Faculty of women for Arts,
Science and Education
Physics Department

"preparation and characterization of Nano Composites Of Chitosan with Different metal"

Thesis
Submitted for Master Degree
In Physics (sold state)
Faculty of women for Arts, Science and Education
Ain Shams University

By

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(2017)

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قُلْ إِنَّ صَلاَتِي.
وَنُسُكِي
وَمَحْيَايَ وَمَمَاتِي
للهِ رَبِّ الْعَالَمِينَ

صدق الله العظيم

سورة الأنعام الآية (162)

Dedication

I dedicate this work

My dear father,

My great mother,

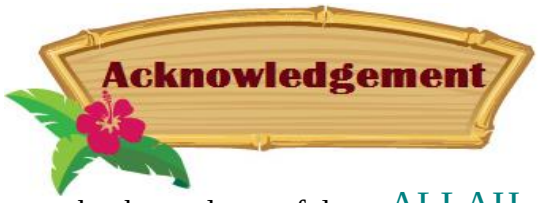
My sisters and brother,

My lovely husband Sase,

My precious sons Moftah and AbdAsalam

"Be wise enough to know that you do not know everything".

H.A. Zgeiup



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✍ *Hameda AbdASalam Zgeiup*

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List of Abbreviations

Abb.		Full Term
CS	**:**	Chitosan-;P =[
CMCS	**:**	Carboxymethylchitosan
MCAA	**:**	Monochloroacetic acid
DP	**:**	Degree of Polymerization
COS	**:**	Chitooligosaccharides
DS	**:**	Degree of Substitution
DMF	**:**	N,N-Dimethylformamide
HFIP	**:**	1,1,1,2,2,2-hexafluoro-2-propanol
PAN	**:**	poly (acrylonitrile)
UF	**:**	Ultrafiltration
H	**:**	Viscosity
THF	**:**	Tetra Hydro Furan
UV	**:**	Ultra violet
PVA	**:**	Ployvinyl alcohol
Hap	**:**	Hydroxyapatite
DCM	**:**	Dichloromethane
TFA	**:**	Trifluoro acetic acid
HFIP	**:**	1,1,1,3,3,3-hexafluoro-2-propanol
PLA	**:**	poly (lactic acid)
S.aureus	**:**	Staphylococcus aureus
E. coli	**:**	Escherichia coli
QCS	**:**	quaternized chitosan
PVP	**:**	poly (vinyl pyrrolidone)
SEM	**:**	Scanning Electron Microscopy
FTIR	**:**	Fourier transform Infra Red
XRD	**:**	X- Ray Diffraction
DSC	**:**	Differential Scanning Coluorimetry
MIC	**:**	Minimum Inhibition Concentration
MBC	**:**	Minimum Bactericidal Concentration
TGA	**:**	Thermogarvimetric Analysis

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Abstract

I. Gold nanoparticles (AuNPs) was prepared via simple and green method by using polysaccharides as reducing and stabilizing agents at the same time. Hiren we used carboxymethylchitosan (CMCS) as a reducing agent for gold nanoparticle as well as capping agent. CMCS prepared based on our previous method by reacting chitosan with monochloroacetic acid in alkaline medium. AuNPs were prepared by using different concentrations of carboxymethylchitosan (0.2% w/v, 0.5% w/v and 1% w/v) at 100 ^{o}C for 1 hour. CMCS was characterized by using nitrogen content, carboxyl content and FTIR spectra. AuNPs was characterized by using UV spectrophotometry and TEM images. Finally, the cytotoxicity of the prepared AuNPs were evaluated using cell viability assay from MMT and IC_{50} values compared with AuNPs prepared by chemical methods. The results shows that AuNPs have normal distributed with 15-25 nm particle size and its cytotoxicity was lowered when prepared by this green method and can use GNPs safely in contact medical treatment with skin.