

A Potent Schiff base as a Colorimetric sensor for Co^{2+} Ions

*A Project report submitted to Department of Chemistry, FATIMA COLLEGE
(Autonomous), In partial fulfillment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

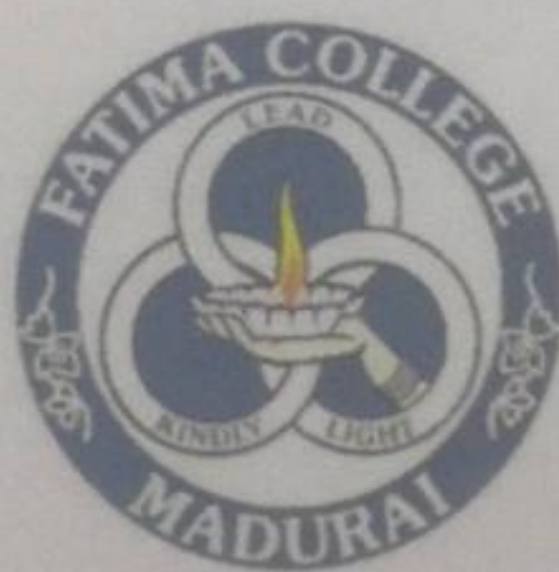
A.ASHA BANU

(Reg. No:2021MSCC01)

Under the Guidance of

Dr. J.Jone Celestina

Assistant professor



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (Autonomous)

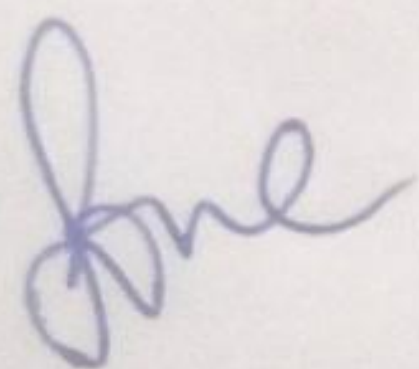
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Madurai- 625018.

April – 2023

CERTIFICATE

This is to declare that the dissertation entitled "**Potent Schiff base as a Colorimetric sensor for Co^{2+} Ions**" Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by **A.ASHA BANU** during the period of her study in the Department of Chemistry, Fatima College, Madurai.



Internal Guide

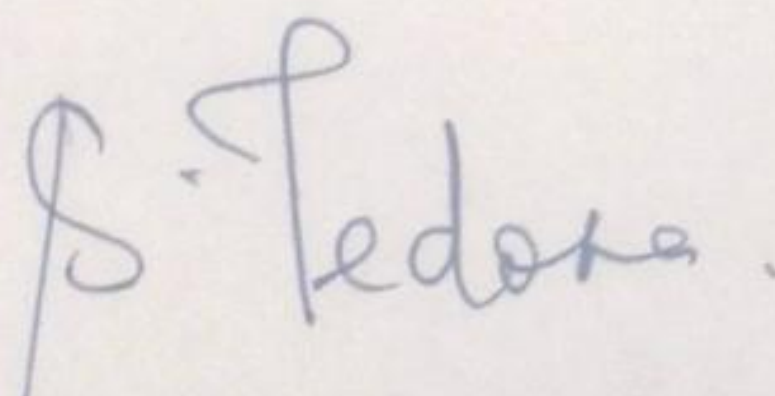
Dr. J. JONE CELESTINA

Assistant Professor

Department of Chemistry

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Head of The Department

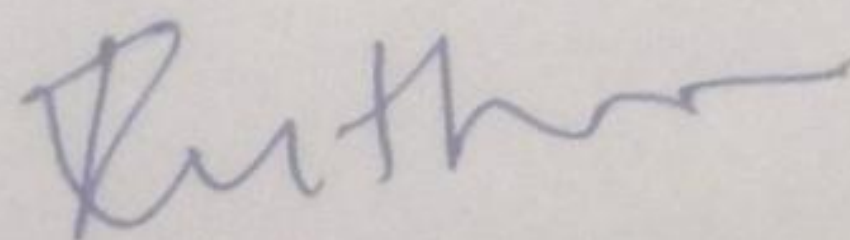
Dr. B. MEDONA,

Associate Professor & Head

Department of Chemistry

Fatima College

Madurai.



DECLARATION

I hereby declare that this project work entitled "A Potent Schiff base as a Colorimetric sensor for Co^{2+} Ions" has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr.J.Jone Celestina**, Assistant Professor, Department of Chemistry, Fatima college, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date: 12.4.23

A. Asha Banu
(A.ASHA BANU)

(Reg.No.2021MSCC01)

ACKNOWLEDGEMENT

"Praise and Glory always be to God"

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

My indebted thanks to **Dr. J. JONE CELESTINA**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

I take my immense pleasure to thank my parents **B. APPAS** and **A. ISHABEEVI**, who are the pillars of my life, encouraged and stand with me in all stages of my life.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

A. Asha Banu
[A.ASHA BANU]

**DEVELOPMENT AND CHARACTERIZATION OF ZINC- ION
CONDUCTING BATTERY ON BIOMATERIAL MEMBRANE
AS ELECTROLYTE BASED ON AZADIRACHTA INDICA
(NEEM FLOWER) INCORPORATED WITH ZINC NITRATE**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. M. BHAVANI

(Register No: 2021MSCC02)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

Director,

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B. Medona
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Dr. B.MEDONA

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DEPARTMENT OF CHEMISTRY

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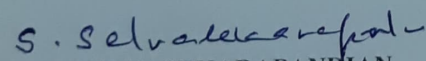
(RE-ACCREDITED WITH 'A⁺⁺' GRADE BY NAAC)

MARYLAND, MADURAI-625018.

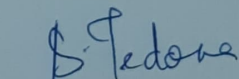
APRIL 2023

BONAFIDE CERTIFICATE

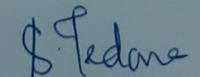
This is to certify that the project report entitled "DEVELOPMENT AND CHARACTERIZATION OF ZINC-ION CONDUCTING BATTERY ON BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA(NEEM FLOWER) INCORPORATED WITH ZINC NITRATE" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN CHEMISTRY. This is the record of original project work done by M.BHAVANI at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. B. MEDONA, Head and Associate Professor, Department of Chemistry, Fatima College, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S.SELVASEKARAPANDIAN

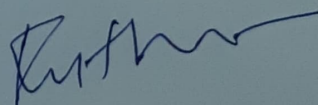
Director,
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Coimbatore-641045.


Dr. B. MEDONA

Head and Associate Professor,
Department of chemistry,
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Madurai-625018.


Dr. B. MEDONA

Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai-625018.



DECLARATION

I do hereby declare that this dissertation entitled “DEVELOPMENT AND CHARACTERIZATION OF ZINC- ION CONDUCTING BATTERY ON BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) INCORPORATED WITH ZINC NITRATE” has been carried out by M. BHAVANI (Reg.No:2021MSCC02) and submitted to Department of Chemistry, Fatima College, Madurai-18 in a partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year, 2021 – 2023.

Place: Madurai

Date:

M. Bhavani

M.BHAVANI

Reg.No:2021MSCC02,

II M.Sc .CHEMISTRY,

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MARY LAND,

MADURAI-625018.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai-18 for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai-18 for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore & Emeritus professor, Bharathiar University, Coimbatore, for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

My indebted thanks to **Dr. B. MEDONA**, Head and Associate Professor, Department of Chemistry, Fatima College, Madurai-18 for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

I thank **R. MEERA NAACHIYAR, S.AAFRIN HAZAANA, N. MUNIRAJ@VIGNESH, M. KANI AJAY BABU, P. MOHANAA MUTHUSELVI**, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. M. MURUGESHWARI** for her motivation and support during this project. I thank my Father **Mr. K. MURUGAN** for giving me strength to chase my dreams. He will always be in my heart because in there he is still alive. And also I would like to thank my friends for their valuable support.

M. Bhavani
(M.BHAVANI)

DEVELOPMENT AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM FORMATE FOR FABRICATION OF PROTON BATTERY

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

Submitted by

Ms. N. DEEPTHI

(Register No: 2021MSCC03)

EXTERNAL GUIDE

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Director,

Materials Research Center,

Coimbatore &

Emeritus Professor,

Bharathiar University,

Coimbatore-641045

INTERNAL GUIDE

Dr. S. SUKUMARI

Associate Professor,

Department of chemistry

Fatima College

Madurai-625018.



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

(RE-ACCREDITED WITH 'A' GRADE BY NAAC)

MARY LAND, MADURAI - 625018

APRIL 2023

BONAFIDE CERTIFICATE

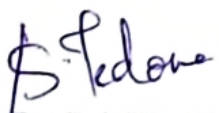
This is to certify that the project report entitled "DEVELOPMENT AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM FORMATE FOR FABRICATION OF PROTON BATTERY" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN CHEMISTRY. This is the record of original project work done by N. DEEPTHI at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. S. SUKUMARI Associate Professor, Department of Chemistry, Fatima college, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
Bharathiar University,
Coimbatore-641045.


Dr. S. SUKUMARI

Associate Professor,
Department of chemistry
Fatima College
Madurai-625018.


Dr. B. MEDONA

Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai-625018



DECLARATION

I do hereby declare that this dissertation entitled "**DEVELOPMENT AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM FORMATE FOR FABRICATION OF PROTON BATTERY**" has been carried out by **N.DEEPTHI**, (Reg.No:2021MSCC03) and submitted to Department of Chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of **MASTER OF SCIENCE IN CHEMISTRY**, during the academic year, 2021 – 2023.

Place: Madurai

Date: 12/4/23

N.Deepthi

N.DEEPTHI

Reg.No:2021MSCC03,

II M.Sc CHEMISTRY,

FATIMA COLLEGE,

MARY LAND,

MADURAI-18.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

My indebted thanks to **Dr. S. SUKUMARI**, Associate Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

I thank **S. AAFRIN HAZAANA, R. MEERA NAACHIYAR, N. MUNIRAJ@VIGNESH M.KANI AJAY BABU & P. MOHANAA MUTHUSELVI** Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. N. MAGESWARI** for her motivation and support during this project. I thank my Father **Mr. M. NAMBURAJAN**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

N. Deepthi
(N.DEEPTHI)

Aminoantipyrine based Schiff base as a selective sensor for Co^{2+} ions

*A Project report submitted to Department of Chemistry, FATIMA COLLEGE
(Autonomous), In partial fulfillment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

R. Hema Dharshini

(Reg. No: 2021MSCC04)

Under the Guidance of

Dr. M. Priyadharsani

Assistant professor



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (Autonomous)


(Re-Accredited with "A⁺⁺" Grade by NAAC)

Madurai- 625018.

April – 2023

CERTIFICATE

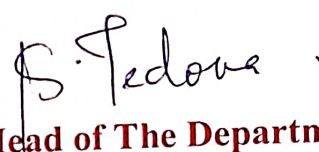
This is to declare that the dissertation entitled “**Aminoantipyrine based Schiff base as a selective sensor for Co^{2+} ions**” Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by **R. HEMA DHARSHINI** during the period of her study in the Department of Chemistry, Fatima College, Madurai.



Internal Guide

Dr. M. PRIYADHARSHINI

Assistant Professor
Department of Chemistry
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Head of The Department

Dr. B. MEDONA

Head & Associate Professor
Department of Chemistry
Fatima College
Madurai.



DECLARATION

I hereby declare that this project work entitled “Aminoantipyrine based Schiff base as a selective sensor for Co^{2+} ions” has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr. M. Priyadharsani**, Assistant Professor, Department of Chemistry, **Fatima college**, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date: 12/04/2023

R. Hemadharshini

(R. Hema Dharshini)

(Reg. No.2021MSCC04)

ACKNOWLEDGEMENT

"Praise and Glory always be to God"

I thank the Management and Principal, Fatima College, Madurai, for permitting me to carry out this project in Fatima College.

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

My indebted thanks to **Dr. M. PRIYADHARSANI** Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

I thank my parents **R. RAMESH KANNAN AND R. ANNA LAKSHMI** and my brother **R. BHUVANESH KUMAR** for their motivation during this project

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

R. Hemadharshini.

R. Hema Dharshini

ENHANCED PHOTOCATALYTIC DEGRADATION OF CATIONIC DYE BY CHEMICAL MEDIATED ZnO-Co₃O₄ NANOCOMPOSITE

*A Project report submitted for partial fulfilment of the Requirement for the
degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. A. INFANTA JENIFER

(Register No: 2021MSCC05)



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61) in the fourth cycle)

MADURAI – 625018

Under the guidance of

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,

Assistant professor



PG AND RESEARCH DEPARTMENT OF CHEMISTRY

N.M.S.S. Vellaichamy Nadar College (Autonomous)

(Re-Accredited with "A" Grade by NACC)

Nagamalai, Madurai- 625019.

