



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

Fabrication of Proton Conducting Primary Battery with Biomaterial (Cassia Auriculata) and Ammonium nitrate based membrane as an Electrolyte

A Project report submitted to Research Centre of Chemistry

FATIMA COLLEGE (Autonomous)

In Partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

S. AKILA

(REG.NO: 2022MSCC02)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI - 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE - 641 045

MARCH - 2024



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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "Fabrication of proton conducting primary battery with Biomaterial (Cassia Auriculata) and Ammonium nitrate based membrane as an Electrolyte" was carried out by Ms. S. AKILA at Materials Research Center, Coimbatore under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore & Emeritus Professor, Bharathiar University, Coimbatore and Dr. S. SUKUMARI, Associate Professor, The Research Centre of Chemistry, Fatima College, Madurai and submitted to The Research Centre of Chemistry, Fatima College, Madurai.

S. S.

INTERNAL GUIDE

Dr. S. SUKUMARI

Associate Professor,

The Research Centre of Chemistry,

Fatima College,

Madurai - 625 018

S. Selvasekarapandian

EXTERNAL GUIDE

Dr. S.SELVASEKARAPANDIAN

Director,

Materials Research Center,

Coimbatore - 641 045 &

Emeritus Professor,

Bharathiar University,

Coimbatore - 641 046.

B. Medona

HEAD OF THE DEPARTMENT

Dr. B. MEDONA

Head & Associate Professor,

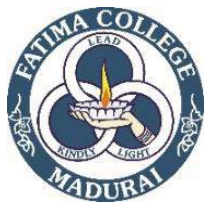
The Research Centre of Chemistry,

Fatima College,

Madurai - 625 018.

R. H.

EXTERNAL EXAMINAR



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I hereby declare that this project work entitled "**Fabrication of proton conducting primary battery with Biomaterial (Cassia Auriculata) and Ammonium nitrate based membrane as an Electrolyte**" has been originally carried out by Ms. S. AKILA (2022MSCC02) at Materials Research Center during the academic year, 2023 – 2024 and submitted to The Research Centre of Chemistry, Fatima College, Madurai in a partial fulfilment of the requirements for the award of **MASTER OF SCIENCE IN CHEMISTRY**, I also declare that this part of work has not been published earlier elsewhere in any manner.

S.AKILA

Place: Madurai

Date: 26/03/2024

(REG. NO: 2022MSCC02)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF A PRIMARY PROTON BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE

A Project report submitted to Research Centre of Chemistry,

FATIMA COLLEGE (Autonomous),

In Partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

A.ARUL SHILPA

(REG.NO: 2022MSCC03)



THE RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH - 2024



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "FABRICATION OF A PRIMARY PROTON BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE" 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 **Ms. A. ARUL SHILPA** 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, The Research Centre of Chemistry, Fatima College, Madurai and submitted to The Research Centre of Chemistry, Fatima College, Madurai.

INTERNAL GUIDE

Dr. S. SUKUMARI

Associate Professor,
The Research Centre of Chemistry,
Fatima College,
Madurai – 625 018

EXTERNAL GUIDE

Dr. S.SELVASEKARAPANDIAN

Director,
Material Research Center,
Coimbatore &
Emeritus Professor,
Bharathiar University,
Coimbatore – 641 045

HEAD OF THE DEPARTMENT

Dr. B. MEDONA

Head and Associate professor,
The Research Centre of chemistry,
Fatima College,
Madurai - 625 018

EXTERNAL EXAMINAR



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "FABRICATION OF A PRIMARY PROTON BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE" has been carried out by Ms. A. ARUL SHILPA (Reg.No: 2022MSCC03) and submitted to The Research Centre 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, 2023-2024.

Place: Madurai

A. Arul Shilpa
A. ARUL SHILPA

Date: 26.05.2024

(Reg. No: 2022MSCC03)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

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 to **Dr. B. MEDONA**, Head and Associate professor, The Research Centre 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, 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 **Ms. S. AAFRIN HAZAANA**, **Ms. MEERA NAACHIYAR**, **Mr. N. MUNIRAJ@VIGNESH**, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

I thank my beloved Mother **Mrs. A. JESINTHA MARY** for her motivation and support during this project. I thank my Father late **Mr. M. ARULANDHU**, 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.

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

A. Arul Shilpa
(A.ARUL SHILPA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY PROTON CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE

*A Project report submitted to Research Centre of Chemistry, Fatima College
(Autonomous), In Partial fulfilment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

A. ARULSNEHA

(REG.NO: 2022MSCC04)



RESEARCH CENTRE OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI - 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE - 641 045

MARCH - 2024



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "FABRICATION OF PRIMARY PROTON CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE" 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 Ms. A. ARULSNEHA at Materials Research Center, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Mrs. Dr. A. RAJESWARI, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.

INTERNAL GUIDE

Dr. A. RAJESWARI, M.Sc., M.Phil., Ph.D.,
Assistant Professor,
Research Centre of Chemistry,
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EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,
Director,
Material Research Center,
Coimbatore – 641 045 &
Emeritus professor,
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Coimbatore – 641 046.

HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., Ph.D.,
Head & Associate professor,
Research Centre of Chemistry,
Fatima College,
Madurai – 625 018.

EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "FABRICATION OF PRIMARY PROTON CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE" has been carried out by Ms. A. ARULSNEHA (Reg.No:2022MSCC04) and submitted to Research Centre 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, 2023 – 2024.

Place: Madurai

Date: 26.03.2024.

A. Arulsneha

A. ARULSNEHA

(Reg. No: 2022MSCC04)



FATIMA COLLEGE

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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 **Mrs. Dr. B. MEDONA**, Head & Associate professor, Research Centre 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 **Ms. S. AAFRIN HAZAANA**, **Ms. R. MEERA NAACHIYAR**, **Mr. N. MUNIRAJ@VIGNESH**, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

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

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

A. Arulsneha
(A. ARULSNEHA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE

*A Project report submitted to Research Centre of Chemistry, Fatima College
(Autonomous), In Partial fulfilment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

A. DELICIA

(REG.NO: 2022MSCC05)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH - 2024



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu


BONAFIDE CERTIFICATE

This is to certify that the project report entitled "FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAYARAM POO) AS BIOMATERIAL BASED ELECTROLYTE" 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 Ms. A. DELICIA at Materials Research Centre, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. A. RAJESWARI, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.



INTERNAL GUIDE

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

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Dr. B. MEDONA, M.Sc., Ph.D.,
Head & Associate professor,
Research Centre of Chemistry,
Fatima College,
Madurai – 625 018.



EXTERNAL EXAMINAR



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "FABRICATION OF PRIMARY LITHIUM-ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE" has been carried out by Ms. A . DELICIA (Reg.No:2022MSCC05) and submitted to Research Centre 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, 2023 – 2024.

Place: Madurai

Date: 26.03.2024

A. Delicia
A. DELICIA

Reg. No: 2022MSCC05



FATIMA COLLEGE

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Mary Land, Madurai - 625018, Tamil Nadu

ACKNOWLEDGEMENT

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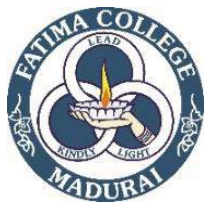
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I thank my beloved Mother **Mrs. S. A. AMALI AROCKIA JOSEPHINE** for her motivation and support during this project. And also, I would like to thank my friends for their valuable support.

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

A. Delicia
(A. DELICIA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AARVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE

*A Project report submitted to Research Centre of Chemistry,
FATIMA COLLEGE (Autonomous),
In Partial fulfilment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

M. DEVIKA

(REG.NO: 2022MSCC06)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with A++ Grade by NAAC

(CGPA: 3.61 in the fourth cycle)

MADURAI - 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE - 641 045

MARCH - 2024



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE" 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 **Ms. DEVIKA** 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. M. PRIYADHARSANI**, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.

