


Cairo University

# SMART MATERIALS AS A NEW TECHNOLOGICAL TOOL IN ARCHITECTURE FACADES

By

**ENG. MONA MOHAMED SALEH HASSEN**

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the Requirements for the Degree of

**DOCTOR OF PHILOSOPHY**

In
**Architectural Engineering**

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Under the Supervision of

**Prof. Dr. Mohamed Medhat Dorrah**

Professor of architecture, department of architecture,
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**ENG. MONA MOHAMED SALEH HASSEN**

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**DOCTOR OF PHILOSOPHY**
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**Title of Thesis:**
Smart materials as a new technological tool in architecture Facades

**Key Words:**
Smart Materials, Technological, Building, façade, responsive

## Summary:

The last few years have been characterized by a new generation of buildings with varying degrees of current technology. Which are highly ecological in their behavior through the intelligent use of adaptive materials and response to external environment changes.

This creates new tasks for architectural designers. The design process requires the integration of buildings and these modern technologies to solve long-standing problems in architectural design. It is necessary to have sufficient knowledge of these new techniques and methods of use, which result in buildings that have the ability to adapt to the needs of occupants. With less energy use ..

Due to the need for innovative and appropriate solutions, this study is the search for the most efficient technological solutions for the building in warm climates. Studies have confirmed that buildings have the highest percentage of consumption of energy. This is through a set of improvements that can be added to the building to reduce the problem. The purpose of this message to find smart solutions to add to the building to improve its performance and reduce the damage to the surrounding environment. The main character of the smart buildings is the ability to adapt and sustainability with the ocean outside.

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# Table of Contents