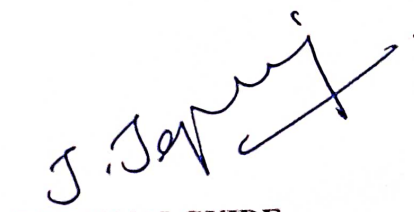
BONAFIDE CERTIFICATE

This is to certify that the project entitled **"ENHANCED PHOTOCATALYTIC DEGRADATION OF CATIONIC DYE BY CHEMICAL MEDIATED ZnO-Co₃O₄ NANOCOMPOSITE"** was carried out by **Ms INFANTAJENIFER A (REG.NO: 2021MSCC05)** under the guidance of **Dr. J. JEYASUNDARI, M.Sc., MPhil., Ph.D.,** Assistant professor, PG & Research Department of Chemistry, N.M.S.S. VELLAICHAMY NADAR COLLEGE, Nagamalai, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.



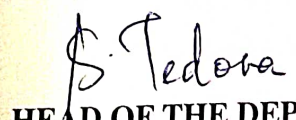
INTERNALGUIDE

Dr.B.Suganthana,
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EXTERNALGUIDE

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Madurai -625 019



HEAD OF THE DEPARTMENT
Dr. B. Medona, M.Sc., PhD.,

Associate Professor,
Department Of Chemistry,
Fatima college,
Madurai-625 018.



EXTERNALEXAMINER

DECLARATION

I do hereby declare that this dissertation entitled “**ENHANCED PHOTOCATALYTIC DEGRADATION OF CATIONIC DYE BY CHEMICAL MEDIATED ZnO-Co₃O₄ NANOCOMPOSITE**” submitted in Madurai Kamaraj University in partial fulfilment of requirement for the award of **MASTER OF SCIENCE IN CHEMISTRY**, is a record of original project work done by me at NMSSVN College, Nagamalai, Madurai – 625018. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai

Date: 10/04/2023

Infantajenifer
INFANTAJENIFER.A

(2021MSCC05)

ACKNOWLEDGEMENT

First and foremost I would like to thank omnipotent almighty who showered his choicest blessings and abounded grace, which helped in the successful completion of my project work.

I would like to express my special thanks of gratitude to our principal **Rev. Dr. Sr. G. Celine Sahaya Mary, MBA, FDP., Ph.D.** Principal, Fatima College (Autonomous), Madurai – 18 who gave me the golden opportunity to do my project , which also helped me to know about so many new things.

I am really grateful to **Dr. B. Medona, M.Sc., PhD.,** Associate professor and Head of the Department of Chemistry, Fatima College, Madurai-18 for permitting to carry out the work.

I would like to thank my external guide **Dr. J.Jeyasundari, M.Sc., M.Phil., PhD.,** Assistant Professor, PG & Research Department of Chemistry, NMSSVN College, Madurai-19 for granting permission and guiding me from time to time in making this project work.

I would like to thank the Management and Principal of N.M.S.S.V.N College for permitting me to do project successfully at N.M.S.S.V.N College. I express my heartfelt thanks to **Dr. M. Rajendran, M.Sc., M.Phil., PhD.,** Head of the Department of Chemistry, NMSSVN College for rendering me necessary facilities throughout my project.

I extend my heartfelt thanks to my internal guide **Dr.B.Suganthana,** Assistant Professor, Department of Chemistry, Fatima college, Madurai for her scholastic guidance and advice for the completion of this work.

I am extremely thankful to Ms. P. Vengatesh Priya, Research Scholar, who was there for me always throughout my journey.

I would like to mention the support and consideration of my beloved family members who have always been there in my life.

I would like to thank other faculties, friends and well-wishers for their support.

We acknowledge project fund received under **DST-CURIE** core grant for women, PG-Colleges, DST/CURIE-PG/2022/11

SYNTHESIS AND CHARACTERIZATION OF $\text{CuO-C}_3\text{O}_4$ NANOCOMPOSITE AND THEIR CATALYTIC ACTIVITY TOWARDS THE REMOVAL OF ANIONIC DYE FROM AQUEOUS SOLUTION

A Project report submitted for partial fulfillment of the Requirement for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. H. JANANI

(Register No: 2021MSCC06)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625018

Under the guidance of

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,

Assistant professor



PG AND RESEARCH DEPARTMENT OF CHEMISTRY

N.M.S.S.Vellaichamy Nadar College (Autonomous)


(Re-Accredited with “A” Grade by NACC)

Nagamalai, Madurai- 625019.

APRIL -2023


BONAFIDE CERTIFICATE

This is to certify that the project entitled "SYNTHESIS AND CHARACTERIZATION OF $\text{CuO-Co}_3\text{O}_4$ NANOCOMPOSITE AND THEIR CATALYTIC ACTIVITY TOWARDS THE REMOVAL OF ANIONIC DYE FROM AQUEOUS SOLUTION" submitted is to Fatima College, Madurai in partial fulfilment for the award of degree of Master of Science in Chemistry is a bonafide record of the work carried by Ms. **H. JANANI (2021MSCC06)** under the guidance of **Dr.J.JEYASUNDARI, M.Sc., M.Phil., Ph.D.**, Assistant, PG& Research Department of Chemistry, N.M.S.S.Vellaichamy Nadar College, Madurai - 625 019 in the academic year 2022-2023.



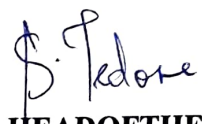
INTERNALGUIDE

Dr. B. SUGANTHANA
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EXTERNALGUIDE

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HEADOF THE DEPARTMENT
Dr. B. MEDONA,
Associate Professor,
Department of Chemistry,
Fatima College,
Madurai- 625018.



EXTERNAL EXAMINAR

DECLARATION

I hereby declare that the work entitled "SYNTHESIS AND CHARACTERIZATION OF $\text{CuO-Co}_3\text{O}_4$ NANOCOMPOSITE AND THEIR CATALYTIC ACTIVITY TOWARDS THE REMOVAL OF ANIONIC DYE FROM AQUEOUS SOLUTION" presented in this report has been carried out by me under the supervision of Dr. B. SUGANTHANA, Assistant professor, Department of Chemistry, Fatima College (autonomous), Madurai. The work presented here is in original and not formed the award of any other degree/Diploma /fellowship or other similar title to any candidate of any university.

Place: Madurai

Date: 10/04/2023

H. Janani
H.JANANI

(REG.NO: 2021MSCC06)

ACKNOWLEDGEMENT

I am over Whelmed in all humbleness and gratefulness to acknowledge my depth to all those who have helped me to put these ideas.

I would like to express my special thanks of gratitude to our principal **Rev. Dr. Sr. G. Celine Sahaya Mary, MBA, FDP., Ph.D.** Principal, Fatima College (Autonomous), Madurai- 18 who gave me the golden opportunity to do my project at N.M.S.S. VELLAICHAMY NADAR COLLEGE, which also helped me to know about so many new things.

I am really grateful the **Dr. B. Medona** Associate professor and Head of the Department of Chemistry, Fatima College, Madurai – 18 for advising me and for her constant support, inspiration and motivation throughout my work.

I would like to thank my guide **Dr.J.Jeyasundari** Assistant Professor, PG & Research Department of Chemistry, NMSSVN College, Madurai -19 who helped me a lot in gathering different information, collecting data and guiding me from time to time in making this project, despite of her busy schedules, she gave me different ideas in making this project unique.

I extend my heartfelt thanks to my internal guide **Dr. B. Suganthana** Assistant professor, Department of Chemistry, Fatima College, Madurai, for her scholastic guidance and advice for the completion of this work.

I would like to thank the Management and Principal of N.M.S.S.V.N College for permitting me to do project successfully at N.M.S.S.V.N College. I express my heartfelt thanks to **Dr. M. Rajendran, M.Sc., M.Phil., Ph.D.**, Head of the Department, Department of Chemistry, N.M.S.S.V.N College for rendering me necessary facilities throughout my project.

I am extremely thankful to Ms. **P. Vengatesh Priya**, Research Scholar, who was there for me always throughout my journey.

We acknowledge project fund received under PST – CURIE Core grant for women PG Colleges DST/CURIE – PG/ 2022/11

I would like to mention the support system and consideration of my beloved family members who have always been there in my life.

Any attempt at any level can't be satisfactorily completed without the support and guidance of other faculties, friends and well-wishers.

Development of a Potent Schiff base with biological applications

*A Project report submitted to Department of Chemistry, FATIMA COLLEGE
(Autonomous), In partial fulfillment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

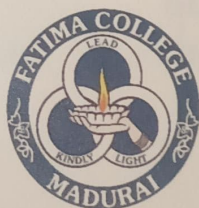
R. Janani

(Reg. No:2021MSCC07)

Under the Guidance of

Dr. J. Jone Celestina

Assistant professor



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (Autonomous)

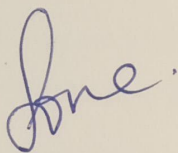
(Re-Accredited with “A⁺⁺” Grade by NAAC)

Madurai- 625018.

April – 2023

CERTIFICATE

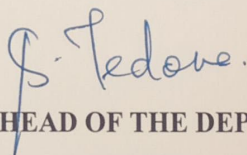
This is to declare that the dissertation entitled "**Development of A Potent Schiff base with biological applications**" Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by R.Janani during the period of her study in the Department of Chemistry, Fatima College, Madurai.



INTERNAL GUIDE

Dr. J. JONE CELESTINA, M.SC., PH.D.,

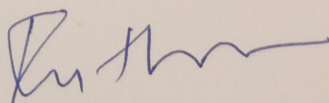
Assistant Professor,
Department of Chemistry,
Fatima college,
Madurai – 625018.



HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., PH.D.,

Associate professor,
Department of Chemistry,
Fatima College,
Madurai – 625018.



DECLARATION

I hereby declare that this project work entitled "**Development of A Potent Schiff base with biological applications**" has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr. J. Jone Celestina**, Assistant Professor, Department of Chemistry, **Fatima college**, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date:

R. Janani

R. JANANI

(REG.NO: 2021MSCC07)

ACKNOWLEDGEMENT

“Praise and Glory always be to God” We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr.Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA, M.Sc., Ph.D.**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I express my heartfelt gratitude and sincere thanks to the **Dr. J. JONE CELESTINA, M.Sc., Ph.D.**, Assistant professor, Department of chemistry, Fatima college, Madurai for granting permission and guiding me in this project.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

Special thanks to all the staff members department of Chemistry. I would particularly like to express my gratitude to all my classmates and scholars for helping and encouraging me to finish my work, special word of thanks to my dear friends.

Finally last but by no means least I wish to thank my family, for all your encouragement and support.

A NOVEL AMINOANTIPYRINE BASED SCHIFF BASE METAL COMPLEXES WITH BIOLOGICAL ACTIVITY

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**)

Madurai

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. D.Jasmine Jenobha

(Register No: 2021MSCC08)

Under the guidance of

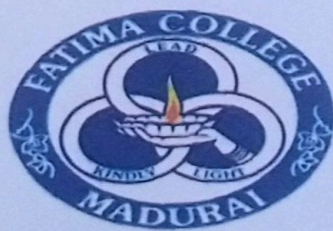
Dr.M.Priyadharshini

Assistant Professor,

Department of chemistry

Fatima College

Madurai



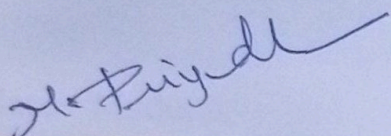
**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**
(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)

MARY LAND, MADURAI - 625018

APRIL 2023

CERTIFICATE

This is to declare that the dissertation entitled "**A novel aminoantipyrine based Schiff base metal complexes with biological activity**" Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by D. **JASMINE JENOBHA** during the period of her study in the Department of Chemistry, Fatima College, Madurai.



Internal Guide

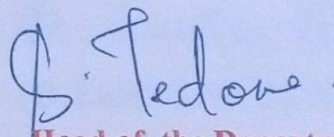
Dr. M. Priyadharsani

Assistant Professor

Department of Chemistry

Fatima College

Madurai.



Head of the Department

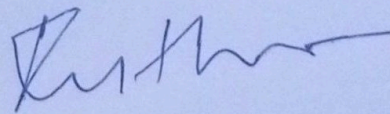
Dr. B. Medona

Associate Professor & Head

Department of Chemistry

Fatima College

Madurai.



