

**SYNTHESIS AND SPECTROSCOPIC CHARACTERIZATION OF
SILVER NANOPARTICLES FROM CHEMICALLY SYNTHESIZED
SOAP (NaOH) AND BIO SYNTHESIZED SOAP (NEEM)**

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

A.R.ANGEL AARTHIKA

Reg. No: 17SPPH02

Under the supervision and guidance of

Mrs.P.DHANALAKSHMI M.Sc., SET.,



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

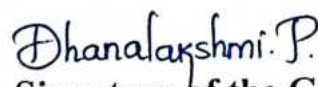
2018-2019

CERTIFICATE

This is to certify that this project work entitled "SYNTHESIS AND SPECTROSCOPIC CHARACTERIZATION OF SILVER NANOPARTICLES FROM CHEMICALLY SYNTHESIZED SOAP (NaOH) AND BIO SYNTHESIZED SOAP (NEEM)" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

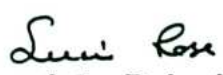
A.R.ANGEL AARTHIKA

Register No: 17SPPH02


Signature of the Guide


Signature of the SSC Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Theothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Theothukudi - 628 001.


Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "SYNTHESIS AND SPECTROSCOPIC CHARACTERIZATION OF SILVER NANOPARTICLES FROM CHEMICALLY SYNTHESIZED SOAP (NaOH) AND BIO SYNTHESIZED SOAP (NEEM)" submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018

A.R. Angel Aarthika
A.R.ANGEL AARTHIKA

Signature of the student

ACKNOWLEDGEMENT

“THANK GOD FOR EVERYTHING AND YOU WILL HAVE MORE TO BE GRATEFUL FOR“

First of all, I owe my special gratitude to the Lord Almighty for blessing me with the successful completion of this project work.

I offer a huge debt of gratitude to our principal **Rev. Dr. Sr. A.S.J. LUCIA ROSE M.Sc.,PGDCA.,M.Phil.,Ph.D.**, for the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of SSC, **Rev. Sr. PEREGRINA MARY M.A., M.Ed.**, for her support in my work.

With great fortune, I acknowledge my thanks to **Dr. S. EUCHRISTA IMMACULATE SYLVIA M.Sc., M.Phil., Ph.D.** Head of the Department, for her inspirational words and encouragement to complete this project.

I assure my words of thanks to **Mrs. P. PADMAVATHI M.Sc.,M.Phil.,SET**, Coordinator, Department of physics, (ssc) for the continuous unstinted support to ensure the success of this project.

I extend my sincere thanks to **Dr. D. NAGARAJAN M.Sc., M.Phil., Ph.D.**, Principal, Kamaraj College, Thoothukudi, for his kind permission to do the project in his institution.

I owe my deep gratitude to **Dr. J. POONGODI M.SC., M. Phil., Ph.D.**, Associate Professor, Department of Physics, Kamaraj College, for being an epitome of strength and a pillar of support till the completion of our project work by providing all the necessary information to develop a good project, inspite of her busy schedule.

I also thank **Mr. A. MATHANA GOPAL M.Sc.**, for his untiring help, guidance and encouragement in the successful completion of this project.

I would like to express my sincere gratitude to my guide **Mrs. P. DHANALAKSHMI M.Sc., SET.**, Assistant Professor, Department of Physics (SSC) for the continuous support, patience, motivation, and immense knowledge. Her guidance had encouraged me to do this project successfully.

I am grateful to my parents for their moral and emotional support to complete my work.

An endeavour over a long period cannot be successful without the advice and support of our well-wishers. I take this opportunity to express my gratitude and appreciation to all those people.

Finally my sincere thanks goes to my dear friends for their enormous support.

**SYNTHESIS OF NiO NANOPARTICLES - A NEW GREEN
TECHNIQUE USING OCIMUM SANCTUM LEAF EXTRACT**

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

S. ARULVATHANA

Reg. No: 17SPPH04

Under the supervision and guidance of

Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

2018-2019

CERTIFICATE

This is to certify that this project work entitled "SYNTHESIS OF NiO NANOPARTICLES - A NEW GREEN TECHNIQUE USING OCIMUM SANCTUM LEAF EXTRACT" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2017-2018 by

S. ARULVAHANA

Register No: 17SPPH04



Signature of the Guide



Signature of the SSC Coordinator



Signature of the Director

Director

Self Supporting Courses

St. Mary's College (Autonomous)

Thoothukudi - 628 001.



Signature of the Principal

Principal

St. Mary's College (Autonomous)

Thoothukudi - 628 001.



Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "SYNTHESIS OF NiO NANOPARTICLES - A NEW GREEN TECHNIQUE USING OCMUM SANCTUM LEAF EXTRACT" submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018

S. Arulvathana

S. ARULVATHANA

Signature of the student

ACKNOWLEDGEMENT

Praise and thanks to the lord almighty God for his constant blessing throughout this work.

I am deeply indebted to our Principal **Rev. Dr. Sr. LUCIA ROSE M.Sc., PGDCA., M.Phil., Ph.D.,** for the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of SSC, **Rev. Sr. PEREGRINA MARY M.A., M.Ed.,** for her support in my work.

