Hemada** for giving me the opportunity to do research and providing invaluable guidance throughout this research. His dynamism, vision, sincerity and motivation have deeply inspired me. He has taught me the methodology to carry out the research and to present the research works as clearly as possible. It was a great privilege and honor to work and study under his guidance.

Besides my advisor, I would like to thank the members of discussion committee: Prof. Dr. **Mervat Khalil** Prof. of Building Physics, Building Physics and Environment Research Institute, Housing and Building National Research Center. Assistant Prof. **Mahmoud Abd El-Hafez** Assistant professor in Conservation and Rehabilitation of Historical Buildings and Sites, Faculty of Archaeology, Cairo university. for their encouragement, insightful comments, and their scientific discussions.

I would like to express my appreciation to the Dean of conservation department, **Prof. Dr. Mona Fouad** and **Prof. Dr. Mohammed Abd El-Raouf** for their encouragement and for their unlimited continuous support. To all professors and lecturers in conservation department in faculty of archaeology especially **Prof.Dr. Gomaa Abd Al-Maksoad Prof.Dr. Abu Bakr Mosaa**, **Prof.Dr. Mohsen Saleh**, **Dr. Abdallah**, **Dr**. **Mourad Fawzy**, **Dr. Sherief Omar**, **Dr. Maha Ahmed** and **Dr. Omar Adam**

Sincere thanks to all my friends especially **Ahmed El-Shabrawy (My Dearest Friend of Struggle)**, Hazem Taha El-Daly, Mohamed Samir, Hamdy El-Deib, Olla

younis, Ahmed kazem, Hader Awad, Shimaa Ali, Abd El-Rahman Fahmy, Eng. Ahmed Hasan and others for their kindness and moral support during my study. Thanks for the friendship and memories.

My acknowledgement also goes to all the technicians and office staffs of Raw Materials and Technological Processing Research Institute, Housing and Building National Research Center for their co-operations especially **Prof. Dr. Medhat El-Mahlawy.** My acknowledgement also goes to the dean of conservation in citadel of Salah El-Din Eng. Shadia Ahmed and all conservators especially Dr. Heba and Mr. Mostafa Shams**.**

To the Dean of postgraduate office in faculty of Archaeology, Cairo university Mrs. Azza, Mrs. Magda for their support and help towards my postgraduate affairs.

Last but not least, my deepest gratitude goes to my beloved parents and also to my sisters for their endless love, prayers and encouragement. Also not forgetting my wife, Dr. Eman Kadry for her love and care. To those who indirectly contributed in this research, your kindness means a lot to me. Thank you very much.

Objectives and Scope

The decision of selecting this study was extremely difficult since there is lack of studies for this important archaeological stony minbars. Minbars are considered one of important elements in Islamic mosques so this study aims at: -

- Revealing archaeological and atheistic importance of the stony minbars
- Studying the characteristics of stone and other building or construction materials of these minbars.
- Providing integrated information on disintegration mechanisms, quantification of disintegration characteristics and forms.
- Evaluating of proposed conservation strategy for such minbars which usually exposed to incorrect conservation works in the past.
- Evaluation of the modern materials for the conservation of the stone minbars, in particular the nano materials and nano compounds.
- Suggest new conservation strategy for the stone minbar.

Summery

The present work deals with the study on various deterioration factors and novel materials used for conservation of stone minbar. the results of the present study are summarized in five chapters that are given as following: -

Chapter one: Archaeological and Technical Study of Archaeological Stone Minbars

This chapter recognizes historical background of minbar, definitions and its importance as ritual furniture, symbolism and features. On the other hand, the second section of this chapter introduces the used technical and decoration techniques. It also sheds light on the most important samples of stone minbar in Egypt and all-over Islamic world.

Chapter Two: Physiochemical, Mechanical Properties of construction Materials of Archaeological Stone Minbars.

This chapter deals with the physical, chemical and mechanical properties of construction materials of stone minbar. the methods of the investigations and analyses such as (XRF – XRD – PLM – DLM – SM – SEM – TEM) used to determine the composition of construction materials of stone minbar also for characterization of deterioration aspects.

Chapter Three: Factors and Mechanisms of Deterioration of Archaeological Stone Minbars

This chapter presents the most important factors and its mechanisms of deterioration on stone minbar. The wrong conservation interventions are the most obviously factor.

Chapter Four: The Experimental Study of Archaeological Stone Minbars Materials

In this chapter recognize the laboratory studies, as several experiments have been carried out to evaluate the efficiency of treatment materials. Many novel consolidants enhanced with nano materials proposed according to previous studies, before and after consolidation processes of aged specimens physical and mechanical properties characterized to choose the best and the most effective consolidant.

Chapter Five: Conservation of Sariet Al-Gabal Stone Minbar

Stone minbar of Sariet Al-Gabal selected to apply the most effective enhanced consolidant with nano materials. the conservation intervention like cleaning, completion, insulation. we reduce the intervention to achieve good maintenance. Seleted area of minbar cleanied physically and chemically and consolidated to be approved to apply to all minbar.

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