



FATIMA COLLEGE

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Affiliated to Madurai Kamaraj University
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Mary Land, Madurai - 625018, Tamil Nadu

1. Internships

The following Internship activities were carried out as part of activities arranged under the functional MoU signed between Research Centre of Physics, Fatima College and Materials Research Centre, Coimbatore.

S. No.	Reg. No.	Name of the Student	Title of the Project	Name of the collaborating agency with contact details
1.	2020MSCP03	J. Anushya	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
2.	2020MSCP06	A. Darathy Celciya	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
3.	2020MSCP07	S. Deepitha Kumari	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
4.	2020MSCP15	C.Marshalin Reena	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
5.	2020MSCP19	J. Roshini	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
6.	2020MSCP22	M.Shrinidhy	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch
7.	2020MSCP27	S. M. Sonalee	Theoretical and Experimental Study based on the Applications of Battery	Materials research center, Madurai branch



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J. Anushya (2020MSCP03)

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Dr. S. Selvasekarapandian Director	Date : <u>07.08.2021</u>
<p style="text-align: center;">CERTIFICATE</p> <p>This is to certify that Ms Anusuya J, II M.Sc. Physics [2020MSCP03] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.</p> <p style="text-align: right;"><i>S. Selvasekarapandian</i> S. Selvasekarapandian Director</p> <p>Madurai Branch: 7-A, Veerapathraiyer Lane, South Veli Street, MADURAI- 625001.</p> <p>200 A, Thiruvalluvar Nagar, Ramanathapuram. Coimbatore - 641 045, INDIA.</p>	



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A. Darathy Celciya (2020MSCP06)

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Dr. S. Selvasekarapandian
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Date : 07.08.2021

CERTIFICATE

This is to certify that Ms Darathy Celciya A, II M.Sc. Physics [2020MSCP06] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.

S. Selvasekarapandian
S. Selvasekarapandian
Director

Madurai Branch: 7-A, Veerapathraiyer Lane, South Veli Street, MADURAI- 625001.

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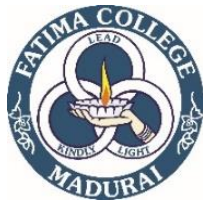
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S. DeepithaKumari (2020MSCP07)

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Cell : +91 94437 03089	Website : www.mrckoval.in Email : mrckoval@gmail.com
Dr. S. Selvasekarapandian Director	Date : <u>07.08.2021</u>
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This is to certify that Ms Deepithakumari S, II M.Sc. Physics [2020MSCP07] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.	
<div style="text-align: right;"> S. Selvasekarapandian Director</div>	
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C. Marshalin Reena (2020MSCP15)

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Dr. S. Selvasekarapandian
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Date : 07.08.2021

CERTIFICATE

This is to certify that Ms Marshalin Reena C, II M.Sc. Physics [2020MSCP15] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.


S. Selvasekarapandian
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J. Roshini (2020MSCP19)

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Dr. S. Selvasekarapandian Director	Date : 07.08.2021	
CERTIFICATE		
This is to certify that Ms Roshini J, II M.Sc. Physics [2020MSCP19] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.		
		<i>S. Selvasekarapandian</i> S. Selvasekarapandian Director
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M. Shrinidhy (2020MSCP22)

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Date : 07.08.2021

CERTIFICATE

This is to certify that Ms Shrinidhy M, II M.Sc. Physics [2020MSCP22] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.

S. Selvasekarapandian
S. Selvasekarapandian
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S. M. Sonalee (2020MSCP27)

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Date : 07.08.2021

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This is to certify that Ms Sonalee S M, II M.Sc. Physics [2020MSCP27] Student from Research Centre of Physics, Fatima College has successfully completed her internship, under the mentorship of Prof. Dr. S. Selvasekarapandian, Emeritus Professor, Bharathiar University, & Director Materials Research Center, Coimbatore. She worked in Materials Research Center, MADURAI BRANCH on the title "Theoretical and Experimental Study based on the Applications of Battery" from 30.06.2021 to 30.07.2021.

S. Selvasekarapandian
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2. Projects

The following Collaborative project activities were carried out as part of activities arranged under the functional MoU signed between Research Centre of Physics, Fatima College and Materials Research Centre, Coimbatore.

S. No.	Reg. No.	Name of the Student	Internal Guide Name	External Guide Name	Title of the Project
1.	2020MSCP02	K. ANNIE ROSELIN	Mrs. R. ALPHONSA FERNANDO	Dr. S. SELVA SEKARAPANDIAN	FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH LITHIUM NITRATE (LiNO_3)
2.	2020MSCP03	J. ANUSUYA	Mrs. R. ALPHONSA FERNANDO	Dr. S. SELVASEKARAPANDIAN	PERFORMANCE OF MAGNESIUM ION BATTERY USING BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH MAGNESIUM NITRATE
3.	2020MSCP06	A. DARATHY CELCIYA	Dr. M.V. LEENA CHANDRA	Dr. S. SELVASEKARAPANDIAN	FABRICATION OF SODIUM ION BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA WITH SODIUM NITRATE
4.	2020MSCP07	S. DEEPITHA KUMARI	Dr. M.V. LEENA CHANDRA	Dr. S. SELVASEKARAPANDIAN	FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH LITHIUM CHLORIDE



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5.	2020MSCP15	C.MARSHALIN REENA	Mrs. ALPHONSA FERNANDO	Dr. S. SELVA SEKARAPANDIA N	SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA AND AMMONIUM NITRATE (NH ₄ NO ₃) FOR PROTON BATTERY APPLICATION
6.	2020MSCP19	J.ROSHINI	Dr. M.V. LEENA CHANDRA	Dr. S. SELVASEKARAP ANDIAN	PRELIMINARY STUDY OF BIOMATERIAL ELCTROLYTE BASED ON WITHANIA SOMNIFERA WITH AMMONIUM FORMATE (NH ₄ HCO ₂) FOR FABRICATION OF PROTON CONDUCTING BATTERY
7.	2020MSCP22	M.SHRINIDHY	Dr. M.V. LEENA CHANDRA	Dr. S. SELVASEKARAPA NDIAN	FABRICATION OF MAGNESIUM ION BATTERY USING BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA(ASHWAGA NDHA) WITH MAGNESIUM CHLORIDE(MgCl ₂)
8.	2020MSCP27	S. M. SONALEE	Mrs. R.ALPHONSA FERNANDO	Dr. S.SELVASEKAR APANDIAN	DEVELOPMENT OF BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA WITH ZINC CHLORIDE (ZnCl ₂) FOR SOLID STATE BATTERY APPLICATION



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K. ANNIE ROSELIN (2020MSCP02)

**FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING
BIO MATERIAL ELECTROLYTE BASED ON WITHANIA
SOMNIFERA (ASHWAGANDHA) WITH LITHIUM NITRATE (LiNO_3)**

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

To fulfillment of the requirements for the award of the degree

MASTER OF SCIENCE IN PHYSICS

Submitted by

K. ANNIE ROSELIN (REG.NO:2020MSCP02)

External Guide:

Dr. S.SELVASEKARAPANDIAN

The Director,
Materials Research Centre,
Coimbatore &
Emeritus professor,
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Coimbatore.

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April 2022



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Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the work continued in the thesis entitled "FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH LITHIUM NITRATE (LiNO_3)" is submitted to Fatima College, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by **K. Annie Roselin**, at Materials Research Centre, Madurai under the guidance of **Mrs. R. Alphonsa Fernando**, Associate Professor, Research Centre of Physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials Research Centre, