بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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

MONA MAGHRABY

Ain Shams University
Faculty of Education
Department of Chemistry

"Production and Characterization of Nanomaterials based on alkaline-earth stannate for different potential Applications"

A Thesis submitted

By

Zynab Abd ELhamed Abd Elraoof Goubish

B.Sc.Ed.2005; MSc. 2011

In partial fulfillment for

Requirements of Doctor of philosophy Degree for Teacher's Preparation in Science

(Inorganic Chemistry)

Under the Supervisors

Prof. Dr. Maged Abdeltawab El- Kemary

Prof .Dr. Mona Mostafa Ali

Prof .Dr. Hoda Saied Hafez

Ass. Prof. Dr. Hala Rashad Ahmed

Dr. Raghda Kamal

Ain Shams University

Cairo, A.R. Egypt

2021

"Production and Characterization of Nanomaterials based on alkaline-earth stannate for different potential Applications"

Thesis submitted

By

Zynab Abd ELhamed Abd Elraoof Goubish

M.D 2011

The Degree of Ph.D for the Teacher's Preparation in Science

(Inorganic Chemistry)

To

Chemistry Department
Faculty of Education
Ain Shams University

Cairo, Egypt

2020

"Production and Characterization of Nanomaterials based on alkaline-earth stannate for different potential Applications"

By

Zynab Abd ELhamed Abd Elraoof Goubish

Under the Supervision

Prof. Dr. Maged Abdeltawab El- Kemary
Prof. of Photochemistry and nanotechnology, Insitute Science and nanotechnology , Kafrelsheikh University

Dr. Mona Mostafa Ali

Prof. of inorganic chemistry, Faculty of Education, Ain Shams University

Dr. Hoda Saied Hafez
Prof. of chemistry, Environmental Studies and Research Institute "ESRI", Sadat University.

Dr. Hala Rashad Ahmed

Ass. Prof. of physical chemistry, Faculty of Education, Ain Shams University

Dr. Raghda Kamal

Lecturer of physical chemistry, Faculty of Education, Ain Shams University

Approval Sheet

Name of candidate: **Zaynab Abd ELhamed Abd Elraoof Ghubish**

Degree: **Ph.D. Sc. Degree for the Teacher's Preparation in Science (Inorganic Chemistry)**
Thesis Title: **"Production and Characterization of Nanomaterials based on alkaline-earth stannate for different potential Applications"**

This Thesis has been approved by **Approval**

Prof. Dr. Maged Abdeltawab El- Kemary ……..

Prof. of photochemistry and nanotechnology, Insitute Science and nanotechnology , Kafrelsheikh University

Dr. Mona Mostafa Ali ……..

Prof. of inorganic chemistry, Faculty of Education, Ain Shams University

Dr. Hoda Saied Hafez ……..

Prof. of chemistry, Environmental Studies and Research Institute "ESRI", Sadat University**.**

Dr. Hala Rashad Ahmed ……..

Ass. Prof. of physical chemistry, Faculty of Education, Ain Shams University

Dr. Raghda Kamal ……..

Lecturer of physical chemistry, Faculty of Education, Ain Shams University

Title Sheet

Name of candidate: Zaynab Abd ELhamed Abd Elraoof Ghubish

Date of Birth: 9/1/1984

Place of Birth: Kafrelsheikh

Highest University Degree: Maste. Sc. & Ed., 2011

Name of University: for Kafrelsheikh

ACKNOWLEDGEMENT

First of all, my deepest thanks to Allah because my god is Allah.

- It is my pleasure to express my sincere gratitude to *Prof.* Dr. Maged. A. El-Kemary Prof. of Photochemistry and nanotechnology, Insitute Science and nanotechnology , Kafrelsheikh University and Dr.Mona Mostafa Ali, Prof. of Inorganic Chemistry for his assistance, encouragement help during this work, suggesting the present line of work, his kind supervision the work, valuable discussion reversing the thesis and putting it in the final form.
- I would like to thank Dr. Hoda Saied Hafez, Dr. Hala Rashad Ahmed and Dr. Raghda Kamal for his helping, suggesting the present line of work ,encouraging and give me confidence.
- I wish to thank my father, my mother, my brother and my sisters, for helping me in all my life.
- My deepest gratitude to all colleagues and staff members of Chemistry and physics Department

Zayanb abd elhamed

Abbreviation

CTAB	Cetyl Trimethyl Ammonium Bromide
FT-IR	Fourier transform infrared spectroscopy
Ln^{3+}	Lanthanide ions
PL	Photoluminescence
Eu^{3+}	Europium
$SrSnO_3$	Strontium stannetes
SEM	Scanning Electron Microscope
TEM	Transition Electron Microscope
APTS	3 Aminopropyltriethylsilane
$CaSn(OH)_6$	Calcium hydroxy stannate
Ksv	The Stern–Volmer quenching constant
CT	Charge transfer
Vis.	Visible

AIM OF THE WORK

Alkaline earth stannate and Alkaline hydroxy stannate with a perovskite structure have long been of theoretical and practical interest due to its attractive luminescence and photocatalytics. This nanomaterial was preparaed with doping Europium ion exhibit unique properties including lower chemical toxicity, lack of radioactive elements, greater thermal and chemical stability, owing to this advantages, nano-phosphor based on Europium doped metal-stannate and metal-hydroxy stannate have a new high photoluminescent properties for different applications such as heavy metal sensor and latent finger print. Also silver nanoparticle coated metal –stannate are used as precursor material and development for water treatment such as degradation methylene blue and reduction nitrophenol.

CONTENTS