DECLARATION

I hereby declare that this project work entitled “**A novel aminoantipyrine based Schiff base metal complexes with biological activity**” has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr. M. Priyadharsani**, Assistant Professor, Department of Chemistry, **Fatima college**, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

D. Jasmine Jenobha
(D.JASMINE JENOBHA)

Place :Madurai

Date : 10.04.2023

(2021MSCC08)

ACKNOWLEDGEMENT

“Praise and Glory always be to God”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

My indebted thanks to **Dr.M.PRIYADHARSHINI**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

I thank my parents **F.DANIAL JOSEPH**, and **D.KULANDHAI THERESE** for their support during this project.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

[D.JASMINE JENOBHA]

**SYNTHESIS AND CHARACTERIZATION OF ORGANOGEL: A N-
LINKED GLYCOSIDES USING P-TOLUIDINE
A PROJECT REPORT SUBMITTED FOR PARTIAL FULFILMENT OF
THE REQUIREMENT FOR THE AWARD OF DEGREE OF
MASTER OF SCIENCE IN CHEMISTRY**

Submitted by

K.LOGESHWARI

(REG.NO: 2021MSCC11)



FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625018.

Under the guidance of

**Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.,
ASSISTANT PROFESSOR**



Since 1881

PG AND RESEARCH DEPARTMENT OF CHEMISTRY

THE AMERICAN COLLEGE (Autonomous)

(Re-Accredited with "A" Grade by NAAC)

MADURAI-625002 (APRIL 2023)



OMCRL
(Formulation & Drug Consultancy Services)

E05-Viprossa,
Thuvariman,
Madurai – 625019,
Tamilnadu

Date: 01.04.2023

CERTIFICATE

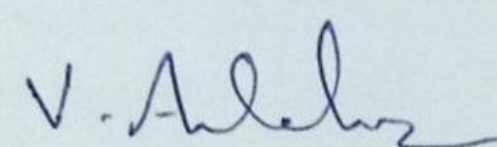
This is to certify that **Ms. K.Logeshwari** [Reg.No: 2021MSCC11],
II. M.Sc., student, Department of Chemistry(PG), **Fatima college, Madurai-18**
carried out her M.Sc., chemistry project work on “**Synthesis and
Characterization of Organogel: A N-linked glycosides using p-Toluidine**”
in the **Organic and Material Chemistry Research Laboratory, The
American College, Madurai-02** from **13.12.2022-01.04.2023**, for a period of
three months, under the guidance of **Dr. K.Karthik Kumar**, Assistant
professor, PG & Research Department of Chemistry, The American College,
Madurai-02.

Dr. K.Karthik Kumar

Dr. K. KARTHIK KUMAR
ASSISTANT PROFESSOR
PG & Research Department of Chemistry
MKU - Guideship No: 1774
The American College,
Madurai - 625002.

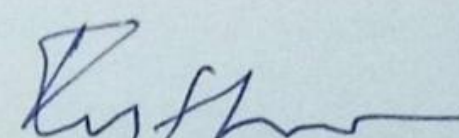
BONAFIDE CERTIFICATE

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF ORGANOGEL: A N-LINKED GLYCOSIDES USING P-TOLUIDINE" carried out by Ms. K.LOGESHWARI (2021MSCC11) under the guidance of Dr. K. KARTHIK KUMAR, M.Sc. Ph.D., Assistant professor, PG & Research Department of chemistry, **ORGANIC AND MATERIAL CHEMISTRY RESEARCH LABORATORY**, The American college, Madurai-625002 and submitted to Department of chemistry, Fatima college Madurai.



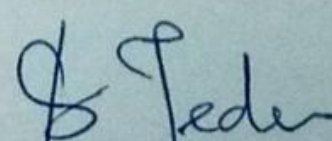
INTERNAL GUIDE

Dr. V. ARUL DEEPA MSc, MPhil, Ph.D.
Assistant professor,
Department of chemistry,
Fatima college
Madurai -625018



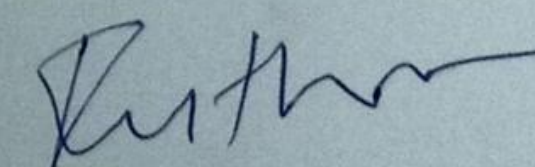
EXTERNAL GUIDE

Dr. K. KARTHIK KUMAR., MSc., Ph.D.,
Assistant professor,
PG & Research Department of Chemistry
The American college
Madurai -625 002



HEAD OF THE DEPARTMENT

Dr. B. MEDONA MSc., Ph.D.,
Associate professor,
Department of chemistry,
Fatima college Madurai-625018



DECLARATION

I do hereby solemnly declare that this project report entitled “**SYNTHESIS AND CHARACTERIZATION OF ORGANOGEL: A N-LINKED GLYCOSIDES USING P-TOLUIDINE**” submitted to Fatima college in partial fulfilment of requirement for the award of **MASTER OF SCIENCE IN CHEMISTRY**, is a record of original project work done by me at **THE AMERICAN COLLEGE**, Tallakulam, Madurai-625002. I also declare that this part of work has not been published earlier elsewhere in any manner.

PLACE: Madurai

DATE:

K. Logeshwari
K.LOGESHWARI
2021MSCC11

ACKNOWLEDGEMENT

“
Thanks be to God Almighty who gives us the Victory”

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which play a key role in the completion of the work.

I have great pleasure in expressing my sincere thanks to management and the principal **Dr. Rev. Sr. G.CELINE SAHAYA MARY**, Fatima College, Madurai for giving me permission to do the project work in The American college, Madurai.

With great pride and pleasure, I express my deep sense of gratitude to my beloved mentor for the independence he gave me to choose the project in my area of interest, his valuable and never-ending support, inspiring guidance, ceaseless encouragement during each and every stage of my project work.

I express my deep respect and gratitude to **Dr. B. MEDONA**, Associate Professor, Department of Chemistry, Fatima College for permitting to carry out the project work in The American college, Madurai.

I record my sincere thanks to my internal guide **Dr. V. ARULDEEPA**, Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

I express my heartfelt gratitude and sincere thanks to **Dr. K. KARTHIK KUMAR**, Assistant Professor, PG & Research Department of Chemistry, The American College, Madurai for granting permission and providing a congenial environment with excellent lab facilities.

I express my sincere and soulful thanks to **Ms. R. SHOBANA, Mrs. P. PANDI SUDHA, Mr. M. MANI BHARATHI, Ms. M. SUJIDHA, Ms. P. NAGA NANDHINI** Research Scholars, Organic & Material Chemistry Research Laboratory, The American College, Madurai. Especially I am very grateful to them for their help rendered in the final proof-reading of the thesis.

I also record my sincere thanks to all my department staff for their support and encouragement.

From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement.

I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

Finally, I would like to extend my gratitude towards my family and my friends for their support in carrying out this work successfully.

We acknowledge project fund received under (DST- "Curie") core grant for women PG colleges DST/CURIE-PG/2022/11

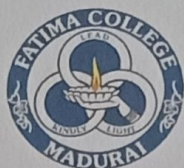
K. Logeshwari
(K. LOGESHWARI)

Synthesis and Characterization of 4,6-*O*-Ethylidene- α -D-glucopyranose based Organogel using p-chloroaniline

A Project report submitted for partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted by
V.MAGIMAGRACE
(REG.NO.2021MSCC13)



DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC
(CGPA: 3.61) in the fourth cycle)

MADURAI – 625018

Under the guidance of

Dr. K. KARTHIK KUMAR
ASSISTANT PROFESSOR



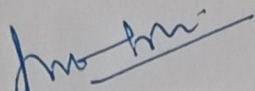
Since 1881

PG&RESEARCH DEPARTMENT OF CHEMISTRY
THE AMERICAN COLLEGE
MADURAI-625 002

APRIL-2023

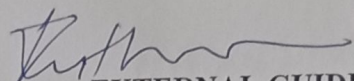
BONAFIDE CERTIFICATE

This is to certify that **Ms. V. MAGIMAGRACE**, M.Sc., (Chemistry) student of Fatima College, Madurai has done the project work entitled "**Synthesis and Characterization of 4,6-O-Ethylidene- α -D-glucopyranose based Organogel using p-chloroaniline**" the academic year 2022-2023 under the supervision of Dr. K. Karthik Kumar, Assistant Professor, PG&Research Department of chemistry, The American college, Madurai-625 002. This is to certify that no part of the work has been presented for any degree/diploma in any other form.



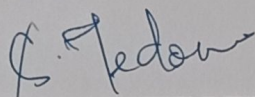
INTERNAL GUIDE

Dr. K. SUBIMOL, M.Sc., M.Phil., Ph.D.,
Assistant Professor
Department of Chemistry
Fatima college
Madurai – 625018.



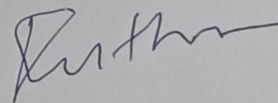
EXTERNAL GUIDE

Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.,
Assistant Professor
PG & Research Department of Chemistry
The American College
Madurai - 625002.



HEAD OF THE DEPARTMENT

Dr. B. Medona, M.Sc., Ph.D.,
Associate professor
Department of Chemistry
Fatima College
Madurai – 625 018





OMCRL
(Formulation & Drug Consultancy Services)

E05-Viprossa,
Thuvariman,
Madurai – 625019,
Tamilnadu

Date: 01.04.2023

CERTIFICATE

This is to certify that **Ms. V. Magimagrace** [Reg.No: 2021MSCC13], II. M.Sc., student, Department of Chemistry(PG), **Fatima college, Madurai-18** carried out her M.Sc., chemistry project work on “**Synthesis and Characterization of 4,6-O-Ethylidene- α -D-glucopyranose based Organogel using p-chloroaniline**” in the **Organic and Material Chemistry Research Laboratory, The American College, Madurai-02** from **13.12.2022-01.04.2023**, for a period of three months, under the guidance of **Dr. K. Karthik Kumar**, Assistant professor, PG & Research Department of Chemistry, The American College, Madurai-02.

Dr. K. Karthik Kumar

Dr. K. KARTHIK KUMAR
ASSISTANT PROFESSOR
PG & Research Department of Chemistry
MKU - Guideship No: 1774
The American College,
Madurai - 625002.

DECLARATION

I do hereby declare that this dissertation entitled "Synthesis and Characterization of 4,6-*O*-Ethylidene- α -D-glucopyranose based Organogel using p-chloroaniline " submitted to Fatima college in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY, is a record of original project work done by me at The American College Madurai - 625002. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai

Date:

V Magimagrace
V. MAGIMAGRACE
(REG.NO. 2021MSCC13)

I also record my sincere thanks to all my department staff for their support and encouragement.

From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement.

I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

We acknowledge project fund received under DST CURIE core Grant for Women PG Colleges DST/CURIE-PG/2022/11

V. Magimagrace
(V.MAGIMAGRACE)

GREEN SYNTHESIS OF TITANIUM DIOXIDE NANOPARTICLE USING *PUNITA GRANATUM* AQUEOUS LEAF EXTRACT AND EVALUATING ITS ANTIMICROBIAL ACTIVITY

*A Project report submitted for partial fulfillment of the Requirement for the
degree of*

MASTER OF SCIENCE IN CHEMISTRY

M.MANSOORUL SAJITHA THASLEEM

(REG.NO: 2021MSCC14)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625018

Under the guidance of

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,

Assistant professor



PG AND RESEARCH DEPARTMENT OF CHEMISTRY

N.M.S.S.Vellaichamy Nadar College (Autonomous)

(Re-Accredited with "A" Grade by NACC)

Nagamalai, Madurai- 625019.

APRIL-2023

BONAFIDE CERTIFICATE

This is to certify that the report entitled "**GREEN SYNTHESIS OF TITANIUM DIOXIDE NANOPARTICLE USING *PUNITA GRANATUM* AQUEOUS LEAF EXTRACT AND EVALUATING ITS ANTIMICROBIAL ACTIVITY**" was carried out by Ms. **M.MANSOORUL SAJITHA THASLEEM** (REG.NO: 2021MSCC14) under the guidance of **Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.**, Assistant professor, PG & Research Department of chemistry, N.M.S.S. VELLAICHAMY NADAR COLLEGE, Nagamalai, Madurai – 625 019 and Submitted to Department of Chemistry, Fatima college, Madurai.



INTERNAL GUIDE

Dr. A. RAJESWARI, M.Sc., M.Phil., Ph.D.

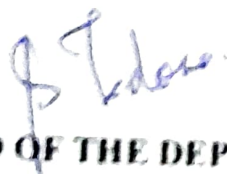
Assistant Professor,
Department of Chemistry,
Fatima college,
Madurai – 625018.



EXTERNAL GUIDE

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,

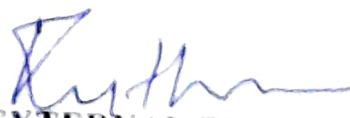
Assistant Professor,
PG & Research Department of Chemistry,
N.M.S.S.V.N College,
Madurai - 625019.



HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., Ph.D.,

Associate professor,
Department of Chemistry,
Fatima College,
Madurai – 625018.



EXTERNAL EXAMINAR

DECLARATION

I do hereby declare that this dissertation entitled "**GREEN SYNTHESIS OF TITANIUM DIOXIDE NANOPARTICLE USING *PUNITA GRANATUM* AQUEOUS LEAF EXTRACT AND EVALUATING ITS ANTIMICROBIAL ACTIVITY**" submitted to Madurai Kamaraj University in partial fulfillment of requirement for the award of **MASTER OF SCIENCE IN CHEMISTRY**, is a record of original project work done by me at NMSSVN College Nagamalai, Madurai - 625018. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

M. Mansoorul Sajitha Thasleem

Place: Madurai

M.MANSOORUL SAJITHA THASLEEM

Date: 10/04/2022

(REG.NO: 2021MSCC14)

ACKNOWLEDGEMENT

I am over Whelmed in all humbleness and gratefulness to acknowledge my depth to all those who have helped me to put these ideas.

I would like to express my special thanks of gratitude to our principal **Rev. Dr. Sr. G. CELINE SAHAYA MARY, MBA, FDP., Ph.D.** Principal, Fatima College (Autonomous), Madurai – 18 who gave me the golden opportunity to do my internship at N.M.S.S. VELLAICHAMY NADAR COLLEGE, which also helped me to know about so many new things.

I am really grateful the **Dr. B. MEDONA M.Sc., Ph. D** Associate professor and Head of the Department of Chemistry, Fatima College, Madurai – 18 for advising me and for her constant support, inspiration and motivation throughout my work.

I extend my heartfelt thanks to my internal guide **Dr.A.RAJESWARI M.Sc., M.Phil., Ph.D.**, Assistant professor, Department of Chemistry, Fatima College, Madurai, for her scholastic guidance and advice for the completion of this work.

I would like to thank my guide **Dr.J.JEYASUNDARIM.Sc., M.Phil.,Ph.D.**, Assistant Professor, PG & Research Department of Chemistry, NMSSVN College, Madurai -19 who helped me a lot in gathering different information, collecting data and guiding me from time to time in making this internship work, despite of her busy schedules, she gave me different ideas in making this work unique.

I would like to thank the Management and Principal of N.M.S.S.V.N College for permitting me to do work successfully at N.M.S.S.V.N College. I express my heartfelt thanks to **Dr. M. RAJENDRAN, M.Sc., M.Phil., Ph.D.**, Head of the Department, Department of Chemistry, N. M. S. S.V. N College for rendering me necessary facilities throughout my work.

I am extremely thankful to **Ms. P. VENGATESH PRIYA**, Research Scholar, who was there for me always throughout my journey.

We acknowledge project fund received under PST – CURIE Core grant for women PG Colleges DST/CURIE – PG/ 2022/11

I would like to mention the support system and consideration of my beloved family members who have always been there in my life.

Any attempt at any level can't be satisfactorily completed without the support and guidance of other faculties, friends and well-wishers.

**DEVELOPMENT AND CHARACTERIZATION OF
BIOMATERIAL MEMBRANE AS ELECTROLYTE
BASED ON AZADIRACHTA INDICA (NEEMFLOWER)
AND
SODIUM PERCHLORATE FOR FABRICATION OF
SODIUM ION BATTERY**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

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

Submitted by

Ms. P. MATHU MEENA

(Register No: 2021MSCC15)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

Director,

Materials Research Center,

Coimbatore &

Emeritus Professor,

Bharathiar University,

Coimbatore-641045

INTERNAL GUIDE

Dr. S. SUKUMARI

Associate Professor,

Department of chemistry

Fatima College

Madurai-625018



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

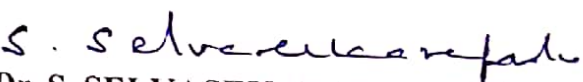
(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)

MARYLAND, MADURAI-625018


APRIL 2023

BONAFIDE CERTIFICATE

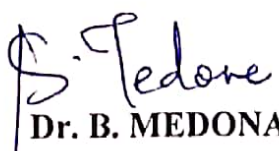
This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND SODIUM PERCHLORATE" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN CHEMISTRY. This is the record of original project work done by P. MATHU MEENA at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. S. SUKUMARI, Associate professor, Department of Chemistry, Fatima college, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
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Coimbatore-641045


Dr. S. SUKUMARI

Associate Professor,
Department of chemistry
Fatima College
Madurai-625018


Dr. B. MEDONA
Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai.



DECLARATION

I do hereby declare that this dissertation entitled **“SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND SODIUM PERCHLORATE”** has been carried out by **P. MATHU MEENA**, (Reg.No:2021MSCC15) and submitted to Department of Chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of **MASTER OF SCIENCE IN CHEMISTRY**, during the academic year, 2021 – 2023.

Place: Madurai

Date: 12/4/23

P. Mathu Meena

P. MATHU MEENA

Reg.No:2021MSCC15

II M.Sc CHEMISTRY,

FATIMA COLLEGE,

MARY LAND,

MADURAI-18.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

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We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

I thank **R. MEERA NAACHIYAR, S. AAFRIN HAZAANA, N. MUNIRAJ@VIGNESH M. KANI AJAY BABU & P. MOHANAA MUTHUSELVI** Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. P. VASUKI**, for her motivation and support during this project. I thank my Father **Mr. M. PANDIARAJAN**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

P. Mathu Meena
(P. MATHU MEENA)

SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH LITHIUM NITRATE FOR THE FABRICATION OF LITHIUM ION BATTERY

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. R.C.PERARASI

(Register No: 2021MSCC16)

EXTERNAL GUIDE

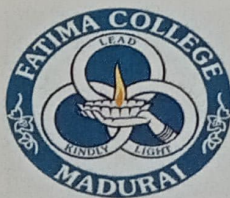
Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
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Emeritus Professor,
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Coimbatore-641045

INTERNAL GUIDE

Dr. B. SUGANTHANA

Assistant Professor,
Department of Chemistry
Fatima College
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DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)

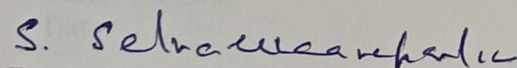
(RE-ACCREDITED WITH 'A⁺⁺' GRADE BY NAAC)

MARY LAND , MADURAI-625018

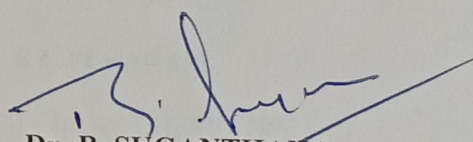
APRIL 2023

BONAFIDE CERTIFICATE

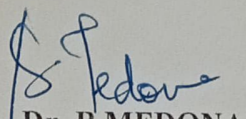
This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH LITHIUM NITRATE FOR THE FABRICATION OF LITHIUM ION BATTERY submitted to Fatima College, Madurai, in partial fulfilment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **R. C. PERARASI** at Materials Research Center, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr.B. SUGANTHANA**, Associate Professor, Department of Chemistry and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

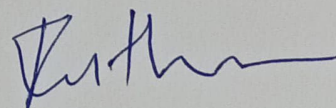
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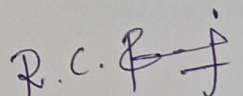


DECLARATION

I do hereby declare that this dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE BASED ON AZADIRCHTA INDICTA AND LITHIUM NITRATE has been carried out by R.C.PERARASI (2021MSCC16) and submitted to DEPARTMENT OF CHEMISTRY, Fatima College , Madurai in a partial fulfilment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year, 2021-2023 .

Place: Madurai

Date :



R.C.PERARASI

II M.Sc., CHEMISTRY

2021MSCC16

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MARY LAND

MADURAI-625018.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA** Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

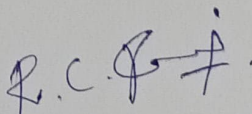
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I thank **R. MEERA NAACHIYAR, S. AAFRIN HAZAANA, N. MUNIRAJ@VIGNESH, M. KANI AJAY BABU, P. MOHANAA MUTHUSELVI**, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. S. ANBUSELVI** for her motivation and support during this project. I thank my Father late **Mr. R. CHINNATHAMBI** for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.



(R.C.PERARASI)

**PHOTOCATALYTIC DEGRADATION OF METHYLENE
BLUE DYE BY ZnO-Cu₂O NANOCOMPOSITES UNDER
SUNLIGHT**

*A Project report submitted for partial fulfillment of the
Requirement for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. S. SANTHANAKARTHIKA

(Register No: 2021MSCC17)



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)
Re-Accredited with 'A++' Grade by NAAC (4th Cycle)
MARY LAND, MADURAI – 625 018**

Under the Guidance of

Dr. J. ANNARAJ

Associate Professor and Head




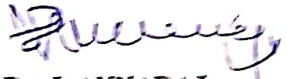
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School of Chemistry
Madurai Kamaraj University
University with potential for excellence
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Madurai– 625021.**

April - 2023

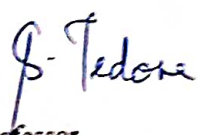
BONAFIDE CERTIFICATE

This is to certify that S. SANTHANAKARTHIKA. M.Sc. (Chemistry) student of Fatima College, Madurai has done the project work entitled 'PHOTOCATALYTIC DEGRADATION OF METHYLENE BLUE DYE BY ZnO-Cu₂O NANOCOMPOSITES UNDER SUNLIGHT the academic year 2021-2023 under the supervision of Dr. JANNARAJ, Associate Professor and Head, Department of Materials Science, School of Chemistry, Madurai Kamaraj University, Madurai- 625021. This is to certify that no part of the work has been presented for any degree / diploma in any other form.


Dr. B. VINOSHA
(Internal Guide)
Assistant Professor
Department of Chemistry
Fatima College
Madurai- 625018


Dr. J. ANNARAJ
(External Guide)
Associate Professor and Head
Department of Materials science,
School of Chemistry,
Madurai Kamaraj University,
Madurai- 625021

ENDORSEMENT



Dr. B. MEDONA
Head & Associate Professor,
Department of Chemistry,
Fatima college,
Madurai -625018.


EXTERNAL EXAMINER

DECLARATION

I do here by declare that this dissertation entitled PHOTOCATALYTIC DEGRADATION OF METHYLENE BLUE DYE BY $\text{ZnO-Cu}_2\text{O}$ NANOCOMPOSITES UNDER SUNLIGHT submitted to Fatima College in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY, is a record of original research work done by me. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai - 18.


Signature of the Candidate

Date:

(S.SANTHANAKARTHIKA

2021MSCC17)

ACKNOWLEDGEMENT

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which plays a key role in the completion of the work

I have great pleasure in expressing my sincere thanks to management and the principal Rev. Dr. Sr. G.CELINE SAHAYA MARY, Fatima College, Madurai for giving me permission to do the project work in Madurai Kamaraj University, Madurai.

With great pride and pleasure, I express my deep sense of gratitude to my beloved mentor Dr. J. ANNARAJ, Associate Professor and Head, Department of Materials Science, Madurai Kamaraj University, Madurai, for the independence he gave me to choose the project in my area of interest, his valuable and never-ending support, inspiring guidance, ceaseless encouragement during each and every stage of my project work.

I express my deep respect and gratitude to Dr. B. MEDONA Associate Professor and Head, Department of Chemistry, Fatima College for permitting to carry out the project work in Madurai Kamaraj University, Madurai.

I record my sincere thanks to my internal guide Dr. B. VINOSHA, Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

We acknowledge project fund received under DST CURIE CORE GRANT for woman PG colleges DST/CURIE-PG/2022/11.

I express my heartfelt gratitude and sincere thanks to **Mr.T.NAGENDRARAJ**, Research scholar, Department of Materials Science, School of Chemistry, for the guidance and encouragement for completing this project successfully.

I also record my sincere thanks to all my department staffs for their support and encouragement. From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement.

I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.


(S. SANTHANAKARTHIKA)

**SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL
MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA
INDICA (NEEM FLOWER) AND MAGNESIUM CHLORIDE SALT
FOR THE APPLICATION OF ELECTROCHEMICAL DEVICES**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. K.SHEEBA

(Register No: 2021MSCC18)

EXTERNAL GUIDE

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Director,
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Emeritus Professor,
Bharathiar University,
Coimbatore-641045.

