

## **DEDICATION**

*To my parents*

*who introduced me to the joy of reading from birth enabling such a study*

*to take place today ,*

*my husband (ABU MOHAMED),*

*my son (MOHAMED),*

*my family,*

*my friends,*

*and all persons who support me*

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# CONTENTS

Article	Page number
الآية	<b>I</b>
Dedication	<b>II</b>
Acknowledgement	<b>III</b>
Contents	<b>IV</b>
List of figures	<b>VI</b>
List of table	<b>VII</b>
Abstract	<b>VIII</b>
المستخلص	<b>IX</b>
<b>Chapter one</b> <b>Introduction and basic concepts</b>	
1.1 Introduction	1
1.2 Aims of the work	2
1.3 Thesis structure	2
1.4 What is photocatalyst	2
1.5 History of photocatalysis	3
1.6 Semiconductor Photocatalyst Materials	4
1.7 Mechanism and fundamentals of photocatalytic reaction	6
1.8 Photocatalytic Process	7
1.9 Radiation sources for photocatalysis	9
1.10 Effect of Light Source on Photocatalytic Degradation	10
1.10 Effect of Temperature	11
1.11 Effect of pollutant Concentration	11
1.12 Photocatalytic treatment of organic compounds:	11

1.13 Dyes	12
1.14 Literature review	14

## Chapter Two

### The Experiment Part

2.1 Introduction	17
2.2 The materials	17
2.2.1 Copper oxide	17
2.2.1.1 Physical properties and chemical properties	18
2.2.2 Malachite green	19
2.2.2.1 Physical and chemical properties	19
2.3 Equipments, tools and setup	20
2.3.1 The UV Light Source	21
2.3.2 Magnetic Stirrer	21
2.3.3 The Glass beaker	22
2.3.4 The UV/Visible 1240 Spectrophotometer	22
2.3.5 Quartz cell	23
2.3.6 Experimental method	24

## Chapter three Results and Discussion

3.1 Introduction	25
3.2 Absorption spectrum of Malachite green in 100 ml of water	25
3.3 Absorption spectra of malachite green mixed with 300mg from CuO irradiated by UV light source for different time	26
3.4 Absorption spectra of Malachite green with 500mg from CuO irradiated by UV light source for different time	28
3.5 Absorption spectra of Malachite green with 1000mg from CuO irradiated by UV light source for different times	30
3.6 Discussion	34
3.7 Conclusions	37

3.8 Recommendations	37
References	38

### List of Figures

Figures	Page number
Figure (1.1) Different band gap and their light adsorption for semiconductor	5
Figure (1.2) The mechanism of photocatalysis	7
Figure (2.1) The CuO in powder form	17
Figure (2.2) Chemical structure of Malachite green	19
Figure (2.3) shows a schematic diagram of the setup in this work	20
Figure (2.4) the UV light source	21
Figure (2.5) The magnetic stirrer	22
Figure (2.6) UV\Visible 1240 spectrometer	23
Figure (2.7) The quartz cell	23
Figure (3.1) the absorption spectrum of malachite green in 100 ml from distilled water without irradiation and without semiconductor	26
Figure (3.2) : the absorption spectrum of malachite green mixed with 300 ml from CuO irradiation by UV light source for different time	27
Figure (3.3) The relation between the exposure time and degradation percentage of a mixture composed of 5 ml chloroform and 300 mg CuO irradiated for different times.	28
Figure (3.4) : the absorption spectrum of malachite green mixed with 500 ml from CuO irradiation by UV light source for different time	29
Figure (3.5) The relation between the exposure time and degradation percentage of a mixture composed of 5 ml chloroform and 300 mg CuO irradiated for different times.	30
Figure (3.6) : the absorption spectrum of malachite green	

mixed with 1000 ml from CuO irradiation by UV light source for different time	31
Figure (3.7) The relation between the exposure time and degradation percentage of a mixture composed of 5 ml chloroform and 1000 mg CuO irradiated for different times.	32
Figure (3.8) The relation between the weight (mg) and degradation percentage of a mixture composed of 5 ml malachite green and 500 mg CuO irradiated for different times.	33

## List of Tables

Tables	Page number
Table (1.1):Bandgap energies for some common semiconductor materials	6
Table(3.1) :The absorption intensity of Malachite green mixed with 300mg from CuO after irradiation for different exposure time .	27
Table(3.2) :The absorption intensity of Malachite green mixed with 500mg from CuO after irradiation for different exposure time .	29
Table(3.3) :The absorption intensity of Malachite green mixed with 1000mg from CuO after irradiation for different exposure time .	31
Table (3.4) shows the degradation percentage of malachite green at different exposures times with different weight of CuO.	33



## ABSTRACT

In this work the toxic Malachite green was degraded using photodegradation technique, in which a LED emitting at 365 nm and power 1200mW was used as UV source. It stimulate the copper oxide (CuO) to interact with Malachite green molecules. Different amounts of photocatalyst (CuO) were added to Malachite green and the mixture was irradiated by the UV source, with different exposure times. The absorption spectra of Malachite green with different amounts of CuO were recorded before and after irradiation. Then the intensity of the absorption peak in either case was compared to check whether the degradation of the Malachite green occur or not. The results showed that, the photodegradation process was increased with increasing the amount of semiconductor (CuO) and with the irradiation time, as well, where it was found that the lower percentage of Malachite green degradation occurs when 300 mg of CuO was added and irradiated for 10 min, while a complete removal was achieved when 1000 mg of CuO was added and irradiated for 40 min.

This study concluded that the increment of the photocatalyst amount and the irradiation time increase the photodegradation of toxic Malachite green exponentially.

## المستخلص

في هذا البحث تم تكسير جزيئات أخضر الملاكيث السام المخلوط في الماء بواسطة تقنية التحفيز الضوئي حيث تم استخدام الثنائي الباعث للضوء ذو الطول الموجي 365 نانوميتر وبقدرة 1200 ملي واط كمصدر للأشعة فوق البنفسجية, لغرض تحفيز مادة أوكسيد النحاس الثنائي (المحفز الضوئي) للتفاعل مع جزيئات أخضر الملاكيث.

تم أضافه كميات مختلفة من أوكسيد النحاس الثنائي لمادة أخضر الملاكيث, ومن ثم تم تعريض هذا الخليط لمصدر الأشعة فوق البنفسجية بفترات تشعيع مختلفة .

تم تسجيل طيف الامتصاص لعينات مادة اخضر الملاكيث مضاف إليها المادة الشبه الموصلة قبل التشعيع وبعده. ومقارنة شدة الامتصاص في كلا الحالتين لمعرفة ما إذا تكسرت واختفت جزيئات اخضر الملاكيث أم لا.

ومن النتائج المتحصلة من هذا العمل وجد ان تكسير اخضر الملاكيث يزيد أسياً بزيادة وزن المادة المحفزة وبزيادة زمن التشعيع, حيث وجد أن اقل نسبة تكسير للمادة كانت عندما أضيف 300ملي جرام من (أوكسيد النحاس) زمن التعريض 10 دقائق , في حين اختفت جزيئات اخضر الملاكيث تماما عندما أضيف أليها 1000 ملي جرام من المادة المحفزة وكان زمن التعريض 40 دقيقة .

بينت هذه الدراسة إن زيادة وزن المادة المحفزة وزيادة زمن التشعيع يزيد من التكسير الضوئي لمادة الملاكيث السام زيادة أسية .

