

بسم الله الرحمن الرحيم



HOSSAM MAGHRABY



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



HOSSAM MAGHRABY

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

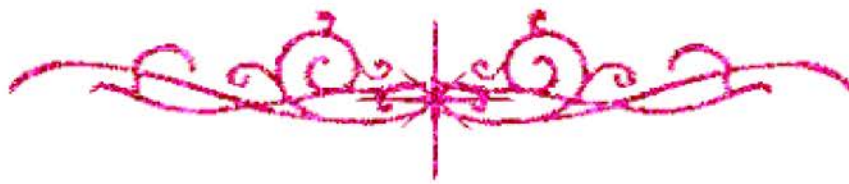
تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HOSSAM MAGHRABY



بعض الوثائق الأصلية تالفة



HOSSAM MAGHRABY



بالرسالة صفحات

لم ترد بالأصل



HOSSAM MAGHRABY

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ رَبِّي زِدْنِي عِلْمًا

**PHYSICO-CHEMICAL STUDIES FOR DESTRUCTION
OF SOME ORGAINIC COMPOUNDS PRESENT IN
WASTE WATER**

B10449

Thesis Submitted By

SAWSSAN MOHAMED ABU EL HASSAN

B.Sc. (Chemistry)

TO

The Faculty of Science Suez Canal University

For

The Degree of Master of Science

In

Chemistry

2001

THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENT OF M. Sc. DEGREE IN
CHEMISTRY

NOTE

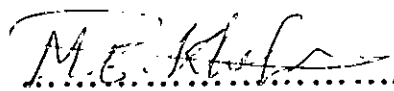
The candidate has attended postgraduate courses for one year in Inorganic and Analytical chemistry covering the following topics

- 1- A advanced elector Analytical Chemistry
- 2- Advanced Inorganic Chemistry
- 3- Symmetry and Term Symbols
- 4- Homogenous Catalytic – Hydrogenation and Hydrosilation
- 5- Reactivity of Organometallic compounds
- 6- Metal carbonyl complexes

Approval sheet

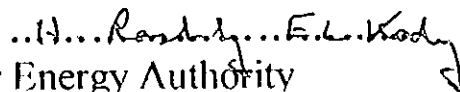
Approved by

Prof. Dr. *Magdy Ebrahim Khalefa*



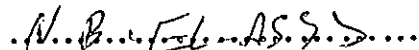
Prof. Of analytical chemistry - Faculty of Science – Mansora
University

Prof. Dr. *Hamed Roshdy EL-Kaddy*



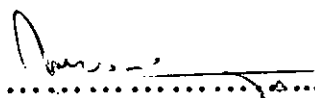
Prof. Of biological sciences - Nuclear Energy Authority

Prof. Dr. *Nasef Bedear EL-Assy*



Prof. Of inorganic chemistry - Dean of Faculty of Education –
Suez Canal University