INTERNAL GUIDE

Dr. J. BELINDA ASHA

Assistant Professor,
Department of chemistry,
Fatima College
Madurai-625018



**DEPARTMENT OF CHEMISRTY
FATIMA COLLEGE (AUTONOMOUS)
(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)
MARY LAND, MADURAI-625018**

APRIL 2023

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "Synthesis and characterization of Biomaterial membrane as electrolyte based on Azadirachta Indica (Neem flower) and Magnesium chloride salt for the application of electrochemical devices" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **K. SHEEBA** at Materials Research Center, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr. J. BELINDA ASHA** Assistant Professor, Department of chemistry, Fatima College Madurai and submitted to Department of Chemistry, Fatima College, Madurai.

S. Selvasekarapandian
Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
Bharathiar University,
Coimbatore-641045.

J. Belinda Asha
Dr. J. BELINDA ASHA

Assistant Professor,
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Madurai-625018.

B. Medona

Dr. B. MEDONA
Head and Associate Professor,
Department of chemistry,
Fatima College,
Madurai-625018.

K. Sheeba

DECLARATION

I do hereby declare that this dissertation entitled **“Synthesis and characterization of Biomaterial membrane as electrolyte based on Azadirachta Indica (Neem flower) and Magnesium Chloride salt for the application of Electrochemical devices”** has been carried out by **K. SHEEBA** (Reg.No:2021MSCC18) and submitted to Department of chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of **MASTER OF SCIENCE IN CHEMISTRY**, during the academic year, 2021 – 2023.

Place: Madurai

Date:

K. Sheeba

K. SHEEBA

Reg.No:2021MSCC18

II MSC.CHEMISTRY

FATIMA COLLEGE,

MARY LAND,

MADURAI-625018.

ACKNOWLEDGEMENT

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I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai, for her constant support and encouragement in the successful completion of this project work.

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I thank **S. AAFRIN HAZAANA, R. MEERA NAACHIYAR, N. MUNIRAJ@VIGNESH, M. KANI AJAY BABU, P. MOHANAA MUTHUSELVI**. Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. P.SATHIYA SEELA** for her motivation and support during this project. I thank my Father **Mr. J. KARNAN**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

K. Sheeba
(K.SHEEBA)

**Synthesis and Characterization of Organogel using
4,6-*O*-Butylidene- α -D-glucopyranose and p-Anisidine**

*A project report submitted for
partial fulfilment of the requirement for the award of degree of*

MASTER OF SCIENCE IN CHEMISTRY

K. SNEKA

[Reg. No: 2021MSCC19]



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61) in the fourth cycle)

MADURAI – 625018.

Under the guidance of

Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.,

Assistant professor



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APRIL – 2023

BONAFIDE CERTIFICATE

This is to certify that **Ms. K. SNEKA, M.Sc., (Reg. No: 2021MSCC19)** (Chemistry) Student of Fatima College, Madurai has done the project work entitled "**Synthesis and Characterization of Organogel using 4,6-*O*-Butylidene- α -D-glucopyranose and p-Anisidine**" during the academic year 2022-2023 under the supervision of **Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.** Assistant Professor, PG & Research Department of chemistry, The American College, Madurai-625002.



INTERNAL GUIDE

Dr. K. R. SUBIMOL, M.Sc., M.Phil., Ph.D.


Assistant Professor,
Department of Chemistry,
Fatima College,
Madurai-625018.



EXTERNAL GUIDE

Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.

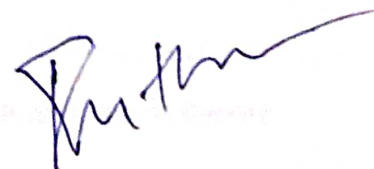
Assistant Professor,
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Dr. B. MEDONA, M.Sc., Ph.D.

HEAD OF THE DEPARTMENT

Associate Professor,
Department of Chemistry,
Fatima College,
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OMCRL

(Formulation & Drug Consultancy Services)

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Thuvariman,
Madurai – 625019,
Tamilnadu

Date: 01.04.2023

CERTIFICATE

This is to certify that **Ms. K. Sneka** [Reg.No: 2021MSCC19], II. M.Sc., student, Department of Chemistry(PG), **Fatima college, Madurai-18** carried out her M.Sc., chemistry project work on “**Synthesis and Characterization of Organogel using 4,6-*O*-Butylidene- α -D-glucopyranose and p-Anisidine**” in the **Organic and Material Chemistry Research Laboratory, The American College, Madurai-02** from **13.12.2022-01.04.2023**, for a period of three months, under the guidance of **Dr. K. Karthik Kumar**, Assistant professor, PG & Research Department of Chemistry, The American College, Madurai-02.


Dr. K. Karthik Kumar

Dr. K. Karthik Kumar
Dr. K. Karthik Kumar
PG & ASSISTANT PROFESSOR, Chemistry
PG & Research Department of Chemistry
The American College, Madurai-02

DECLARATION

I do hereby solemnly declare that this dissertation entitled "**Synthesis and Characterization of Organogel using 4,6-*O*-Butylidene- α -D-glucopyranose and p-Anisidine**" submitted to Fatima college in partial fulfilment of requirement for the award of **MASTER OF SCIENCE IN CHEMISTRY** is a record of original project work done by me. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Date:

Place: Madurai

K. Sneha

SNEKA K

(Reg. No: 2021MSCC19)

ACKNOWLEDGEMENT

“Thanks be to God Almighty who gives us the Victory”

I have great pleasure in expressing my sincere thanks to management and the principal **Dr. Rev. Sr. G. CELINE SAHAYA MARY, MBA, FDP., Ph.D.** Fatima College, Madurai for giving me permission to do the project work in The American College, Madurai.

I express my deep respect and gratitude to **Dr. B. MEDONA, M.Sc., Ph.D.** Associate Professor, Head of the Department, Department of Chemistry, Fatima College for permitting to carry out the project work in The American College, Madurai.

I would like to thank to my external guide **Dr. K. KARTHIK KUMAR, M.Sc., Ph.D.** Assistant Professor, PG & Research Department of Chemistry, The American College, Madurai for granting permission and providing a congenial environment with excellent lab facilities.

I record my sincere thanks to my internal guide **Dr. K. R. SUBIMOL, M.Sc., M.Phil., Ph.D.** Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

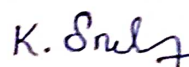
I express my sincere and soulful thanks to **Mrs. P. PANDI SUDHA, Ms. R. SHOBANA, Ms. M. SUJIDHA, Mr. M. MANIBHARATHI, Ms. P. NAGA NANDHINI**, Research Scholars, Organic & Material Chemistry Research Laboratory, The American College, Madurai. Especially I am very grateful to them for their help rendered in the final proof-reading of the thesis.

I also record my sincere thanks to all My Department Staff for their support and encouragement.

From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima college for their great support and constant encouragement.

I am deeply indebted My Family for their understanding, care, love and unfailing support and encouragement

We acknowledge project fund received under DST CURIE core Grant for Women PG Colleges **DST/CURIE-PG/2022/11**.


(K. SNEKA)

**PERFORMANCE OF LITHIUM ION BATTERY USING
BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON
AZADIRACHTA INDICA (NEEM FLOWER) WITH LITHIUM
CHLORIDE**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. V. SOUNTHARYA

(Register No: 2021MSCC20)

EXTERNAL GUIDE

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Coimbatore-- 641045

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Dr. J. BELINDA ASHA

Assistant Professor,

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(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)

MARY LAND, MADURAI – 625018

APRIL 2023

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "PERFORMANCE OF LITHIUM ION BATTERY USING BIOMATERIAL MEMEBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH LITHIUM CHLORIDE" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN CHEMISTRY. This is the record of original project work done by V.SOUNTHARYA at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore, and Dr. J. BELINDA ASHA, Assistant Professor, Department of Chemistry, Fatima College, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

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Dr. J. BELINDA ASHA
Assistant Professor,
Department of Chemistry
Fatima College
Madurai - 625018



DECLARATION

I do hereby declare that this dissertation entitled "PERFORMANCE OF LITHIUM ION BATTERY USING BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH LITHIUM CHLORIDE" has been carried out by V.SOUNTHARYA (Reg.No:2021MSCC20) and submitted to Department of Chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year, 2021 – 2023.

Place: Madurai

Date:

V. Sountharya.

V.SOUNTHARYA

Reg.No:2021MSCC20

II M.Sc CHEMISTRY

FATIMA COLLEGE,

MARY LAND,

MADURAI-625018.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN** Director, Materials Research Center, Coimbatore and Emeritus professor, Bharathiar University, Coimbatore for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

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I thank **S.AAFRIN HAZAANA, R. MEERA NAACHIYAR N. MUNIRAJ@VIGNESH, M. KANIAJAY BABU, P. MOHANAA MUTHUSELVI** Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs V. MUTHULAKSHMI** for her motivation and support during this project. I thank my Father **Mr.T.VELSAMY**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

V. Sountarya

(V.SOUNTHARYA)

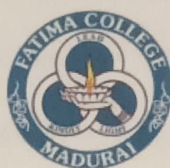
**TRIDAX PROCUMBENS L. MEDIATED SYNTHESIS OF ANATASE
TITANIUM DIOXIDE NANOPARTICLES AND ASSESSMENT OF ITS
ANTIMICROBIAL ACTIVITIES**

*A Project report submitted to Department of Chemistry, FATIMA COLLEGE
(Autonomous), In partial fulfillment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

M. SRI HARSHINI

(REG.NO: 2021MSCC21)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re- Accredited with A++ Grade by NAAC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625018

Under the guidance of

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,

Assistant professor



PG AND RESEARCH DEPARTMENT OF CHEMISTRY

N.M.S.S. Vellaichamy Nadar College (Autonomous)

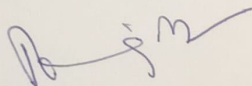
(Re-Accredited with “A” Grade by NACC)

Nagamalai, Madurai- 625019.

APRIL - 2023

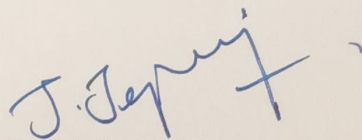
BONAFIDE CERTIFICATE

This is to certify that the project report entitled "**TRIDAX PROCUMBENS L. MEDIATED SYNTHESIS OF ANATASE TITANIUM DIOXIDE NANOPARTICLES AND ASSESSMENT OF ITS ANTIMICROBIAL ACTIVITIES**" was carried out by **Ms. SRI HARSHINI M** (REG.NO:2021MSCC21) under the guidance of **Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.**, Assistant professor, PG & Research Department of chemistry, N.M.S.S. VELLAICHAMY NADAR COLLEGE, Nagamalai, Madurai and Submitted to Department of Chemistry, Fatima college, Madurai.



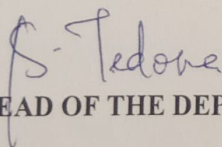
INTERNAL GUIDE

Dr. A. RAJESWARI, M.Sc., M.Phil., Ph.D.,
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Department of Chemistry,
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Madurai – 625018.



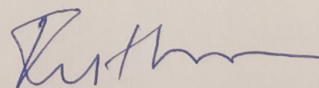
EXTERNAL GUIDE

Dr. J. JEYASUNDARI, M.Sc., M.Phil., Ph.D.,
Assistant Professor,
PG & Research Department of Chemistry,
N.M.S.S.V.N College,
Madurai - 625019.



HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., Ph.D.,
Associate professor,
Department of Chemistry,
Fatima College,
Madurai – 625018.



EXTERNAL EXAMINER

DECLARATION

I do hereby declare that this dissertation entitled "*TRIDAX PROCUMBENS* L. MEDIATED SYNTHESIS OF ANATASE TITANIUM DIOXIDE NANOPARTICLES AND ASSESSMENT OF ITS ANTIMICROBIAL ACTIVITIES" submitted to Madurai Kamaraj University in partial fulfillment of requirement for the award of **MASTER OF SCIENCE IN CHEMISTRY**, is a record of original project work done by me at NMSSVN College Nagamalai Madurai - 625018. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai

Date: 10. 4. 2023

M. Sri Harshini

M. SRI HARSHINI

(REG.NO: 2021MSCC21)

ACKNOWLEDGEMENT

I would like to express my gratitude and appreciation to all those who gave me the possibility to complete this report.

I would like to express my special thanks of gratitude to our principal **Rev. Dr. Sr. G. CELINE SAHAYA MARY, MBA, FDP., Ph.D.** Principal, Fatima College (Autonomous), Madurai – 18 who gave me the golden opportunity to do my internship, which also helped me to know about so many new things.

I am really grateful the **Mrs. Dr. B. MEDONA M.Sc., Ph.D.** Associate professor and Head of the Department of Chemistry, Fatima College, Madurai – 18 for permitting to carry out the work.

I record my sincere thanks to my internal guide **Dr. A. RAJESWARI, M.Sc., M.Phil., Ph.D.**, Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the work.