M. Priyadharsani 4/3/24

INTERNAL GUIDE

Dr. M. PRIYADHARSANI,
M.Sc., M.Phil., SET., Ph.D.,
Assistant Professor,
Research Centre of Chemistry,
Fatima College,
Madurai – 625 018

S. Selva Sekarapandian

EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN,
M.Sc., Ph.D.,
Director,
Materials Research Center,
Coimbatore – 641 045 &
Emeritus Professor,
Bharathiar University,
Coimbatore – 641 046.

B. Medona

HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., Ph.D.,
Head & Associate Professor,
Research Centre of Chemistry,
Fatima College,
Madurai – 625 018.

K. S. S. S.

EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE" has been carried out by Ms. M. DEVIKA (Reg.No:2022MSCC06) and submitted to Research Centre 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, 2023 – 2024.

Place: Madurai

Date: 26.03.2024

M. Devika

M. DEVIKA

(Reg. NO: 2022MSCC06)



FATIMA COLLEGE

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ACKNOWLEDGEMENT

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

M. Devika
(M. DEVIKA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

SYNTHESIS AND CHARACTERIZATION OF COPPER(II) COMPLEX CONTAINING SCHIFF BASE LIGAND AND ITS BIOLOGICAL ACTIVITIES

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. J. Kanisious Mary

(Register No: 2022MSCC09)



RESEARCH CENTRE 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 – 2024



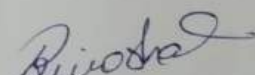
FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

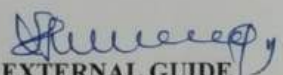
BONAFIDE CERTIFICATE

This is to certify that J. KANISIOUS MARY, M.Sc., (Chemistry) student of Fatima College, Madurai has done the project work entitled "**Synthesis and characterization of copper (II) complex containing Schiff base ligand and its biological activities**" during the academic year 2022-2024 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

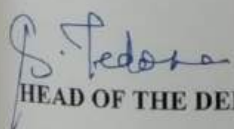
Dr. B. VINOSHA

Assistant Professor,
Research Centre of Chemistry,
Fatima College
Madurai- 625018


EXTERNAL GUIDE

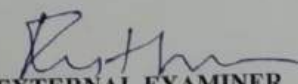
Dr. J. ANNARAJ

Associate Professor and Head,
Department of Material science,
School of Chemistry,
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HEAD OF THE DEPARTMENT

Dr. B. MEDONA

Head & Associate Professor,
Research Centre of Chemistry,
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EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)


Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "**Synthesis and characterization of copper (II) complex containing Schiff base and its biological activities**" 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: 26.03.24.


Signature of the Candidate

(J.Kanisious Mary-2022MSCC09)



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Mary Land, Madurai - 625018, Tamil Nadu

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.

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

J. Kanisious Mary
(J. KANISIOUS MARY)



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Mary Land, Madurai - 625018, Tamil Nadu

SYNTHESIS AND CHARACTERIZATION OF COPPER(II) COMPLEX CONTAINING SCHIFF BASE LIGAND AND ITS BIOLOGICAL

ACTIVITIES

A Project report submitted to Research Centre of Chemistry,

FATIMA COLLEGE (Autonomous),

In partial fulfilment of the requirement for the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted By

Ms. R. Karthika

(Register No: 2022MSCC10)



RESEARCH CENTRE OF CHEMISTRY

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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

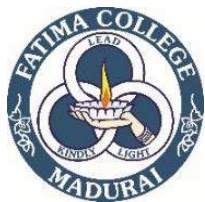
School of Chemistry

Madurai Kamaraj University

University with Potential for Excellence

(Re-Accredited with A++ Grade by NAAC (CGPA: 3.54) in the fourth cycle)
Madurai- 625021.

March - 2024



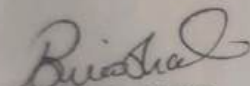
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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

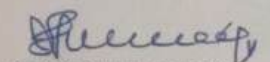
BONAFIDE CERTIFICATE

This is to certify that R. KARTHIKA, M.Sc., (Chemistry) student of Fatima College, Madurai has done the project work entitled "Synthesis and characterization of copper(II) complex containing Schiff base ligand and its biological activities" during the academic year 2022-2024 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

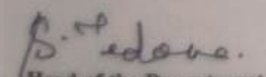
Dr. B. VINOSHA

Assistant Professor,
Research Centre of Chemistry,
Fatima College,
Madurai- 625018


EXTERNAL GUIDE

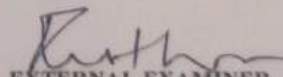
Dr. J. ANNARAJ

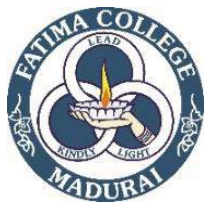
Associate Professor and Head,
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Head of the Department

Dr. B. MEDONA

Head & Associate Professor,
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EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

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Place: Madurai

Date: 26.03.2024

R. Karthika.

Signature of the Candidate

(R. Karthika-2022MSCC10)



FATIMA COLLEGE

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R. Karthika.
(R. KARTHIKA)



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Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY MAGNESIUM ION CONDUCTING BATTERY USING CASSIA ARTICULATA (AAVARAM POO) BIOMATERIAL – BASED MEMBRANE AS AN ELECTROLYTE

*A Project report submitted to Research Centre of Chemistry,
FATIMA COLLEGE (Autonomous),
In Partial fulfilment of the requirements for the degree of*

MASTER OF SCIENCE IN CHEMISTRY

S. PRIYADHARSHINI

(REG.NO: 2022MSCC14)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH-2024



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(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

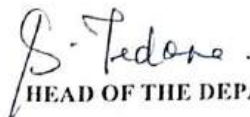
This is to certify that the project report entitled **FABRICATION OF PRIMARY MAGNESIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA BIOMATERIAL – BASED MEMBRANE AS AN ELECTROLYTE** submitted to Fatima College, Madurai in partial fulfilment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of original project work done by **Ms. S. PRIYADHARSHINI** at Materials Research Centre, Madurai under the guidance of **Dr. S. SELVASEKARAPANDIAN**, Director, Materials Research Centre, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and **Dr. Sr. JARUL MARY** Assistant Professor Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.


INTERNAL GUIDE

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Assistant Professor,
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EXTERNAL GUIDE

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Dr. B. MEDONA, M.Sc., Ph.D.,
Associate Professor,
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Fatima College,
Madurai – 625 018.


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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled **FABRICATION OF PRIMARY MAGNESIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA BIOMATERIAL – BASED MEMBRANE AS AN ELECTROLYTE** has been carried out by **S. PRIYADHARSHINI (Reg.No:2022MSCC14)** and submitted to Research Centre 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, 2023 – 2024.

Place: Madurai

Date: 26/03/2024

S. PRIYADHARSHINI

Reg. No: 2022MSCC14



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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

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 Centre, 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, Research Centre of Chemistry, Fatima College, Madurai for her constant support and encouragement in the successful completion of this project work.

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I am extremely thankful to Ms. R. MEERA NAACHIYAR, Ms. S. AAFRIN HAZAANA, Mr. N.MUNIRAJ@VIGNESH, Research Scholars, Materials Research Center, Madurai for their constant support throughout this project work.

