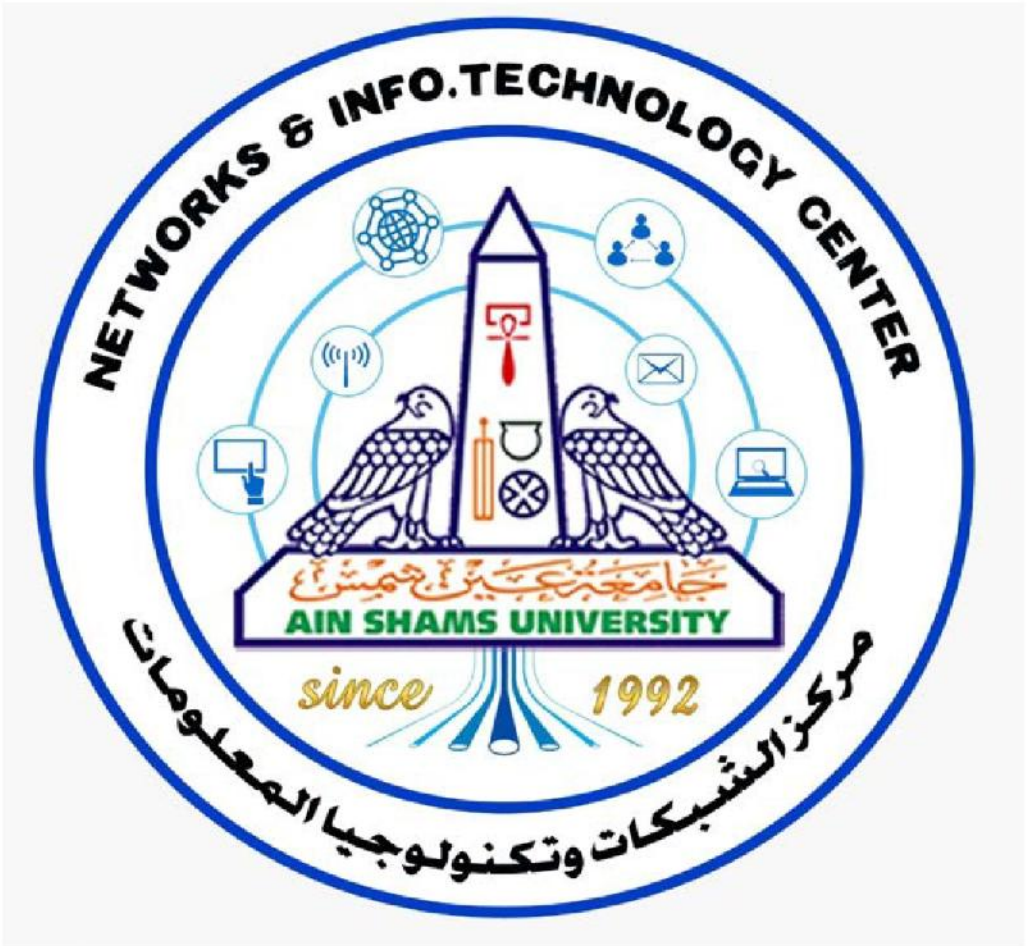
hossam maghraby

بسم الله الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



hossam maghraby

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

THE EFFECT OF USING NANO TITANIUM AS A PARTIAL REPLACEMENT OF CEMENT ON THE MECHANICAL PROPERTIES AND PHOTOCATALYTIC PROPERTIES OF MORTAR

By

Rania Adel Ali Khalil

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfilment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
Structural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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Title of Thesis:

The Effect of Using Nano Titanium as a Partial Replacement of Cement on the Mechanical Properties and Photocatalytic Properties of Mortar

Key Words:

Nano material, Nano Titanium, agglomeration, dispersion, photocatalytic.

Summary:

This research aims to study the effect of adding Nano titanium (TiO_2) on the mechanical properties and photocatalytic properties of cement mortar. To achieve these goals, three different percentages of Nano TiO_2 were investigated 2%, 3%, and 4% by Wt. of cement. Compressive strength, Flexural strength, and Splitting strength were measured. Different method of dispersing Nano TiO_2 were investigated to reach the optimum utilization of Nano materials. In addition, the effect of adding Nano TiO_2 on the photocatalytic properties of cement mortar was investigated. The study showed that Nano TiO_2 has a significant effect on the photocatalytic process, which gives the mortar new properties in the process of self-cleaning.

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 references section.

Name: Rania Adel Ali Khalil Date: / / 2022

Signature:

ACKNOWLEDGMENTS

IN THE NAME OF ALLAH, THE MOST GRACIOUS AND THE MOST MERCIFUL

First and above all, I have to thank Allah for giving me wisdom and knowledge I have today. I praise Allah for His care and support and providing me with the opportunity to present my hard work in a beneficial knowledge to people.

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DEDICATION

To My Mum, My Dad & My Husband, My family

that has a great effect on my life.

All my love to you for your care and support.

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ABSTRACT

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