I would like to express my special thanks of gratitude to **Dr.S.EUCHRISTA IMMACULATE SYLVIA M.Sc., M.Phil., Ph.D.** Head of the Department, for her inspirational words and encouragement to complete this project.

I owe my deep gratitude to **S. IRUDAYA SAHAYA LANCY M.SC., M. Phil.,** Professor, Department of Physics, ST.MARY'S College, who took keen interest on our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good project, although she had busy schedule.

I thank my husband **C. AROCLIARAJ B.Com., LLB.,** from the bottom of my heart who encouraged me to carry out my research work successfully.

I would like to express my sincere gratitude to my guide **Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,** Head of the Department of Physics (SSC) for the continuous support, patience, motivation, and immense knowledge. Her guidance had encouraged me to do this project successfully.

My heartfelt thanks to my parents, friends and all those who helped me for their good support and help to carry out research work successfully.

ACOUSTICAL PROPERTIES OF BINARY LIQUID MIXTURES
A COMPARATIVE STUDY

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

H.DILOSLIN

Reg. No: 17SPPH05

Under the supervision and guidance of

Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

2018-2019

CERTIFICATE

This is to certify that this project work entitled "ACOUSTICAL PROPERTIES OF BINARY LIQUID MIXTURES A COMPARATIVE STUDY" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

H.DILOS LIN

Register No: 17SPPH05

P. D. M. V. S. P.

Signature of the Guide

P. D. M. V. S. P.

Signature of the SSC Coordinator

P. S. S. S. S.
Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.

S. S. S. S.
Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.

P. S. S. S. S.
Signature of the Examiner
24/10/18

DECLARATION

I hereby state that the project entitled, “**ACOUSTICAL PROPERTIES OF BINARY LIQUID MIXTURES A COMPARATIVE STUDY**” submitted to **ST. MARY’S COLLEGE (AUTONOMOUS), THOOTHUKUDI**, affiliated to **MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI**, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018

H. Dioloslin

H.DILOSLIN

Signature of the student

ACKNOWLEDGEMENT

"GIVE THANKS TO THE LORD FOR HE IS GOOD"

First of all, I thank the Lord Almighty for his blessing and grace to complete this comprehension work.

I am deeply indebted to our Principal **Rev. Dr. Sr. S. LUCIA ROSE M. Sc., PGDCA., M. Phil., Ph. D.,** for the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of SSC, **Rev. Sr. PEREGRINA MARY M.A., M.Ed.,** for her support in my work.

I would like to express my special thanks of gratitude to **Dr. S. EUCHRISTA IMMACULATE SYLVIA M.Sc., M.Phil., Ph.D.** Head of the Department, for her inspirational words and encouragement to complete this project.

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I also thank **Mr. A. MATHANA GOPAL M.Sc., M.Sc.,** for his untiring help, guidance and encouragement in the successful completion of this project.

I would like to express my sincere gratitude to my guide **Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,** Assistant Professor,

Department of Physics (SSC) for the continuous support, patience, motivation, and immense knowledge. Her guidance had encouraged me to do this project successfully.

I am grateful to my parents and my sister who have provided me through moral and emotional support to complete my work.

An endeavor over a long period can be successful only with the advice and supports of many well-wishers. I take this opportunity to express my gratitude and appreciations to all these people.

Finally I am thankful and fortune enough to get support from my friend **A. Shernika, N.Nandhini and my classmates** who extended their help regarding my project.

ACKNOWLEDGEMENT

First and foremost I thank **ALMIGHTY** for keeping me hale and healthy for the successful completion of my project.

I express my deep sense of gratitude to the principal, **Rev. Dr. Sr. A.S.J. Lucia Rose M.Sc., PGDCA, M.Phil., Ph.D.**, for providing this opportunity and we are extremely thankful for all the help encouragement and invaluable moral support provided to us throughout the project work.

I'm extremely thankful to the Director of Self Supporting Course, **Rev. Sr. Peregrina Mary M.A., M.Ed.**, for providing her invaluable support throughout the project.

I would like to express my special thanks of gratitude to **Dr. S Euchrista Immaculate Sylviya M.Sc., M.Phil., Ph.D**, Head of the Department, for her inspirational words and encouragement to complete this project.

I owe my special gratitude to **Mrs. P. Padmavathi M.Sc., M.Phil., SET (Coordinator)**, Head of the Department of Physics, for her timely advice and encouragement to complete this project.

It is with deep sense of gratitude I acknowledgement my indebtedness to my project guide **Mrs. Y. Sasikala M.Sc., SET.**, Department of Physics, her inspiring guidance, encouragement and scholarly suggestion helped me to complete this work successfully.

I express my deep sense of gratitude especially to my parents for their care affection and guidance that encouraged us for the successful completion of this project work.