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

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


S.PRIYADHARSHINI



FATIMA COLLEGE

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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAYARAM POO) BASED MEMBRANE AS AN ELECTROLYTE

A Project report submitted to Research Centre of Chemistry,

FATIMA COLLEGE (Autonomous),

In Partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

R. RAMYA

(REG.NO: 2022MSCC15)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI - 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE - 641 045

MARCH - 2024



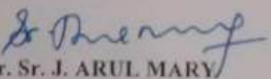
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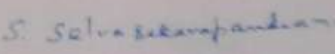
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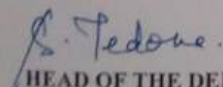
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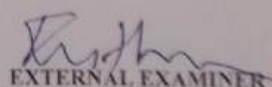
BONAFIDE CERTIFICATE

This is to certify that the project report entitled "FABRICATION OF PRIMARY LITHIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AVARAMPOO) BASED MEMBRANE AS AN ELECTROLYTE" 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. RAMYA 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. Sr. J. ARUL MARY, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.


Dr. Sr. J. ARUL MARY
M.Sc., M.Phil., Ph.D.,
Assistant Professor,
The Research Centre of Chemistry,
Fatima College,
Madurai – 625018


Dr. S. SELVASEKARAPANDIAN
M.Sc., Ph.D.,
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Dr. B. MEDONA, M.Sc., Ph.D.,
Head and Associate Professor,
Research Centre of Chemistry,
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Madurai – 625018.


EXTERNAL EXAMINER



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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

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Place: Madurai

Date: 26/03/2024

R. Ramya,
R. RAMYA

Reg. No:2022MSCC15



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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

ACKNOWLEDGEMENT

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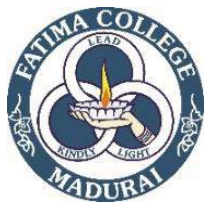
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We acknowledge project fund received under **DST CURIE** core Grant for Women PG Colleges **DST/CURIE-PG/2022/11**.

R. Ramya
(R. RAMYA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

THE INFLUENCE OF GREEN INHIBITOR ON CARBON STEEL CORROSION BEHAVIOUR IN SIMULATED CONCRETE PORE SOLUTION PREPARED IN WELL WATER

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

MASTER OF SCIENCE IN CHEMISTRY

V.RESHMA

(REG.NO: 2022MSCC16)



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FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

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Under the guidance of

Dr. A. SAHAYA RAJA, M.Sc., M.Phil., B.Ed., Ph.D.,

Assistant Professor of Chemistry



PG & RESEARCH DEPARTMENT OF CHEMISTRY

G.T.N. ARTS & SCIENCE COLLEGE (AUTONOMS)

DINDIGUL– 624 005

MARCH - 2024



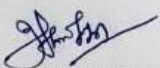
FATIMA COLLEGE

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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "**THE INFLUENCE OF GREEN INHIBITOR ON CARBON STEEL CORROSION BEHAVIOUR IN SIMULATED CONCRETE PORE SOLUTION PREPARED IN WELL WATER**" 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 **Ms. V. RESHMA** at, G.T.N. Arts & Science College, Dindigul under the guidance of **Dr. A.SAHAYA RAJA**, Assistant Professor of Chemistry, PG& Research Department of Chemistry and **Dr. B.SUGANTHANA**, Assistant professor Research Center of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.



Dr. A. SAHAYA RAJA

M.Sc., M. Phil., B.Ed., Ph.D.,

Assistant Professor,

PG & Research Department of Chemistry,

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Dr. B.SUGANTHANA,

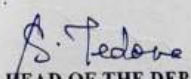
M.Sc., M.Phil., Ph.D.,

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Madurai-625018.



HEAD OF THE DEPARTMENT

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

Head and Associate professor,

Research Center of chemistry,

Fatima College(Autonomous),

Madurai - 625018.



EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

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Place: Madurai

Date: 26.03.2024

V. Reshma
V. RESHMA

REG. NO: (2022MSCC16)



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V. Reshma
(V. RESHMA)



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(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

CONSTRUCTION OF PRIMARY ZINC- ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) AS BIOMATERIAL BASED ELECTROLYTE

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

MASTER OF SCIENCE IN CHEMISTRY

N.SAKTHI PANDIMEENA

(REG.NO: 2022MSCC17)



**RESEARCH CENTRE OF CHEMISTRY
FATIMA COLLEGE (AUTONOMOUS)**

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

MADURAI – 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

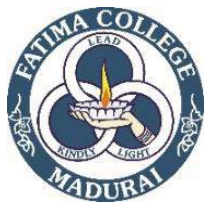
DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH – 2024



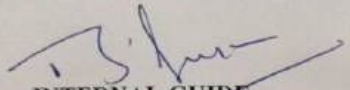
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(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONA FIDE CERTIFICATE

This is to certify that the project report entitled "CONSTRUCTION OF PRIMARY ZINC-ION CONDUCTING BATTERY USING CASSIA AURICULATA AS BIOMATERIAL-BASED ELECTROLYTE" 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 Ms. N. SAKTHI PANDIMEENA at Materials Research Centre, Madurai under the guidance of Dr. S. SELVASEKARAPANDIAN, Director, Materials Research Center, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore and Dr. B. SUGANTHANA, Assistant Professor Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.


INTERNAL GUIDE

Dr. B. SUGANTHANA, M.Sc., M. Phil., Ph.D.,
Assistant Professor,

Research Centre of Chemistry,

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EXTERNAL GUIDE

Dr. S. SELVASEKARAPANDIAN, M.Sc
Ph.D.,

Director

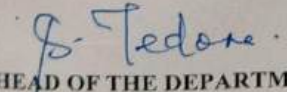
Materials Research Center,

Coimbatore-641045&

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Coimbatore- 641046.


HEAD OF THE DEPARTMENT

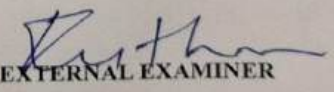
Dr. B. MEDONA, M.Sc., Ph.D.,

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Madurai – 625018.


EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

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Place: Madurai

Date: 26.03.2024

N. Sakthi Pandimeena
N. SAKTHI PANDIMEENA

REG. NO: (2022MSCC17)



FATIMA COLLEGE

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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

ACKNOWLEDGEMENT

"GLORY TO GOD ALMIGHTY WHO GIVES US THE VICTORY"

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

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

N. Sakthi Pandimeena
(N.SAKTHI PANDIMEENA)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

SYNTHESIS AND CHARACTERIZATION OF 4, 6-O PROTECTED BUTYLIDENE-N-GLYCOSYL IMINE

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

MASTER OF SCIENCE IN CHEMISTRY

Ms. M. SNEKA
(Register No: 2022MSCC19)



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MARY LAND, MADURAI – 625 018

Under the guidance of
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MARCH 2024



FATIMA COLLEGE

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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

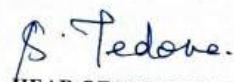
BONA FIDE CERTIFICATE

This is to certify that the project report "SYNTHESIS AND CHARACTERIZATION OF 4,6-O PROTECTED BUTYLIDENE-N-GLYCOSYL IMINE" was carried out by Ms.MSNEKA (Reg. No. 2022MSCC19), under the guidance of Dr. K. R. SUBIMOL and submitted to Research Centre of Chemistry, FATIMA COLLEGE (AUTONOMOUS), MADURAI, in partial fulfilment of the requirements for the award of the Degree of MASTER OF SCIENCE in Chemistry, during the academic year 2023-2024.



GUIDE

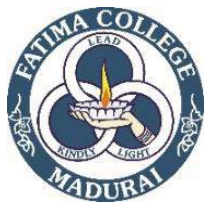
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Dr. B. MEDONA, M.Sc., Ph.D.
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EXTERNAL EXAMINER



FATIMA COLLEGE

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Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I hereby declare that this project work entitled "SYNTHESIS AND CHARACTERIZATION OF 4,6-O PROTECTED BUTYLIDENE-N-GLYCOSYL IMINE" has been originally carried out by me in PG Chemistry department laboratory during the academic year 2023-2024, under the guidance of Dr. K.R. SUBIMOL, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai -18, and this work or any part of this has not been submitted elsewhere for any other degree.

