

سامية محمد مصطفى



شبكة المعلومات الجامعية

# بسم الله الرحمن الرحيم



سامية محمد مصطفى



شبكة المعلومات الجامعية



# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





سامية محمد مصطفى



شبكة المعلومات الجامعية

# 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



## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



سامية محمد مصطفى



شبكة المعلومات الجامعية



# بعض الوثائق الأصلية تالفة





سامية محمد مصطفى



شبكة المعلومات الجامعية



# بالرسالة صفحات لم ترد بالأصل



# **HETEROGENEOUS CATALYZED INDUCED OXIDATION OF SOME ORGANIC POLLUTANTS**

## **A THESIS**

Submitted to Tanta University  
In partial fulfillment for the degree of Master of Science  
(Chemistry)

**By**

**Rehab Galal El- Sharkawy**  
B. Sc. (Chemistry) 1999

## **Supervisors**

**Prof. Dr. Ahmed B. Zaki**

Professor of Physical Chemistry

**Dr. Ali H. Gemeay**

Assistant Professor of Physical Chemistry

**Dr. Ekhlas A. Mansour**

Lecturer of Inorganic Chemistry

Department of Chemistry

Faculty of Science

Tanta University

2002

B  
11/17V

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَدْ نَزَّلْنَا ذِكْرًا فَتَعْلَمُ أَنَّكَ نَزَّلْنَا مُبَارَكًا مَنُجَّاتًا  
وَلَقَدْ نَزَّلْنَاهُ بِقَوْلٍ مُّنتَبِهٍ وَهُوَ بِالْأُفُقِ الْمُبِينِ

صدق الله العظيم

سورة البقرة (32)

*To my parents,*

*my sisters*

*my brother*

*and Sama, my sister's daughter*



## SUPERVISORS

**1- Prof. Dr. Ahmed B. Zaki**

*Professor of Physical Chemistry, Department of Chemistry, Faculty of Science, Tanta University.*

**2- Dr. Ali H. Gemeay**

*Assistant Professor of Physical Chemistry, Department of Chemistry, Faculty of Science, Tanta University.*

**3- Dr. Ekhlas A. Mansour**

*Lecturer of Inorganic Chemistry, Department of Chemistry, Faculty of Science, Tanta University.*

*Head of Chemistry Department*

*(Prof. Dr. M. M. Abou Sekkina)*



## Curriculum Vitae

Name: Rehab Galal El- Sharkawy

Date and place of Birth: 24/12/1978 - Tanta, El- Gharbia.

Address: Mahallet Marhom, Tanta, El- Gharbia

Telephone: 040 / 3340338

Nationality: Egyptian

Qualification: B. Sc. Degree with general grade (very good)  
Major Chemistry (1999), Faculty of Science,  
Tanta University

Occupation: Demonstrator in Chemistry Department, Faculty of Science,  
Tanta university.

## COURSES

The candidate has studied postgraduate courses for one calendar year in the division of physical and inorganic chemistry. The courses cover the following topics.

- 1- Chemical kinetics
- 2- Electrochemistry
- 3- Coordination and inorganic chemistry.
- 4- Solid state and superconductor chemistry.
- 5- Molecular spectroscopy
- 6- Advanced Heterocyclic chemistry.
- 7- Physical organic chemistry .
- 8- Organo metallic compounds.
- 9- Organic reaction mechanism.
- 10- Instrumental analysis.
- 11- German language

She had successfully passed the written examination of these courses.

*Head of Chemistry Department*

(Prof. Dr. M. M. Abou Sekkina)





## ACKNOWLEDGEMENT

It is a pleasure to express my sincere gratitude to **Prof. Ahmed B. Zaki**, Professor of Physical Chemistry at the Chemistry Department, Faculty of Science, Tanta University for his help and constant encouragement during the course of this work.

I would also like to pay my respects to **Dr. Ali H. Gemeay**, Assistant Professor of Physical Chemistry at the same Department who kindly spared enough time for undertaking an appreciable task in reading the manuscript and offering invaluable comments and suggestions.

I would also express my grateful thank to **Dr. Ekhlās A. Mansour**, Lecturer of inorganic Chemistry in the same department for her continuous guiding, and encouragement during the course of this work

My sincere thanks to all friends in the Department of Chemistry specially the members of chemical kinetic unit for their continuous help and encouragement in the final preparation of this work.

My deep gratitude to my family who paid a great attention for me and suffered so much in order to create lovely and scientific atmosphere for helping me to finish this work.

**Before all and above all thanks to God**

A black and white illustration of a scroll. The scroll is unrolled, with its top edge curved into a loop on the left. The word "contents" is written in a bold, serif font across the center of the scroll. At the bottom right, there is a ribbon seal with a circular top featuring a triangular pattern and a pointed bottom.

# contents

# CONTENTS

## CHAPTER ONE

Subject	Page
<i>Introduction</i>	
1. 1. Introductory concepts.....	1
1. 2. Physical methods .....	1
1. 3. Biological methods .....	3
1. 4. Chemical methods .....	5
1. 4. 1. Reduction process.....	5
1. 4. 2. Electrochemical process .....	7
1. 4. 3. Chemical oxidation .....	8
1. 5. Homogeneous oxidation of dyes .....	13
1. 6. Heterogeneous oxidation of dyes .....	14
1. 7. Aim of the work .....	20

## CHAPTER TWO

<i>Experimental</i> .....	21
2. 1. Materials .....	21
2. 1. 1. Organic dyes .....	21
2. 1. 2. Oxidizing agent .....	22
2. 1. 3. Supports .....	22
2. 1. 4. Preparation of the catalysts .....	23
2. 1. 5. Physical measurements .....	23
2. 2. Kinetic measurements .....	27
2. 3. pH – measurements.....	27
2. 4. Stoichiometry .....	27



3. 3. 6. Effect of ligand .....	92
3. 3. 7. Effect of support .....	92
3. 3. 8. Effect of pH .....	94
3. 3. 9. Effect of NaCl concentration .....	96
3. 3. 10. Effect of surfactants .....	97
3. 3. 11. Effect of UV- irradiation .....	100
3. 3. 12. Reaction mechanism .....	101
<b>General discussion .....</b>	<b>105</b>

<b>References .....</b>	<b>110</b>
-------------------------	------------

## **Publications**

## **Arabic summary**