**FTIR ANALYSIS OF SELECTED MEDICINAL
PLANT AND FLOWER**

**A project report submitted to
DEPARTMENT OF PHYSICS**

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

**Affiliated to
MANONMANIAM SUNDARANAR UNIVERSITY,
TIRUNELVELI.**

**In partial fulfillment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS**

**Submitted by
JESU RANI VANITHA.Y**

Reg.No: 17SPPH07

**Under the supervision and guidance of
Mrs. A.NIRMALA SHIRLEY M.Sc., B.Ed., M.Phil.,**



**DEPARTMENT OF PHYSICS
ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.
(Re-accredited with 'A' Grade by NAAC)**

2017-2018

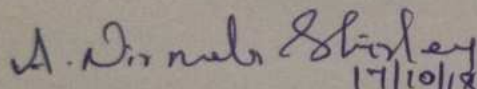
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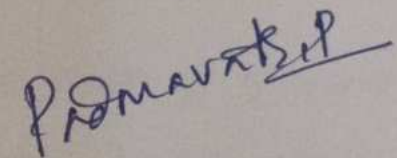
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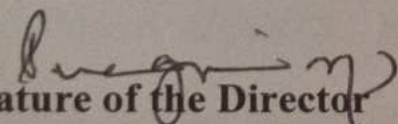
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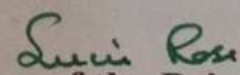
JESU RANI VANITHA.Y


Register No: 17SPPH07


17/10/18
Signature of the Guide


Signature of the SSC Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "FTIR ANALYSIS OF SELECTED MEDICINAL PLANT AND FLOWER" submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

STATION: THOOTHUKUDI

DATE: 17.10.18

Y. Jesu Rani Vanitha
JESU RANI VANITHA.Y

Register No: 17SPPH07

ACKNOWLEDGEMENT

"FOR WITH GOD NOTHING WILL BE IMPOSSIBLE"

First of all, I thank the Lord Almighty for his blessing and grace to complete this work successfully.

I am deeply indebted to our Principal Rev. Dr. Sr. LUCIA ROSE M.Sc., PGDCA. M.Phil., Ph.D. for the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of Self Supporting Courses, Rev. Sr. PEREGRINA MARY M.A., M.Ed., for her support in my work

I would like to express my special thanks of gratitude to Head of the Department, Mrs. P. PADMAVATHI M.Sc., M.Phil., SET., for her inspirational words and encouragement to complete this project.

I wish like to express my sincere gratitude to my guide Mrs. A. NIRMALA SHIRELY M.Sc., B.Ed., M.Phil., SSC Assistant Department Physics (SSC) for the continuous support, patience, motivation, and immense knowledge. Her guidance had encouraged me to do this project successfully.

I am grateful to my parents and my sister who have provided me through moral and emotional support to complete my work.

An endeavor over a long period can be successful only with the advice and supports of many well-wishers. I take this opportunity to express my gratitude and appreciations to all these people.

Finally I am thankful and fortune enough to get support from my friends and **my classmates** who extended their help regarding my project.

**FTIR ANALYSIS OF SELECTED MEDICINAL
FLOWER PETALS**

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY,

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

Jeyavathi Jefina Sugipaulin .D

Reg.No: 17SPPH08

Under the supervision and guidance of

Mrs. A.NIRMALA SHIRLEY M.Sc., B.Ed., M.Phil.



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

2017-2018


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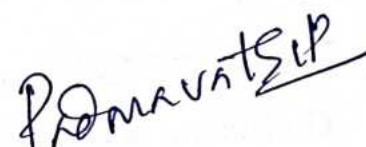
This is to certify that this project work entitled "FTIR ANALYSIS OF SELECTED MEDICINAL FLOWERS" is submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of Master of Science in physics and is a record of work done during the year 2017-2018.


By

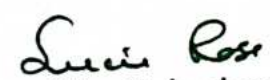
JEYAVATHI JEFINA SUGIPAULIN.D


Register No: 17SPPH08


Signature of the Guide 17/10/18


Signature of the SSC
Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Examiner 20/10/18.

DECLARATION

I hereby declare that the project entitled, "FTIR ANALYSIS OF SELECTED MEDICINAL FLOWER PETALS" submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

D. Jeyavathi Jefina Sugipaulin
Jeyavathi Jefina sugipaulin.D

Reg .No:17SPPHO8

Station: Thoothukudi.

Date: 17.10.2018

ACKNOWLEDGEMENT

"FOR WITH GOD NOTHING WILL BE IMPOSSIBLE"

First of all, I thank the Lord Almighty for his blessing and grace to complete this work successfully.

I am deeply indebted to our Principal **Rev. Dr. Sr. LUCIA ROSE M.Sc., PGDCA. M.Phil., Ph.D.** For the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of Self-supporting courses, **Rev. Sr. PEREGRINA MARY M.A., M.Ed.,** for her support in my work.

I would like to express my special thanks of gratitude to the Head of the Department of physics **Dr. S. EUCHRISTA IMMACULATE SYLVIA M.Sc., M.Phil., Ph.D.,** for her inspirational words and encouragement to complete this project.

I wish to express my special thanks of gratitude to the Head of the Department of physics(SSC), **Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,** for her support and encouragement to complete this project.