Place: Madurai

Date: 26.03.2024

M. Sneka

M. SNEKA

(REG NO2022MSCC19)



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

ACKNOWLEDGEMENT

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

I whole heartedly surrender my sincere thanks to the Management and the Principal **Dr. Sr. G. CELINE SAHAYA MARY**, Fatima College, Madurai for giving me permission to do the Project Work at Fatima College, Madurai.

I would like to attribute my sincere and heartfelt thanks to **Dr. B. MEDONA**, Head of the Department, Research department of chemistry, Fatima College, Madurai for her valuable help and support for the successful completion of this work.

I am very much thankful to **Dr. K. KARTHIK KUMAR**, Assistant Professor, Department of Chemistry, The American College, Madurai for his valuable and inspiring, encouragement during each and every stage of my project work.

It is impossible to fully express my indebtedness to **Dr. K. R. SUBIMOL**, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai for the dynamic guidance, constant help, sincere and compassionate advice, patience and insightful discussion for planning and execution of my project work I consider myself extremely fortunate to have worked under the guidance of her.

I would like to thank **Mrs. R. SHOBANA, Mrs. P. PANDI SUDHA, Mr. S.P. VIJAYAN, Ms. M. SUJIDHA, Ms. P. NAGA NANDHINI** Research scholars, OMCR Laboratory Madurai for their endless support and guidance.

I also extend my thanks to other faculty members in the department. I also thank all the staff members and lab technicians for their instant support and encouragement.

I would like to give my sincere thanks to all my family members and friends for their constant Love and Moral Support during my Project days.

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

M. SNEKA
M. Sneka



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

6-FORMYL INDOLE BASED SCHIFF BASE LIGAND - A BIOLOGICAL STUDY

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

MASTER OF SCIENCE IN CHEMISTRY

G. SOUNDARYA

(REG.NO: 2022MSCC20)

Under the Guidance of

Dr. J. JONE CELESTINA, M.Sc., Ph.D.

ASSISTANT PROFESSOR

RESEARCH CENTRE OF CHEMISTRY



RESEARCH CENTRE OF CHEMISTRY

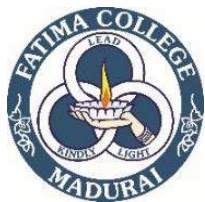
FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with A⁺⁺ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

Madurai-625018.

MARCH – 2024.



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "6-FORMYL INDOLE BASED SCHIFF BASE LIGAND – A BIOLOGICAL STUDY" Submitted to the Fatima College, Madurai in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN CHEMISTRY**. This is the record of research work done by Ms. G. SOUNDARYA under the guidance of **Dr. J. JONE CELESTINA**, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai.

INTERNAL GUIDE

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HEAD OF THE DEPARTMENT

Dr. B. MEDONA, M.Sc., Ph.D.,
Head and Associate Professor,
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EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "6-FORMYL INDOLE BASED SCHIFF BASE LIGAND – A BIOLOGICAL STUDY" has been carried out by Ms. G. SOUNDARYA (2022MSCC20) in the PG Chemistry laboratory during 2023-2024 under the guidance of Dr. J. JONE CELESTINA, Assistant Professor, Research Centre of Chemistry, Fatima College, Madurai and this work or any part of this has not been submitted elsewhere for any other degree.

Gt. Soundarya
G. SOUNDARYA

Place: Madurai.

Date: 26.03.2024

Reg. No: 2022MSCC20



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

ACKNOWLEDGEMENT

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 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 Research Center, Madurai and, 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, Research Centre 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, Research Centre 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 extend my Profound thanks to **Dr. M. PRIYADHARSANI**, Assistant Professor, Research Centre of Chemistry, Fatima College, for her great support and continuous help during the project work.

I express my heartfelt gratitude and sincere thanks to **Dr. V. ARUL DEEPA**, Assistant Professor, Research Centre of Chemistry, Fatima College, for her incredible effort and support during my project work.

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 extend my deep sense of gratitude to my beloved Lab Assistances for their untired help during my project work.