Dr. *Fakria Saed EL-Dean EL-Deghde*



Prof. Of inorganic chemistry - Faculty of Science– Suez Canal
University

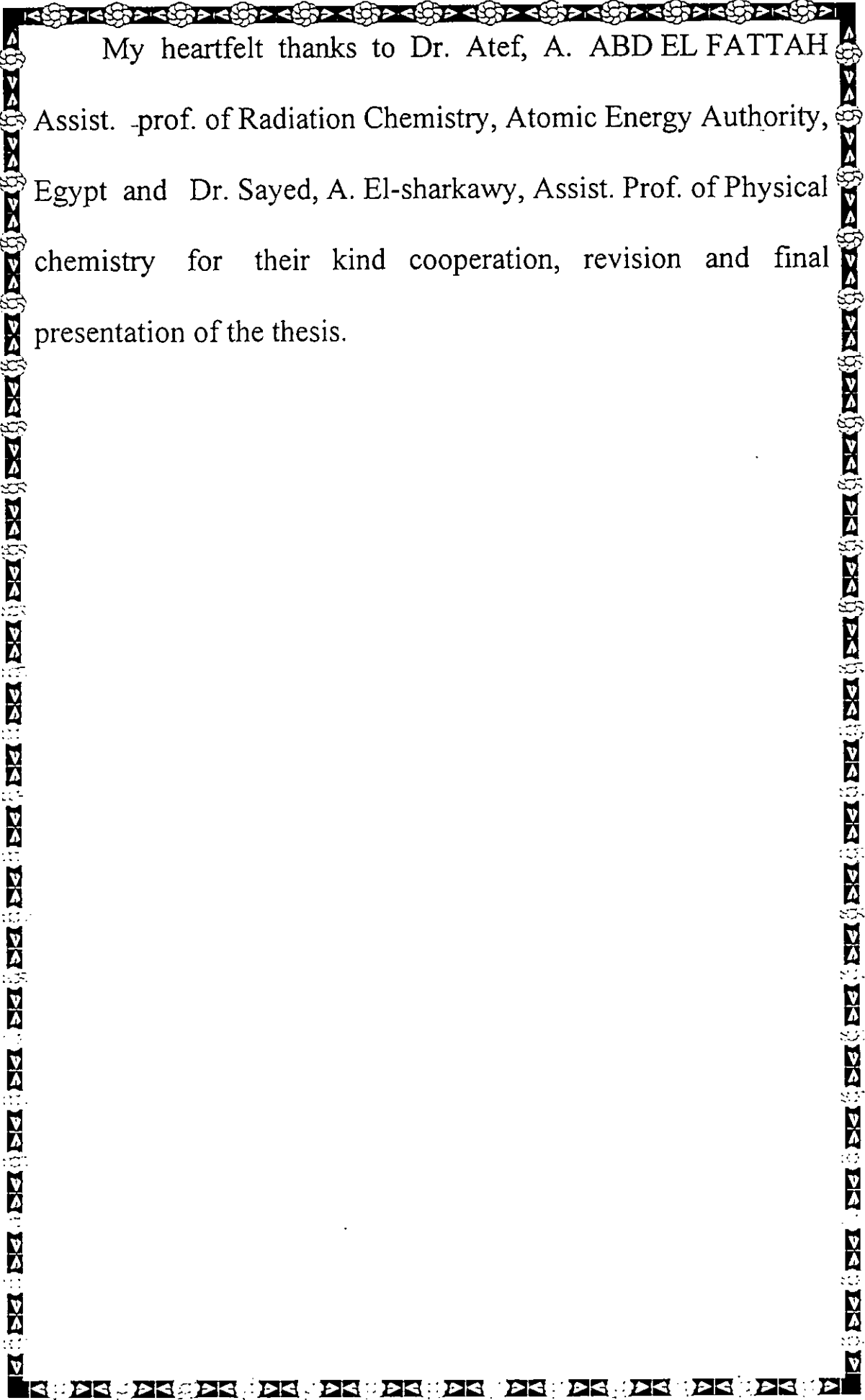
ACKNOWLEDGMENT

ACKNOWLEDGMENT

The author wishes to express her gratitude to prof. dr. NASEF. B.EL-ASSY, prof. of Inorganic Chemistry, Faculty of Education of El-Arish, Suez Canal University, and prof. Dr. FEKREAI, S.E. DEGHEDY, Prof. of Inorganic Chemistry, Faculty of Science, Suez Canal University for suggesting the problem and their close and continuous supervision during all the stages of the development of the work.

The author wishes to express her gratitude To. Dr. TAREK, M. WAHDAN Lecturer of Analytical Chemistry, Faculty of Education of El-Arish, Suez Canal University for his continuous support, fruitful discussion, and revision of the thesis.

The author wish to thank Dr. Magdy, S. Aly, Ass. Prof. of Genetics, faculty of science, Cairo University (Ben-suef-Branch) for planing and performing the biological studies and for his great cooperation.



My heartfelt thanks to Dr. Atef, A. ABD EL FATTAH

Assist. -prof. of Radiation Chemistry, Atomic Energy Authority,
Egypt and Dr. Sayed, A. El-sharkawy, Assist. Prof. of Physical
chemistry for their kind cooperation, revision and final
presentation of the thesis.

CONTENTS

CONTENTS

	page
1 INTRODUCTION	1
1.1 Importance of Photochemistry	1
1.2 Ultraviolet Radiation Dosimetry and Measurement	3
1.2.1 the ultraviolet spectrum	3
1.2.2 Radiometry	5
1.2.3 Radiometric	5
1.2.4 Laws of photochemistry	6
1.2.4.1 Calculation of energy contained in photon of 365 nm wavelength	9
1.2.4.2 Calculation / of intensity of flux from light sources	10
1.2.5 Radiometric calculations Surface irradiation	10
1.2.6 Surface irradiation	11
1.2.7 Volume irradiation	11
1.3 Biological Effects of Ultraviolet Radiation in Humans	12
1.3.1 Effects of UVR on normal skin	13
1.3.1.1 Ultraviolet erythema	13
1.3.1.2 Melanin pigmentation	14
1.3.1.3 Production of vitamin D	14
1.3.1.4 Aging of the skin	14
1.3.1.5 Photocarcinogenesils	15
1.3.1.6 Effects of UVR on the eye	15
1.3.1.7 Cataracts	16
1.4 The Measurement of Ultraviolet Radiation	17

1.4.1 Biological dosimetry	17
1.4.1.1 Microorganisms as UV dosimeter	17
1.4.1.2 Human skin as UV dosimeter	18
1.4.2 Chemical dosimetry	19
1.4.2.1 Gaseous actinometer systems	19
1.4.2.2 Liquid- phase chemical actinometry	20
1.4.2.3 Diazo systems	21
1.4.2.4 Polysulfone film	23
1.5 Some applications of UV radiation	23
1.6 Photolysis of water	23
1.7 Photolysis of hydrogen peroxide	24
II LITERATURE SURVEY ON DESTRUCTION OF ORGANIC COMPOUNDS BY UV-RADIATION	26
III EXPERIMENTAL	42
IV RESULTS AND DISCUSSION	50
4.1 Decoloration of RBBR Dye by UV-Radiation	51
4.2 Decoloration of NC Dye by UV – Radiation	75
4.3 Assessment of the Biological Eco-toxicity of RBBR and NC Dyes	98
4.4 Treatment of two samples of waste waters	102
4.5 the Comparison Between Destruction of organic Compounds By UV- Radiation and the Method used in this thesis	104
SUMMARY	109
REFERENCES	113
ARABIC SUMMARY	128