I would like to express my sincere gratitude to my guide **Mrs. A. NIRMALA SHIRLEY M.Sc., B.Ed., M.Phil.,** Assistant Professor, Department of Physics for the continuous support, patience, motivation, and immense knowledge. Her guidance has encouraged me to do this project successfully.

I am grateful to my parents who have provided moral and emotional support to me to complete my work.

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Finally I am thankful and fortune enough to get support from my friends and my **classmates** who extended their help regarding my project.

**MOLECULAR INTERACTIONS IN AQUEOUS SOLUTION OF
POLYVINYL ALCOHOL : AN ULTRASONIC STUDY**

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

**MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI.**

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

A. KISHORE SHERNIKA

Reg. No: 17SPPH09

Under the supervision and guidance of

Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

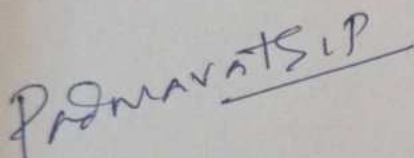
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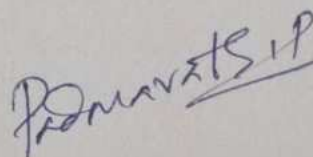
This is to certify that this project work entitled "MOLECULAR INTERACTIONS IN AQUEOUS SOLUTION OF POLYVINYL ALCOHOL : AN ULTRASONIC STUDY" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

A. KISHORE SHERNIKA

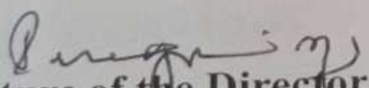
Register No: 17SPPH09



Signature of the Guide



Signature of the SSC Coordinator

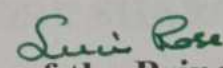

Signature of the Director

Director

Self Supporting Courses

St. Mary's College (Autonomous)

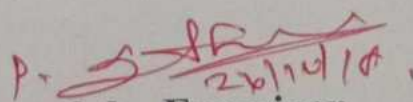
Thoothukudi - 628 001.


Signature of the Principal

Principal

St. Mary's College (Autonomous)

Thoothukudi - 628 001.

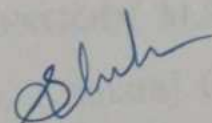

Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "**MOLECULAR INTERACTIONS IN AQUEOUS SOLUTION OF POLYVINYL ALCOHOL : AN ULTRASONIC STUDY**" submitted to **ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI**, affiliated to **MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI**, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018



A. KISHORE SHERNIKA

Signature of the student

ACKNOWLEDGEMENT

"GIVE THANKS TO THE LORD FOR HE IS GOOD"

First of all, I thank the Lord Almighty for his blessing and grace to complete this comprehension work.

I am deeply indebted to our Principal Rev. Dr. Sr. S. LUCIA ROSE M. Sc., PGDCA., M. Phil., Ph. D., for the encouragement she bestowed upon us.

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I would also thank Dr. D. NAGARAJAN M.Sc., M.Phil., Ph.D., Principal, Kamaraj College, Thoothukudi, for his kind permission to do the project in his Institution.

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Finally I am thankful and fortune enough to get support from my friend **A. Nandhini, H. Diloslin and my classmates** who extended their help regarding my project.

**AB INITIO CALCULATIONS OF THE STRUCTURAL AND
ELECTRONIC PROPERTIES OF TiO_2 , ZrO_2 AND HfO_2 USING
DENSITY FUNCTIONAL THEORY**

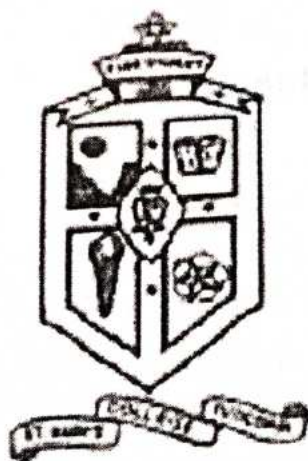
A project report submitted to
**DEPARTMENT OF PHYSICS
ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.**

Affiliated to
**MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI.**

In partial fulfilment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS

Submitted by
**K. KRISHNA VENI
Reg. No: 17SPPH10**

Under the supervision and guidance of
Y. SASIKALA M.Sc., SET.,



**DEPARTMENT OF PHYSICS
ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.
(Re-accredited with 'A' Grade by NAAC)
2018-2019**

CERTIFICATE

This is to certify that this project work entitled "AB INITIO CALCULATIONS OF THE STRUCTURAL AND ELECTRONIC PROPERTIES OF TiO_2 , ZrO_2 AND HfO_2 USING DENSITY FUNCTIONAL THEORY" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfilment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

K. KRISHNA VENI

Register No: 17SPPH10

Y. Sasi'kala

Signature of the Guide

P. Adhinarayanan

Signature of the SSC Coordinator

[Signature]
Signature of the Director
Director

Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.

[Signature]
Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.

[Signature]
Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "AB INITIO CALCULATIONS OF THE STRUCTURAL AND ELECTRONIC PROPERTIES OF TiO_2 , ZrO_2 , AND HfO_2 " submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.18

K. Krishna Veni.
K. KRISHNA VENI.

Signature of the student

ACKNOWLEDGEMENT

First and foremost, I thank **ALMIGHTY** for keeping me hale and healthy for the successful completion of my project.

