Ain Shams University
Faculty of Science
Chemistry Department

Study on utility of nano-semiconductors in solar cells

A Thesis
Submitted for the Degree of Master of Science
As Partial Fulfillment for Requirements of Master of Science
"Chemistry Department"

By

Amr Mohamed Ahmed Elattar

B.Sc. in Applied Chemistry, Faculty of Science
Ain Shams University
2011

Under Supervision of

Dr. Mostafa Mohamed Hassan Khalil

Professor of inorganic Chemistry, Faculty of Science,
Ain Shams University

Dr. Fawzy Abdel Hameed Mahmoud

Associate Professor of Physics
National Research Center

2016

Ain Shams University
Faculty of Science
Chemistry Department

Approval Sheet

Study on utility of nano-semiconductors in solar cells

By

Amr Mohamed Ahmed Elattar

B.Sc. in applied chemistry, Faculty of Science
Ain Shams University
2011

This thesis for Master degree has been approved by:

Dr. Mostafa Mohamed Hassan Khalil

Professor of inorganic Chemistry, Faculty of Science,
Ain Shams University

Dr. Fawzy Abdel Hameed Mahmoud

Associate Professor of Physics, National Research Center

Head of Chemistry Department
Prof. Dr. Ibrahim Hussainy Ali Badr

Ain Shams University
Faculty of Science
Chemistry Department

Student Name: Amr Mohamed Ahmed Elattar

Scientific Degree: M.Sc.

Faculty Name: Faculty of Science – Ain Shams University

Graduation Year: 2011

Granting Year:

Head of Chemistry Department
Prof. Dr. Ibrahim Hussainy Ali Badr

بِسْمِ اللّهِ الرَّحْمنِ الرَّحِيمِ

قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

صدق اللَّهُ العظيم

سورة البقرة – الآية (32)

Acknowledgement

First I do thank Allah the most merciful for his indefinite blessings

I am indebted to ***Prof. Dr. Mostafa M. H. Khalil****, Professor of Inorganic and Analytical Chemistry, Faculty of Science, Ain Shams University, for suggesting the theme of this study, for the help and guidance he has given during his supervision of this work and without which fulfillment of this work would be impossible, for helping and revising the whole manuscript.*

I would like to express my deepest appreciation to ***Dr. Fawzy A. Mahmoud,*** *Assistant Professor of Physics Department, National Research Center, for offering me the opportunity to carry out this interesting research work under her kind supervision and guidance and for his helping me for writing the thesis.*

Contents

Chapter 3: Results and Discussion

List of tables and schemes

List of figures