

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



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Cairo University

NANOTECHNOLOGY AS A TOOL FOR DESIGNING ENERGY EFFICIENT BUILDING

By

Sarah Gamal Saleh Mohamed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Architectural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Nanotechnology as a Tool for Designing Energy Efficient Building

Key Words:

Nanotechnology; Residential building; Energy consumption; Energy efficient Building; Building envelope.

Summary:

The world has witnessed many crises, including the energy crisis, since the 1970s. This critical crisis draws attention and requires a rapid solution. It found that the main axis of the emergence of this crisis is the residential buildings because it consumes 42.45% of energy source due to the urban expansion energy consumer. Hence, we start towards energy-efficient buildings designed to reduce energy consumption and provide thermal comfort within the building. This trend led to emerging of several solutions using conventional and modern technology applications (including nanotechnology).

Therefore, this thesis aims to highlight both the conventional and nanotechnology applications and study the extent of their impact on the building's energy efficiency. The research indicates the use of nanotechnology applications contributes to enhanced thermal performance and rationalize energy consumption more effective than conventional application (currently used). It will also provide solutions to architectural problems in building and construction.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the reference section.

Name: Sarah Gamal Saleh Mohamed

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Signature:

Dedication

I dedicate my master thesis to:

My beloved parents, Ms. Nadia Mahmoud and Mr. Gamal Saleh, My first gift and my candle that illuminates my way, who have taught me to stand in front the waves of the rebellious sea, To whom they have given me and to whom they still give me without limits, To those who have lifted up my head high and proud of them. And if my pen`s ink does not express my feelings towards them, my thoughts are greater than being on paper. But I do not have except I call Allah Almighty for protecting them and not deprive us of springs of their love and affection. The most precious treasure I Possess.

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All those who are offering me a helping hand. Anyone who sees this humble effort as a reader or a science student.

All of them, I dedicate the result of my humble effort, calling on Allah Almighty to make it a useful note and a receptive work in my balance of good deeds.

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In the Name of Allah, the Most Gracious, the Most Merciful.

And say, "Do [as you will], for Allah will see your deeds, and [so, will] His Messenger and the believers. And you will return to the Knower of the unseen and the witnessed, and He will inform you of what you used to do." (105) Surah At-Tawbah.

The great truth of Allah

O Lord, to you, is praise as befits the glory of your face and the greatness of your might. I thank my Lord and repent to you. I pray and peace on the Prophet Mohammed Bin Abdullah the best prayer and completed peace and on his family and his companions (friends) altogether. After.

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Finally, I hope from Allah that I have been able to prepare this thesis in a manner that benefits Islam and Muslims, serves students, and receives Allah's satisfaction.

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