I express my deep sense of gratitude to our college Principal, **Rev. Dr. Sr. A.S.J. Lucia Rose M.Sc., PGDCA, M.Phil., Ph.D.**, for providing this opportunity and we are extremely thankful for all the help encouragement and invaluable moral support provided to us throughout the project work.

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It is with deep sense of gratitude, I acknowledge my indebtedness to my project guide **Y. SASIKALA M.Sc., SET.**, Assistant Professor, Department of Physics, whose inspiring guidance, encouragement and scholarly suggestion helped me to complete this work successfully.

I express my deep sense of gratitude especially to my parents for their care, affection, guidance and encouragement for the successful completion of this project work. I thank my friend **Ms. A. Reshmina Tony** and **Ms. T. Vinoline Golda** for their encouragement and timely help for the successful completion of my project work

**SPECTROSCOPIC CHARACTERISATION AND SYNTHESIS
OF SILVER NANOPARTICLES FROM IMPREGNATED
SOAP(TULSI AND THOOTHUVALAI)**

A project report submitted to

DEPARTMENT OF PHYSICS

ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

J.MARIA ARUL JENIFA

Reg. No: 17SPPH11

Under the supervision and guidance of

Mrs.P.DHANALAKSHMI M.Sc., SET.,



DEPARTMENT OF PHYSICS

ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

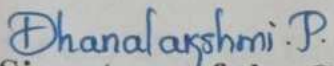
2018-2019

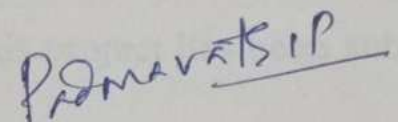
CERTIFICATE

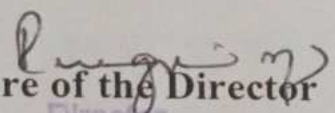
This is to certify that this project work entitled "SPECTROSCOPIC CHARACTERISATION AND SYNTHESIS OF SILVER NANO PARTICLES FROM IMPREGNATED SOAP (TULSI AND THOOTHUVALAI)" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

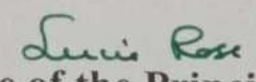
J.MARIA ARUL JENIFA

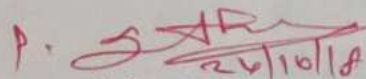
Register No: 17SPPH11


Signature of the Guide


Signature of the SSC Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "**SPECTROSCOPIC CHARACTERISATION AND SYNTHESIS OF SILVER NANO PARTICLES FROM IMPREGNATED SOAP (TULSI AND THOOTHUVALAI)**" is submitted to **ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI**, affiliated to **MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI**, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17/10/2018

J. maria Arul Jenifa
J. MARIA ARUL JENIFA

Signature of the student

ACKNOWLEDGEMENT

**"THANK GOD FOR EVERYTHING AND YOU WILL HAVE MORE
TO BE GRATEFUL FOR"**

First of all, I owe my special gratitude to the Lord Almighty for blessing me with the successful completion of this project work.

I offer a huge debt of gratitude to our principal **Rev. Dr. Sr. A.S.J. LUCIA ROSE M.Sc., PGDCA., M.Phil., Ph.D.**, for the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of SSC, **Rev. Sr. PEREGRINA MARY M.A., M.Ed.**, for her support in my work.

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An endeavour over a long period cannot be successful without the advice and support of our well-wishers. I take this opportunity to express my gratitude and appreciation to all those people.

Finally my sincere thanks goes to my dear friends for their enormous support.

**ACOUSTICAL INVESTIGATION AND ANTIOXIDANT
ACTIVITY OF BIOSYNTHESIZED SILVER
NANOPARTICLES FROM *CARICA PAPAYA*
FRUIT EXTRACT**

A project report submitted to
**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.**

Affiliated to
**MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI.**

In partial fulfillment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS

Submitted by
**B.MUTHUMARI
Reg. No: 17SPPH12**

Under the supervision and guidance of
Mrs.P.DHANALAKSHMI M.Sc., SET.,



**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.
(Re-accredited with 'A' Grade by NAAC)**

2018-2019

ACOUSTIC INVESTIGATIONS IN PVA WITH DMSO AT 305K

A project report submitted to

DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

Affiliated to

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI.

In partial fulfillment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

A.NANDHINI SURYA

Reg. No: 17SPPH13

Under the supervision and guidance of

Mrs. P. PADMAVATHI M.Sc., M.Phil., SET.,



DEPARTMENT OF PHYSICS

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

(Re-accredited with 'A' Grade by NAAC)

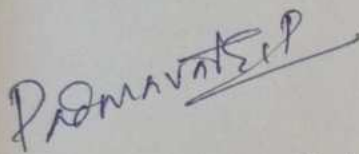
2018-2019

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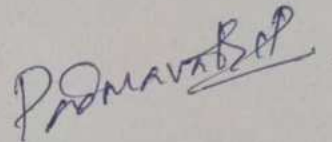
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A.NANDHINI SURYA

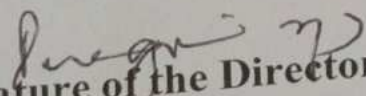
Register No: 17SPPH13



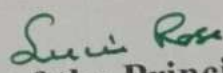
Signature of the Guide



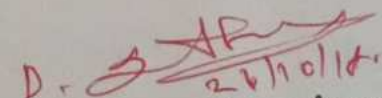
Signature of the SSC Coordinator



Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.



Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.



Signature of the Examiner

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Station: Thoothukudi

Date: 17.10.18

A. Nandhini Surya

A.NANDHINI SURYA

Signature of the student

ACKNOWLEDGEMENT

"GIVE THANKS TO THE LORD FOR HE IS GOOD"

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I am deeply indebted to our Principal **Rev. Dr. Sr. S. LUCIA ROSE M. Sc., PGDCA., M.Phil., Ph. D.**, for the encouragement she bestowed upon us.

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**ULTRASONIC STUDIES AND EVALUATION OF
ANTIOXIDANT ACTIVITY OF BIOSYNTHESIZED SILVER
NANOPARTICLES**

FROM *MALUS DOMESTICA* FRUIT EXTRACT

A project report submitted to
**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.**

Affiliated to
**MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI.**

In partial fulfillment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS

Submitted by

N.NEBILA

Reg. No: 17SPPH14

Under the supervision and guidance of
Mrs.P.DHANALAKSHMI M.Sc., SET.,



**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.
(Re-accredited with 'A' Grade by NAAC)**

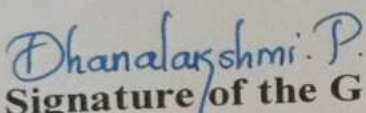
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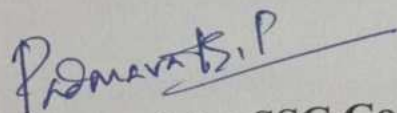
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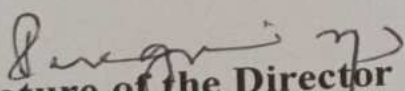
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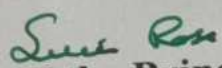
N.NEBILA

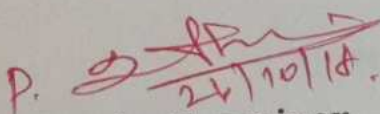
Register No: 17SPPH14


Signature of the Guide


Signature of the SSC Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "**ULTRASONIC STUDIES AND EVALUATION OF ANTIOXIDANT ACTIVITY OF BIOSYNTHESIZED SILVER NANOPARTICLES FROM BIOSYNTHESIZED *MALUS DOMESTICA* FRUIT EXTRACT**" submitted to **ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI**, affiliated to **MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI**, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018

Nebila . N
N.NEBILA

Signature of the student

ACKNOWLEDGEMENT

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**AN ANALYTIC STUDY OF DEBYE TEMPERATURE AND
GRUNEISEN PARAMETER WITH VARIATION OF PRESSURE
FOR ALKALI BROMIDES USING C++ PROGRAMMING**

In partial fulfillment of the requirements for the award of degree of

MASTER OF SCIENCE IN PHYSICS

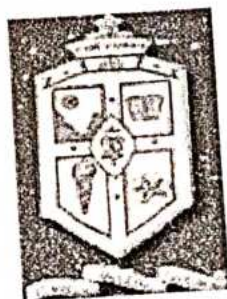
Submitted by

N.PADMA SHILPA

Reg.No:17SPPH15

Under the Supervision and Guidance of

Mrs. L. SMILA M.Sc., M.Phil.,



DEPARTMENT OF PHYSICS

**ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI-
(RE-ACCREDITED WITH "A" GRADE BY NAAC)**

2018-2019

CERTIFICATE

This is to certify that this project work entitled "AN ANALYTIC STUDY OF DEBYE TEMPERATURE AND GRUNEISEN PARAMETER WITH VARIATION OF PRESSURE FOR ALKALI BROMIDES USING C++ PROGRAMMING" is submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, Partial fulfillment for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

N. PADMA SHILPA


Reg.No: 17SPPH15



Signature of the Guide

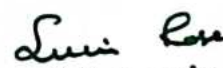


Signature of the SSC Coordinator


Signature of the Director

Director

Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.


Signature of the principal
Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.
Signature of the Examiner

DECLARATION

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Station: Thoothukudi

N.Padma Shilpa
N.Padma Shilpa

Date: 17.10.2018

Reg.No:17SPPH15

ACKNOWLEDGEMENT

First and foremost I thank **ALMIGHTY** for keeping me hale and healthy for the successful completion of my project.

I express my deep sense of gratitude to the principal, **Rev. Dr. Sr. A.S.J. Lucia Rose M.Sc., PGDCA, M.Phil., Ph.D.**, for providing this opportunity and we are extremely thankful for all the help encouragement and invaluable moral support provided to us throughout the project work.

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It is with deep sense of gratitude I acknowledgement my indebtedness to my project guide **Mrs. L. Smila M.Sc., M.Phil.**, Department of Physics, her inspiring guidance, encouragement and scholarly suggestion helped me to complete this work successfully.