I express my heartfelt gratitude and sincere thanks to the **Dr. J. JEYASUNDHARI, M.Sc., M.Phil., Ph.D.**, Assistant professor, PG & Research Department of chemistry, N. M. S. S. V. N College, Madurai for granting permission and guiding me from time to time in making this project work.

I would like to thank the Management and Principal of N.M.S.S.V.N College for permitting me to do intern work successfully at N.M.S.S.V.N College. I express my heartfelt thanks to **Dr. M. RAJENDRAN M.Sc., M.Phil., Ph.D.**, Head of the Department, PG and Research Department of Chemistry, N.M.S.S.V.N College for rendering me necessary facilities throughout my project work.

I am extremely thankful to **Ms. P. VENGATESH PRIYA**, Research Scholar, who was there for me always throughout my journey.

Special thanks to all the staff members department of Chemistry. I would particularly like to express my gratitude to all my classmates and scholars for helping and encouraging me to finish my work, special word of thanks to my dear friends. Finally last but by no means least I wish to thank my family, for all your encouragement and support.

We acknowledge project fund received under **DST-CURIE** core grant for women PG-colleges, DST/CURIE-PG/2022/11

Fluorescent Schiff base as a selective sensor for metal ions

A Project report submitted to Department of Chemistry, FATIMA COLLEGE (Autonomous), In partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

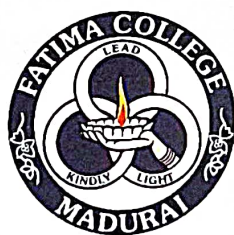
M.SUBASHINI

(Reg. No:2021MSCC22)

Under the Guidance of

Dr. V.Arul Deepa

Assistant professor



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (Autonomous)

(Re-Accredited with "A⁺⁺" Grade by NAAC)

Madurai- 625018.

April – 2023

CERTIFICATE

This is to declare that the dissertation entitled “**Fluorescent Schiff base as a selective sensor for metal ions**” Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by **M.SUBASHINI** during the period of her study in the Department of Chemistry, Fatima College, Madurai.



Internal Guide

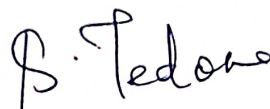
Dr.V.Arul Deepa

Assistant Professor

Department of Chemistry

Fatima College

Madurai.



Head of The Department

Dr.B.Medona

Associate Professor & Head

Department of Chemistry

Fatima College

Madurai.



DECLARATION

I hereby declare that this project work entitled “**Fluorescent Schiff base as a selective sensor for metal ions**” has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr.V.Arul Deepa**, Assistant Professor, Department of Chemistry, **Fatima college**, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date: 10.04.2023

M. Subashini
Signature of the candidate

M. Subashini

(Reg.no.2021MSCC22)

ACKNOWLEDGEMENT

“Praise and Glory always be to God”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

My indebted thanks to **Dr.V.Arul Deepa**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

I record my sense of gratitude to my lovable sister **Ms.M.Priya Varshini**, and to my dear parents **Dr.E.Mohan** and **Mrs.M.Vasanthi** for their patience ,support ,encouragement and understanding which have a long way in enabling me to complete this work successfully.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

M.Subashini

SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM NITRATE FOR FABRICATION OF PROTON BATTERY

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

To partial fulfillment of the requirements for the award of the
degree **MASTER OF SCIENCE IN CHEMISTRY**

Submitted by

Ms. V. SUBASHINI

(Register No: 2021MSCC23)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

Director,

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Coimbatore &

Emeritus Professor,

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Coimbatore - 641045

INTERNAL GUIDE

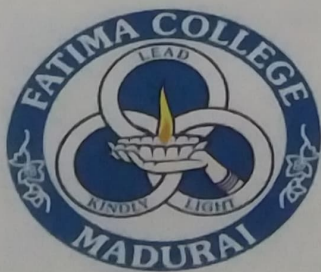
Dr. J. JONE CELESTINA

Assistant Professor,

Department of chemistry

Fatima College

Madurai-- 625018.



DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)

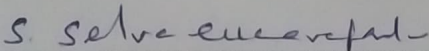
(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)

MARY LAND, MADURAI - 625018

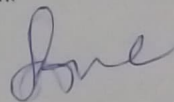
APRIL 2023

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM NITRATE FOR FABRICATION OF PROTON BATTERY" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN CHEMISTRY. This is the record of original project work done by V. SUBASHINI at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. J. JONE CELESTINA, Assistant Professor, Department of Chemistry, Fatima college, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.

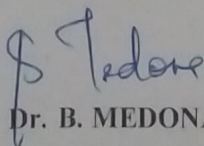

Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
Bharathiar University,
Coimbatore-641045

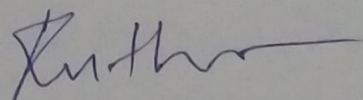


Dr. J. JONE CELESTINA

Assistant Professor,
Department of chemistry
Fatima College
Madurai- 625018


Dr. B. MEDONA

Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai- 625018



DECLARATION

I do hereby declare that this dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) AND AMMONIUM NITRATE FOR FABRICATION OF PROTON BATTERY" has been carried out by V. SUBASHINI (Reg.No:2021MSCC23) and submitted to Department of Chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year, 2021 – 2023.

Place: Madurai

Date:

V Subashini

V. SUBASHINI

Reg.No:2021MSCC23,

II M.Sc CHEMISTRY,

FATIMA COLLEGE,

MARY LAND,

MADURAI-625018

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

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I thank **S. AAFRIN HAZAANA, R. MEERA NAACHIYAR, N. MUNIRAJ@VIGNESH M.KANI AJAY BABU & P. MOHANAA MUTHUSELVI** Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. K. RAMALAKSHMI**, for her motivation and support during this project. I thank my Father **Mr. S. S. VENUGOPALAKRISHAN**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

✓ *Subashini*

(V. SUBASHINI)

**SYNTHESIS AND CHARACTERIZATION OF
BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED
ON AZADIRACHTA INDICA (NEEM FLOWER) USING
ZINC CHLORIDE FOR THE FABRICATION OF ZINC-
ION BATTERY**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. K.YUVARANI

(Register No: 2021MSCC24)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
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Emeritus Professor,
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INTERNAL GUIDE

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Assistant Professor,
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**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

(RE-ACCREDITED WITH 'A++' GRADE BY NAAC)

MARY LAND , MADURAI-625018


APRIL 2023

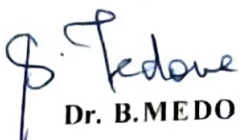
BONAFIDE CERTIFICATE

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) USING ZINC CHLORIDE FOR THE FABRICATION OF ZINC-ION BATTERY" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **K.YUVARANI** at Material Research Center, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr. M.PRIYADHARSANI**, Assistant Professor, Department of Chemistry, Fatima College, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
Bharathiar University,
Coimbatore-641045


Dr.M.PRIYADHARSANI
Assistant Professor,
Department of Chemistry,
Fatima College
Madurai-625018


Dr. B.MEDONA,
Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai-625018



DECLARATION

I do hereby declare that this dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL MEMBRANE AS ELECTROLYTE AZADIRACHTA INDICA (NEEM FLOWER) USING ZINC CHLORIDE FOR THE FABRICATION OF ZINC-ION BATTERY" has been carried out by K.YUVARANI (Reg.No:2021MSCC24) and submitted to Department of Chemistry ,Fatima college, Madurai in a partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year , 2021-2023.

Place: Madurai

Date: 12/4/23

K.Yuvarani
K.YUVARANI

Reg.No:2021MSCC24

II M.Sc CHEMISTRY

FATIMA COLLEGE,

MARY LAND,

MADURAI-625018

ACKNOWLEDGEMENT

"GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY"

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B.MEDONA**, Head and Associate Professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore & Emeritus Professor, Bharathiar University, Coimbatore, for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

My indebted thanks to **Dr. M. PRIYADHARSANI**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

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I thank **R. MEERA NAACHIYAR, S. AAFRIN HAZAANA, N. MUNIRAJ@VIGNESH, M. KANI AJAY BABU, P. MOHANAA MUTHUSELVI**, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. K.PANCHAVARNAM** for her motivation and support during this project. I thank my Father **Mr. C.KARUPPIAH**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

K.Yuvarani^o
(K.YUVARANI)

ENHANCED PHOTOCATALYTIC DEGRADATION OF CIPROFLOXACIN USING Ag₂O DECORATED N-DOPED TiO₂ NANOCOMPOSITES

*A Project report submitted for partial fulfillment of the
requirement for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. C. Febia
(Register No: 2021MSCC25)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with 'A++' Grade by NAAC (4th Cycle)

MARY LAND, MADURAI – 625 018

Under the Guidance of

Dr. J. ANNARAJ

Associate Professor and Head



Department of Materials Science

School of Chemistry

Madurai Kamaraj University

University with potential for excellence

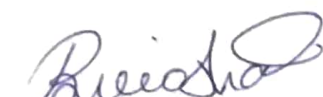
(Re-Accredited with A++ Grade by NAAC (CGPA: 3.54) in the fourth cycle)

Madurai– 625021.

April - 2023

BONAFIDE CERTIFICATE

This is to certify that C. FEBIA, M.Sc., (Chemistry) student of Fatima College, Madurai has done the project work entitled 'Enhance photocatalytic degradation of ciprofloxacin using Ag₂O decorated N-doped TiO₂ nanocomposites' during the academic year 2021-2023 under the supervision of Dr. J. ANNARAJ, Associate professor and Head, Department of Materials Science, School of Chemistry, Madurai Kamaraj University, Madurai- 625021. This is to certify that no part of the work has been presented for any degree / diploma in any other form.



INTERNAL GUIDE

Dr. B. VINOSHA

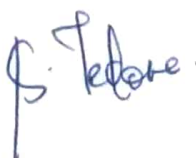
Assistant Professor,
Department of Chemistry,
Fatima College,
Madurai- 625018



EXTERNAL GUIDE

Dr. J. ANNARAJ

Associate Professor and Head,
Department of Material science,
School of Chemistry,
Madurai Kamaraj University,
Madurai- 625021

ENDORSEMENT 

Dr. B. MEDONA
Head & Associate Professor,
Department of Chemistry,
Fatima College,
Madurai -625018



EXTERNAL EXAMINER

DECLARATION

I do here by declare that this dissertation entitled 'Enhance photocatalytic degradation of ciprofloxacin using Ag_2O decorated N-doped TiO_2 nanocomposites' submitted to Fatima College in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY, is a record of original research work done by me. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

C. Febia

Place: Madurai

Signature of the Candidate

Date:

(C.Febia-2021MSCC25)

ACKNOWLEDGEMENT

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which plays a key role in the completion of the work.

I have great pleasure in expressing my sincere thanks to management and the principal Rev. Dr. Sr. G. CELINE SAHAYA MARY, Fatima College, Madurai for giving me permission to do the project work in Madurai Kamaraj University, Madurai.

With great pride and pleasure, I express my deep sense of gratitude to my beloved mentor Dr. J. ANNARAJ, Associate professor and Head, Department of Materials chemistry, Madurai Kamaraj University, Madurai for the independence he gave me to choose the project in my area of interest, his valuable and never-ending support, inspiring guidance, ceaseless encouragement during each and every stage of my project work.

I express my deep respect and gratitude to Dr. B. MEDONA Associate Professor and Head, Department of Chemistry, Fatima College for permitting to carry out the project work in Madurai Kamaraj University, Madurai.

I record my sincere thanks to my internal guide Dr. B. VINOSHA, Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

I express my heartfelt gratitude and sincere thanks to Mr.T.NAGENDRARAJ, Research scholar, Department of Materials Science, School of Chemistry, for the guidance and encouragement for completing this project successfully.

We acknowledge project fund received under DST CURIE CORE GRANT for woman PG colleges DST/CURIE-PG/2022/11.

I also record my sincere thanks to all my department staffs for their support and encouragement. From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement.

I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

C. Febia

(C.FEBIA)

**STUDY OF BIOMATERIAL ELECTROLYTE
BASED ON AZADIRACHTA INDICA (NEEM
FLOWER) WITH MAGNESIUM NITRATE
FOR THE APPLICATION OF
ELECTROCHEMICAL DEVICES**

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

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

Submitted by

Ms. J. MARIYA JOSE PRINCIYA

(Register No: 2021MSCC26)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
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Coimbatore-641045

INTERNAL GUIDE

Dr. B. VINOSHA

Assistant Professor,
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Madurai-625018.