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

G. Soundarya
G. SOUNDARYA



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

**CONSTRUCTION OF PRIMARY SODIUM ION CONDUCTING BATTERY
USING BIOMATERIAL CASSIA AURICULATA BASED SOLID MEMBRANE AS
AN ELECTROLYTE**

A Project report submitted to Research Centre of Chemistry,

FATIMA COLLEGE (Autonomous),

In Partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

K. SUDARSORNALAKSHMI

(REG.NO: 2022MSCC21)



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FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625 018

Under the guidance of

Dr. S. SELVASEKARAPANDIAN, M.Sc., Ph.D.,

DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH – 2024



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the project report entitled "CONSTRUCTION OF PRIMARY SODIUM ION CONDUCTING BATTERY USING BIOMATERIAL *CASSIA AURICULATA* BASED SOLID MEMBRANE AS AN ELECTROLYTE" 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 Ms. K. SUDARSORNALAKSHMI 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, Research Centre of Chemistry, Fatima College, Madurai and submitted to Research Centre of Chemistry, Fatima College, Madurai.

J. Belinda Asha

INTERNAL GUIDE

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Emeritus Professor

Bharathiar University,

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B. Medona

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Head & Associate professor,

Research Centre of Chemistry,

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K. S. Srinivasan

EXTERNAL EXAMINER



FATIMA COLLEGE

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Mary Land, Madurai - 625018, Tamil Nadu

DECLARATION

I do hereby declare that this dissertation entitled "CONSTRUCTION OF PRIMARY SODIUM ION CONDUCTING BATTERY USING BIOMATERIAL *CASSIA AURICULATA* BASED SOLID MEMBRANE AS AN ELECTROLYTE" has been carried out by Ms. K. SUDARSORNALAKSHMI (Reg.No:2022MSCC21) and submitted to Research Centre 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, 2023 – 2024.

Place: Madurai

Date: 26/03/2024

K. Sudarsornalakshmi

K.SUDARSORNALAKSHMI

Reg. No:2022MSCC21



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ACKNOWLEDGEMENT

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K. Sudar Sornalakshmi
(K.SUDARSORNALAKSHMI)



FATIMA COLLEGE

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Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

FABRICATION OF PRIMARY SODIUM ION CONDUCTING BATTERY USING CASSIA AURICULATA (AAVARAM POO) BASED MEMBRANE AS AN ELECTROLYTE

A Project report submitted to Research Centre of Chemistry,

FATIMA COLLEGE (Autonomous),

In Partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN CHEMISTRY

S. UDHAYA PRIYA

(REG.NO: 2022MSCC22)



RESEARCH CENTRE OF CHEMISTRY

FATIMA COLLEGE (AUTONOMOUS)

Re - Accredited with A++ Grade by NACC

(CGPA: 3.61 in the fourth cycle)

MADURAI – 625 018

Under the guidance of

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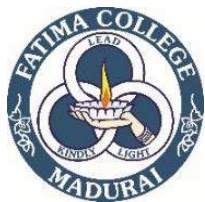
DIRECTOR



MATERIALS RESEARCH CENTER

COIMBATORE – 641 045

MARCH - 2024



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J. Belinda Asha
INTERNAL GUIDE

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EXTERNAL GUIDE

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Emeritus Professor,

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Coimbatore – 641046

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HEAD OF THE DEPARTMENT

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

Head and Associate Professor,

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Fatima College,

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K. Thirumala
EXTERNAL EXAMINER



FATIMA COLLEGE

(Autonomous)

Affiliated to Madurai Kamaraj University
Re-Accredited with 'A++' by NAAC (Cycle - IV)
Mary Land, Madurai - 625018, Tamil Nadu

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S. Udhaya Priya

Place: Madurai

S. UDHAYA PRIYA

Date: 26/03/2024

(Reg. No:2022MSCC22)



FATIMA COLLEGE

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S. Udhaya Priya

(S. UDHAYA PRIYA)