I express my deepest gratitude to my beloved parents and friends for their care affection and guidance that encouraged us for the successful completion of this project work.

**THEORETICAL INVESTIGATIONS OF THE
STRUCTURAL AND ELECTRONIC PROPERTIES OF
GROUP III NITRIDES (GaN, InN AND AlN) USING
DENSITY FUNCTIONAL THEORY**

A project report submitted to
**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.**

Affiliated to
**MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI.**

In partial fulfilment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS

Submitted by
A. RESHMINA TONY

Reg. No: 17SPPH17

Under the supervision and guidance of
Mrs. Y. SASIKALA M.Sc.,SET.



**DEPARTMENT OF PHYSICS
ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.**

(Re-accredited with 'A' Grade by NAAC)

2018-2019

CERTIFICATE

This is to certify that this project work entitled "THEORETICAL INVESTIGATIONS OF THE STRUCTURAL AND ELECTRONIC PROPERTIES OF GROUP III NITRIDES (GaN, InN AND AlN) USING DENSITY FUNCTIONAL THEORY" is submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfilment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2018-2019 by

A. RESHMINA TONY

Reg. No.:17SPPH17

Y. Sasi Kala

Signature of the Guide

P. Anavatsip

Signature of the SSC Coordinator

[Signature]
Signature of the Director

Director

Self Supporting Courses

St. Mary's College (Autonomous)

Thoothukudi - 628 001.

[Signature]
Signature of the Principal

Principal

St. Mary's College (Autonomous)

Thoothukudi - 628 001.

[Signature]
Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "THEORETICAL INVESTIGATIONS OF THE STRUCTURAL AND ELECTRONIC PROPERTIES OF GROUP III NITRIDES (GaN, InN AND AlN) USING DENSITY FUNCTIONAL THEORY" submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

Station: Thoothukudi

Date: 17.10.2018

A. Reshmina Tony

A.RESHMINA TONY

Signature of the student

ACKNOWLEDGEMENT

First and foremost I thank **ALMIGHTY** for keeping me hale and healthy for the successful completion of my project.

I express my deep sense of gratitude to the principal, **Rev. Dr. Sr. A.S.J. LUCIA ROSE M.Sc., PGDCA, M.Phil., Ph.D.**, for providing this opportunity and we are extremely thankful for all the help, encouragement and invaluable moral support provided to us throughout the project work.

I'm extremely thankful to the Director of Self Supporting Course, **Rev. Sr. PEREGRINA Mary M.A., M.Ed.**, for providing her invaluable support throughout the project.

I would like to express my special thanks of gratitude to **Dr.S.EUCHRISTA IMMACULATE SYLVIYA M.Sc., M.Phil., Ph.D**, Head of the Department, for her inspirational words and encouragement to complete this project.

I owe my special gratitude to **Mrs. P. PADMAVATHI M.Sc., M.Phil., SET (Coordinator)**, Head of the Department of Physics, for her timely advice and encouragement to complete this project.

It is with deep sense of gratitude I acknowledge my indebtedness to my project guide **Mrs. Y. SASIKALA M.Sc., SET.**, Department of Physics, her inspiring guidance, encouragement and scholarly suggestion helped me to complete this work successfully.

I express my deep sense of gratitude especially to my parents for their care, affection and guidance that encouraged us for the successful completion of this project work.

FTIR ANALYSIS OF SELECTED MEDICINAL PLANTS

**A project report submitted to
DEPARTMENT OF PHYSICS**

ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.

**Affiliated to
MANONMANIAM SUNDARANAR UNIVERSITY,
TIRUNELVELI.**

**In partial fulfillment of the requirements for the award of
MASTER OF SCIENCE IN PHYSICS**

**Submitted by
SUGANYA.P**

Reg.No: 17SPPH18

**Under the supervision and guidance of
Mrs. A.NIRMALA SHIRLEY M.Sc., B.Ed., M.Phil.,**



**DEPARTMENT OF PHYSICS
ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI.
(Re-accredited with 'A' Grade by NAAC)
2017-2018**

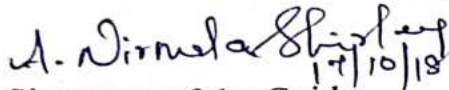
CERTIFICATE

This is to certify that this project work entitled "FTIR ANALYSIS OF SELECTED MEDICINAL PLANTS" is submitted to ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, in partial fulfillment of requirements for the award of MASTER OF SCIENCE IN PHYSICS and is a record of work done during the year 2017-2018.


By

SUGANYA.P

Register No: 17SPPH18


Signature of the Guide


Signature of the SSC Coordinator


Signature of the Director
Director
Self Supporting Courses
St. Mary's College (Autonomous)
Theothukudi - 628 001.


Signature of the Principal
Principal
St. Mary's College (Autonomous)
Theothukudi - 628 001.