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

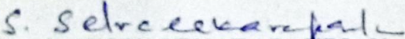
(RE-ACCREDITED WITH 'A' GRADE BY NAAC)

MARY LAND, MADURAI - 625018

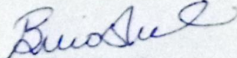
APRIL 2023

BONAFIDE CERTIFICATE

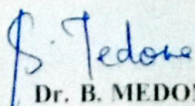
This is to certify that the project report entitled "**STUDY OF BIOMATERIAL ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH MAGNESIUM NITRATE FOR THE APPLICATION OF ELECTROCHEMICAL DEVICES**" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **J. MARIYA JOSE PRINCIYA** at Materials Research Center, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr. B. VINOSHA** Assistant Professor, Department of Chemistry, Fatima college, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

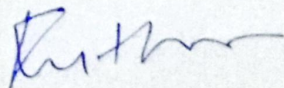
Director,
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Coimbatore-641045.


Dr. B. VINOSHA

Assistant Professor,
Department of chemistry
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Madurai-625018.


Dr. B. MEDONA

Head and Associate Professor,
Department of Chemistry,
Fatima College,
Madurai-625018



DECLARATION

I do hereby declare that this dissertation entitled "STUDY OF BIOMATERIAL ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH MAGNESIUM NITRATE FOR THE APPLICATION OF ELECTROCHEMICAL DEVICES" has been carried out by J. MARIYA JOSE PRINCIYA (Reg.No:2021MSCC26) and submitted to Department of Chemistry, Fatima College, Madurai in a partial fulfillment of the requirements for the award of MASTER OF SCIENCE IN CHEMISTRY, during the academic year, 2021 – 2023.

Place: Madurai

Date:

J. Mariya Jose Princiya

J. MARIYA JOSE PRINCIYA

Reg.No:2021MSCC26,

II M.Sc CHEMISTRY,

FATIMA COLLEGE,

MARY LAND,

MADURAI-18

ACKNOWLEDGEMENT

"GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY"

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

I am greatly indebted to **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore for his constant support and supervision throughout the project work and for initiating my interest in research. I owe a lot to him and express my deep sense of gratitude to him. I considered myself extremely fortunate to get an opportunity to work under him.

My indebted thanks to **Dr. B. VINOSHA**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

I thank **R. MEERA NAACHIYAR, S. AAFRIN HAZAANA, N. MUNIRAJ@VIGNESH, M.KANI AJAY BABU & P. MOHANAA MUTHUSELVI** Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. R. JAYAPUSHPAM** for her motivation and support during this project. I thank my Father **Mr. R. JESURAJ**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

J. Mariya Jose Princiya
(J. MARIYA JOSE PRINCIYA)

ELECTROCHEMICAL INVESTIGATION OF HYDROTHERMALLY SYNTHESIZED NICKEL COBALT THIOSPINEL (NiCo_2S_4) NANOSPHERES

A Project report submitted for partial fulfillment of the
requirement for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. A. JOY JULIE ANSLIN

(Register No: 2021MSCC27)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with 'A++' Grade by NAAC (4th Cycle)

MARY LAND, MADURAI – 625 018

Under the Guidance of



Dr. M. JEYANTHINATH

Assistant professor

Department of Materials Science

School of Chemistry

Madurai Kamaraj University

University with potential for excellence

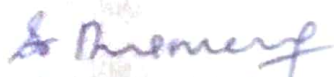
(Re-Accredited with A++ Grade by NAAC (CGPA: 3.54) in the fourth cycle)

Madurai– 625021.

April-2023

BONAFIDE CERTIFICATE

This is to certify that Ms. A. JOY JULIE ANSLIN, M.Sc., (Chemistry) student of Fatima College, Madurai has done the project work entitled "ELECTROCHEMICAL INVESTIGATION OF HYDROTHERMALLY SYNTHESIZED NICKEL COBALT THIOSPINEL (NiCo_2S_4) NANOSPHERES", during the academic year 2021 - 2023 under the supervision of Dr. M. JEYANTHINATH, Assistant professor, Department of Materials Science, School of Chemistry, Madurai Kamaraj University, Madurai - 625021. This is to certify that no part of the work has been presented for any degree / diploma in any other form.


INTERNAL GUIDE

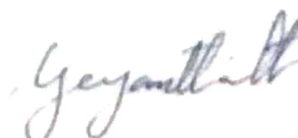
Dr. Sr. J. ARUL MARY

Assistant Professor

Department of Chemistry

Fatima College

Madurai- 625018



EXTERNAL GUIDE

Dr. M. JEYANTHINATH

Assistant Professor

Department of Material science

School of Chemistry

Madurai Kamaraj University

Madurai- 625021

ENDORSEMENT


Dr. B. MEDONA

Head & Associate Professor

Department of Chemistry

Fatima college

Madurai -625018



EXTERNAL EXAMINER

DECLARATION

I do hereby declare that this dissertation entitled "ELECTROCHEMICAL INVESTIGATION OF HYDROTHERMALLY SYNTHESIZED NICKEL COBALT THIOSPINEL (NiCo_2S_4) NANOSPHERES", submitted to Fatima College in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY, is a record of original research work done by me. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai

Date:

A. Joy Julie Anslin
Signature

A. JOY JULIE ANSLIN

(2021MSCC27)

ACKNOWLEDGEMENT

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which plays a key role in the completion of the work.

I have great pleasure in expressing my sincere thanks to management and the principal **Rev. Dr. Sr. G. CELINE SAHAYA MARY**, Fatima College, Madurai for giving me permission to do the project work in Kamaraj University, Madurai.

With great pride and pleasure, I express my deep sense of gratitude to my beloved mentor **Dr. M. JEYANTHINATH**, Assistant professor, Department of Materials Science, School of chemistry, Madurai Kamaraj University, Madurai for the independence he gave me to choose the project in my area of interest, his valuable and never-ending support, inspiring guidance, ceaseless encouragement during each and every stage of my project work.

I express my deep respect and gratitude to **Dr. B. MEDONA** Associate Professor and Head, Department of Chemistry, Fatima College for permitting to carry out the project work in Madurai Kamaraj University, Madurai.

I record my sincere thanks to my internal guide **Dr. Sr. J. ARUL MARY**, Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

I express my heartfelt gratitude and sincere thanks to the **Dr. V. RAGHAVENDRAN** and **Ms. G. BABY SRI PRATHA**, Research scholar, Department of Materials Science, School of Chemistry, for the guidance and encouragement for completing this project successfully.

We acknowledge that, the project fund received under "**DST-CURIE**" Core grant for women PG colleges, **DST/CURIE-PG/2022/11**.

I also record my sincere thanks to all my department staff for their support and encouragement. From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement.

I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

A. Joy Julie Anslin
(A.JOY JULIE ANSLIN)

SYNTHESIS AND CHARACTERIZATION OF MANGANESE COBALT OXIDE MnCo_2O_4 BY AUTO COMBUSTION METHOD

A Project report submitted in

Partial fulfillment of the Requirement for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. S . SABITHRA

(Register No: 2021MSCC28)



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with 'A++' Grade by NAAC (4th Cycle)

MARY LAND, MADURAI – 625 018



Under the Guidance of

Dr. M. JEYANTHINATH

Assistant professor

Department of Materials Science

School of Chemistry Madurai

Kamaraj University

University with potential for excellence

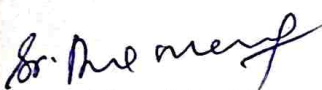
(Re-Accredited with A++ Grade by NAAC (CGPA: 3.54) in the fourth cycle)

Madurai– 625021.

April-2023

BONAFIED CERTIFICATE

This is to certify that **Ms. S.SABITHRA**, M. Sc., (Chemistry) student of Fatima college, Madurai has done the project work entitled "**SYNTHESIS AND CHARACTERIZATION OF MANGANESE COBALT OXIDE $MnCo_2O_4$ BY AUTO COMBUSTION METHOD**". During the academic year 2021 – 2023 under the supervision of **Dr. M. JEYANTHINATH**, Assistant professor, Department of material Science, School of Chemistry, Madurai Kamaraj University.


INTERNAL GUIDE


Dr. Sr. J. ARUL MARY
Assistant professor
Department of Chemistry
Fatima College Madurai



EXTERNAL GUIDE

Dr. M. JEYANTHINATH
Assistant professor
Department of Materials Science
School of chemistry
Madurai Kamaraj
University.

ENDORESEMENT


Dr. B. Medona
Head & Associate professor,
Department of chemistry
Fatima College
Madurai -18


EXTERNAL EXAMINER

DECLARATION

I do hereby declare that this dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF MANGANESE COBALT OXIDE MnCo_2O_4 BY AUTO COMBUSTION METHOD". Submitted to Fatima College in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY is a record of original research work done by me. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place : Madurai

Date :

S. Sabithra

Signature of the Candidate

S. SABITHRA

(2021MSCC28)

ACKNOWLEDGEMENT

“Thanks Be To God Almighty Who Gives Us the Victory”

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which plays a key role in the completion of the work.

I have great pleasure in expressing my sincere thanks to management and the principal **Rev. Dr. Sr. G. CELINE SAHAYA MARY**, Fatima College, Madurai for giving me permission to do the project work in Kamaraj University, Madurai.

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I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

d. Sabithra

(S.SABITHRA)

SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH SODIUM NITRITE

A dissertation submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to **MADURAI KAMARAJ UNIVERSITY**, Madurai)

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

Ms. P.SHANMUGAPRIYA

(Register No: 2021MSCC29)

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN

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Materials Research Center,

Coimbatore &

Emeritus Professor,

Bharathiar University,

Coimbatore-641045.

INTERNAL GUIDE

Dr. B. MEDONA

Head & Associate Professor,

Department of Chemistry

Fatima College,

Madurai-625018.



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

(RE-ACCREDITED WITH 'A⁺⁺' GRADE BY NAAC)

MARY LAND, MADURAI-625018.

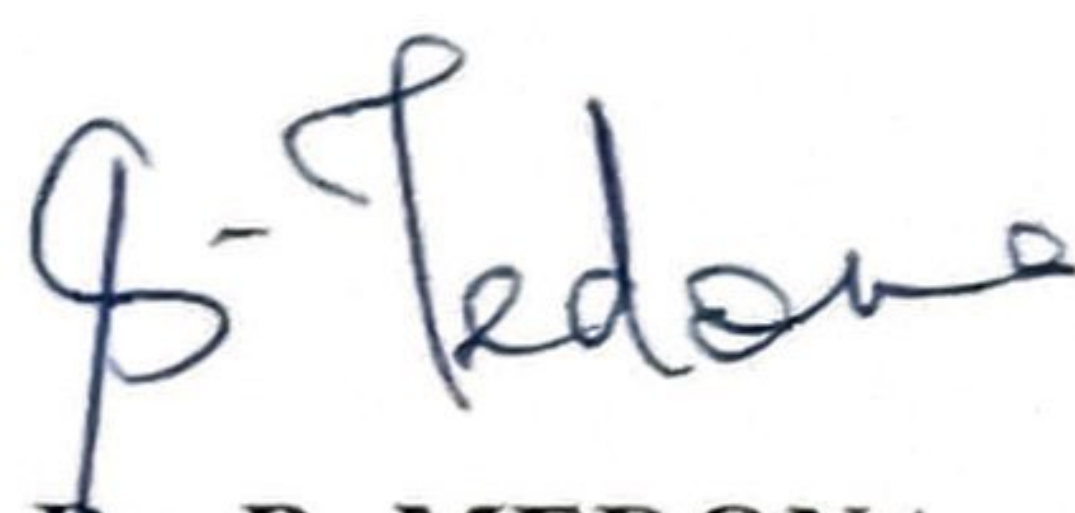
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BONAFIDE CERTIFICATE

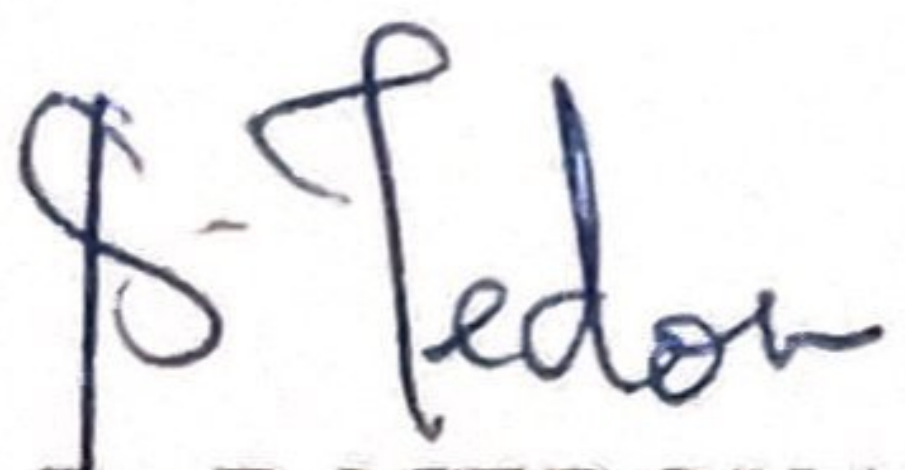
This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION BIOMATERIAL ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH SODIUM NITRITE" submitted to Fatima College, Madurai in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **P. SHANMUGAPRIYA** at Materials Research Center, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr. B. MEDONA**, Head and Associate professor, Department of chemistry, Fatima college, Madurai and submitted to Department of Chemistry, Fatima College, Madurai.