Signature of the Examiner

DECLARATION

I hereby state that the project entitled, **"FTIR ANALYSIS OF SELECTED MEDICINAL PLANTS"** submitted to **ST. MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI**, affiliated to **MANONMANIAM SUNDARANAR UNIVERSITY TIRUNELVELI**, for the award of the Degree of Master of Science in Physics is my unique work and no part of this project has been submitted for any Degree, Diploma or other similar titles.

STATION: THOOTHUKUDI

DATE : 17.10.2018

P. Suganya
SUGANYA.P

REG.NO:17SPPH18

ACKNOWLEDGEMENT

"FOR WITH GOD NOTHING WILL BE IMPOSSIBLE"

First of all, I thank the Lord Almighty for his blessing and grace to complete this work successfully.

I am deeply indebted to our Principal Rev. Dr. Sr. LUCIA ROSE M.Sc., PGDCA., M.Phil., Ph.D. For the encouragement she bestowed upon us.

I wish to express my sincere thanks to our Director of Self Supporting Courses, Rev. Sr. PEREGRINA MARY M.A., M.Ed., for her support in my work.

I would like to express my special thanks of gratitude to the Head of the Department of Physics Dr. S. EUCHRISTA IMMACULATE SYLVIA M.SC., M.Phil., Phil.D., for her inspirational words and encouragement to complete this work.

I wish to express my special thanks of gratitude to the Head of the Department of Physics (SSC), Mrs. P. PADMAVATHI M.Sc., M.Phil., SET., for her support and encouragement to complete this project.

I would like to express my sincere gratitude to my guide Mrs. A. NIRMALA SHIRELY M.Sc., B.Ed., M.Phil., Assistant professor Department of Physics, for the continuous support, patience, motivation, and immense knowledge. Her guidance had encouraged me to do this project successfully.

I am grateful to my parents and my sister who have provided me through moral and emotional support to complete my work.

An endeavor over a long period can be successful only with the advice and supports of many well-wishers. I take this opportunity to express my gratitude and appreciations to all these people.

Finally I am thankful and fortunate enough to get support from my friends and my classmates who extended their help regarding my project.

**A STUDY ON COMPARISON OF JACOBI, GAUSS SEIDEL
AND SOR ITERATIVE METHODS FOR THE SOLUTION
OF SYSTEM OF LINEAR EQUATIONS
USING C++ PROGRAMMING**

In partial fulfilment of the requirements for the award of

MASTER OF SCIENCE IN PHYSICS

Submitted by

T. VINOLINE GOLDA

Reg.No: 17SPPH19

Under the Supervision and Guidance of

Mrs. L. SMILA, M.Sc., M.Phil.,



DEPARTMENT OF PHYSICS

ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI

(Re-accredited with 'A' Grade by NAAC)

2018-2019

CERTIFICATE


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T. VINOLINE GOLDA

Reg.No: 17SPPH19



Signature of the Guide



Signature of the SSC Coordinator



Signature of the Director

Director
Self Supporting Courses
St. Mary's College (Autonomous)
Thoothukudi - 628 001.



Signature of the principal

Principal
St. Mary's College (Autonomous)
Thoothukudi - 628 001.



Signature of the Examiner

DECLARATION

I hereby state that the project entitled, "A STUDY ON COMPARISON OF JACOBI, GAUSS-SEIDEL AND SOR ITERATIVE METHODS FOR THE SOLUTION OF SYSTEM OF LINEAR EQUATIONS USING C++ PROGRAMMING" submitted to ST.MARY'S COLLEGE (AUTONOMOUS), THOOTHUKUDI, affiliated to MANONMANIAM SUNDARANAR UNIVERSITY, THIRUNELVELI, for the award of the Degree of Master of Science in physics is my unique work and that no part of this project has been submitted for any Degree, Diploma or other similar titles.

T. Vinoline Golda

Station: Thoothukudi

T. VINOLINE GOLDA

Date: 17.10.18

Reg. No: 17SPPH19

ACKNOWLEDGEMENT

First and foremost I thank **ALMIGHTY** for keeping me hale and healthy for the successful completion of my project.

I express my deep sense of gratitude to the principal, **Rev. Dr. Sr.A.S.J. Lucia Rose, M.Sc., PGDCA, M.Phil., Ph.D.,** St. Mary's college(Autonomous), Thoothukudi, for her immense support and encouragement.

I'm extremely thankful to the Director of SSC, **Rev. Sr. Peregrina Mary, M.A., M.Ed.,** for providing her invaluable support throughout the project.

I would like to express my special thanks of gratitude to **Dr. S. Euchrista Immaculate Sylviya M.Sc., M.Phil., Ph.D.,** Head of the Department, for her inspirational words and encouragement to complete this project.

I own my special gratitude to **Mrs. P. Padmavathi, M.Sc., M.Phil., SET (Coordinator),** for her timely advice and encouragement to complete this project.

It is with deep sense of gratitude I acknowledge my indebtedness to my project guide **Mrs.L. Smila, M.Sc., M.Phil.,** Department of Physics, her inspiring guidance, encouragement and scholarly suggestion helped me to complete this work successfully.

I express my deepest gratitude especially to my beloved parents, family members especially **Ms. T. Seline Golda** and friends for being my source of inspiration through the entire course to make it a successful one.