Dr. S. SELVASEKARAPANDIAN

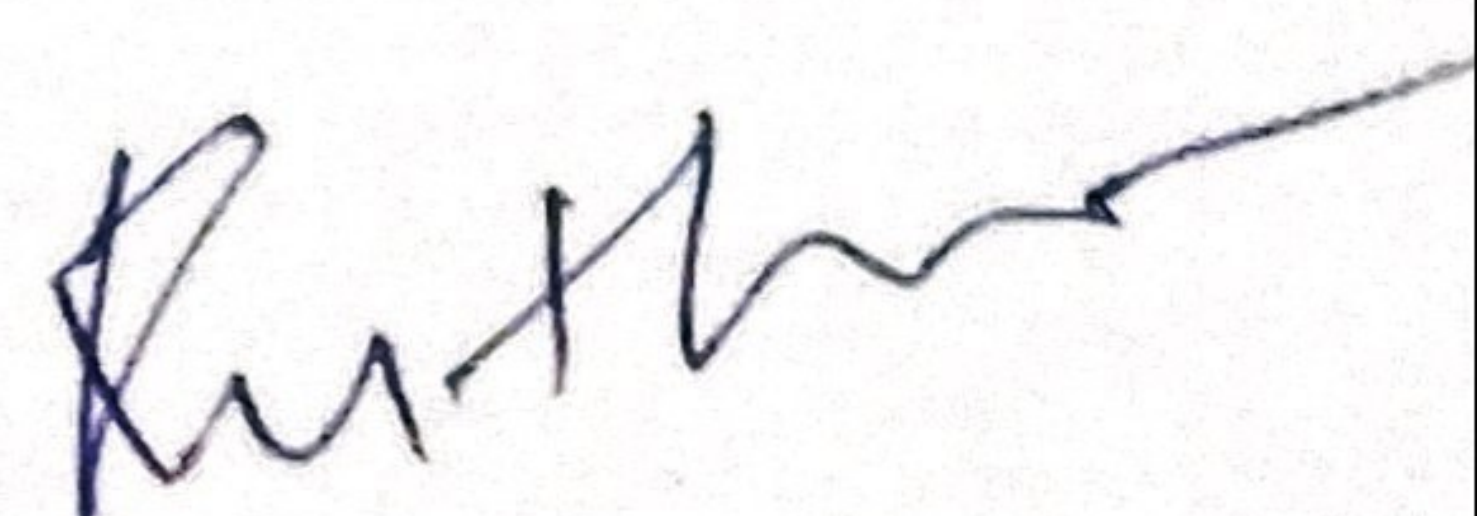
Director,
Materials Research Center,
Coimbatore &
Emeritus Professor,
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Dr. B. MEDONA

Head & Associate Professor,
Department of Chemistry
Fatima College
Madurai-625018.


Dr. B. MEDONA

Head and Associate Professor,
Department of Chemistry,
Fatima college,
Madurai-625018.



DECLARATION

I do hereby declare that this dissertation entitled "**SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE BASED ON AZADIRACHTA INDICA (NEEM FLOWER) WITH SODIUM NITRITE**" has been carried out by **P. SHANMUGAPRIYA** (Reg.No:2021MSCC29) and submitted to Department of Chemistry, Fatima College, Madurai-18 in a partial fulfillment of the requirements for the award of **MASTER OF SCIENCE IN CHEMISTRY**, during the academic year, **2022 – 2023**.

Place: Madurai

Date:

P. Shanmugapriya

P. SHANMUGAPRIYA

Reg.No:2021MSCC29

II M.Sc CHEMISTRY,

FATIMA COLLEGE,

MARY LAND,

MADURAI-625018.

ACKNOWLEDGEMENT

“GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY”

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai-18 for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai-18 for her constant support and encouragement in the successful completion of this project work.

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M. KANI AJAY BABU & P. MOHANAA MUTHUSELVI, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. P. ALAGUMANI** for her motivation and support during this project. I thank my Father **Mr. K. PANDIYAN**, for giving me strength to chase my dreams. And also I would like to thank my friends for their valuable support.

P. Shanmugapriya
(P. SHANMUGAPRIYA)

**Facile Synthesis and Characterization of Organogel using
4,6-*O*-Ethylidene- α -D-glucopyranose and
p-bromoaniline**

A PROJECT REPORT

Submitted by

**K. VISWATHIKA
(2021MSCC30)**

in partial fulfillment for the award of the degree of

MASTER OF SCIENCE IN CHEMISTRY



**DEPARTMENT OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

**(Re-Accredited with A++ Grade by NAAC (CGPA: 3.61) in the fourth cycle)
MARYLAND MADURAI- 625018.**

**Under the Guidance of
Dr. K. KARTHIK KUMAR
Assistant Professor**



**Since 1881
PG & Research Department of Chemistry
The American College
Madurai-625002
APRIL - 2023**

CERTIFICATE

This is to certify that K. VISWATHIKA, MSc., (Chemistry) student of Fatima College, Madurai has done the project work entitled "Facile Synthesis and Characterization of Organogel using 4,6-O-Ethylidene- α -D-glucopyranose and p-bromoaniline" during the academic year 2022-2023 under the supervision of Dr. K Karthik Kumar, Assistant Professor, PG & Research Department of chemistry, The American College, Madurai-625002. This project or any part of this work has not been presented for any degree/diploma in any other form.



Internal guide

Dr. K. R SUBIMOL

Assistant Professor,
Department of Chemistry,
Fatima College,
Madurai-625018



External guide

Dr. K. KARTHIK KUMAR

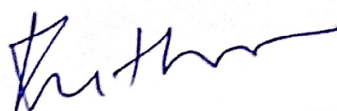
Assistant Professor,
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The American College,
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Head of the department

Dr. B. MEDONA

Associate Professor,
Department of Chemistry,
Fatima College,
Madurai-625018





OMCRL

(Formulation & Drug Consultancy Services)

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Thuvariman,
Madurai – 625019,
Tamilnadu

Date: 01.04.2023

CERTIFICATE

This is to certify that **Ms. K. Viswathika** [Reg.No: 2021MSCC30], II. M.Sc., student, Department of Chemistry(PG), Fatima college, Madurai-18 carried out her M.Sc., chemistry project work on “Facile Synthesis and Characterization of Organogel using 4,6-*O*-Ethylidene- α -D-glucopyranose and p-bromoaniline” in the Organic and Material Chemistry Research Laboratory, The American College, Madurai-02 from 13.12.2022 - 01.04.2023, for a period of three months, under the guidance of **Dr. K. Karthik Kumar**, Assistant professor, PG & Research Department of Chemistry, The American College, Madurai-02.

Dr. K. Karthik Kumar

Dr. K. KARTHIK KUMAR
Dr. K. KARTHIK KUMAR
PG & ASSISTANT PROFESSOR OF Chemistry
PG & Research Department of Chemistry
Ship No: 17/24
Madurai - 625002,
Madurai - 625002.



DECLARATION

I do hereby declare that this dissertation entitled "Facile Synthesis and Characterization of Organogel using 4,6-*O*-Ethylidene- α -D-glucopyranose and p-bromoaniline" submitted to Fatima college in partial fulfillment of requirement for the award of MASTER OF SCIENCE IN CHEMISTRY, is a record of original research work done by me at The American College Madurai - 625002. I also declare that this dissertation or part of work has not been published earlier elsewhere in any manner.

Place: Madurai

Date:

K. Viswathika

K.VISWATHIKA

(REG.NO. 2021MSCC30)

ACKNOWLEDGEMENT

On the verge of completing my thesis, I extend my first and foremost gratefulness to the god almighty and my parents for their blessings which plays a key role in the completion of the work.

I have great pleasure in expressing my sincere thanks to management and the principal **Dr. Rev. Sr. G. CELINE SAHAYA MARY**, Fatima College, Madurai for giving me permission to do the project work in Kamaraj University, Madurai.

I express my deep respect and gratitude to **Dr. B. MEDONA** Associate Professor and Head of the Department of Chemistry, Fatima College for permitting to carry out the project work in Madurai Kamaraj University, Madurai.

I record my sincere thanks to my internal guide **Dr. K. R. SUBIMOL** Assistant Professor, Department of Chemistry, Fatima College for her guidance and support for the successful completion of the project work.

I express my heartfelt gratitude and sincere thanks to **Dr. K. KARTHIK KUMAR**, Assistant Professor, PG & Research Department of Chemistry, The American College, Madurai for granting permission and providing a congenial environment with excellent lab facilities.

I express my sincere and soulful thanks to **Mrs. P. PANDI SUDHA**, **Ms. R. SHOBANA**, **Ms. M. SUJIDHA**, **Mr. M. MANI BHARATHY**, **Ms. P. NAGA NANDHINI**, Research Scholars, Organic and Material Chemistry Laboratory, The American College, Madurai. Especially I am very grateful to them for their help rendered in the final proof-reading of the thesis.

I also record my sincere thanks to all my department staff for their support and encouragement.

From the bottom of my heart, I extend my gratitude to my classmates and friends of Fatima College for their great support and constant encouragement. I am deeply indebted my family for their understanding, care, love and unfailing support and encouragement.

We acknowledge project fund received under DST-CURIE core grant for women PG colleges DST/CURIE-PG/2022/11.

K. Viswathika
(K.VISWATHIKA)

Fluorescent Schiff base as a selective sensor for Cu^{2+} ion with biological activity

*A Project report submitted to Department of Chemistry, FATIMA COLLEGE
(Autonomous), In partial fulfillment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

P. S. Sneha

(Reg. No: 2021MSCC31)

Under the Guidance of

Dr. V. Arul Deepa

Assistant professor



DEPARTMENT OF CHEMISTRY

FATIMA COLLEGE (Autonomous)

(Re-Accredited with "A++" Grade by NAAC)

Madurai- 625018.

April – 2023

CERTIFICATE

This is to declare that the dissertation entitled "**Fluorescent Schiff base as a selective sensor for Cu²⁺ ion with biological activity**" Submitted to the **FATIMA COLLEGE**, Madurai, is partial fulfillment of the requirements of the award of the degree of **Master of Science in Chemistry**, is a record of research work done by P. S. Sneha during the period of her study in the Department of Chemistry, Fatima College, Madurai.



Internal Guide

Dr. V. Arul Deepa

Assistant Professor

Department of Chemistry

Fatima College

Madurai.



Head of The Department

Dr. B. Medona

Associate Professor & Head

Department of Chemistry

Fatima College

Madurai.



DECLARATION

I hereby declare that this project work entitled “**Fluorescent Schiff base as a selective sensor for Cu²⁺ ion with biological activity**” has been originally carried out by me in the PG Chemistry laboratory during 2022-2023 under the guidance of **Dr. V. Arul Deepa**, Assistant Professor, Department of Chemistry, **Fatima college**, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date: 10.04.2023

P. S. Sneha

(P. S. SNEHA)

(Reg.No.2021MSCC31)

ACKNOWLEDGEMENT

"Praise and Glory always be to God"

I thank the Management and Principal, Thiagarajar College, Madurai, for permitting me to carry out this project in Thiagarajar College.

We are grateful to **Dr. Sr. G. CELINE SAHAYA MARY**, Principal, Fatima College, Madurai for permitting us to carry out our project at Materials Research Center, Madurai and also, I would like to thank **Dr. Sr. M. FRANCISCA FLORA**, Secretary, Fatima College, Madurai for her prayers and blessings.

I thank **Dr. B. MEDONA**, Head and Associate professor, Department of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

My indebted thanks to **Dr. V. Arul deepa**, Assistant Professor, Department of Chemistry, Fatima College, for her constructive and sustained interest towards each and every stage of this work and her valuable suggestions throughout my project work.

I thank my parents **P. SENRAYAN** and **K. VASANTHI** and my sister **P. S. SUBHIKSHA** for their motivation during this project.

We acknowledge project fund received under **DST CURIE core Grant** for Women PG Colleges **DST/CURIE-PG/2022/11**.

P. S. SNEHA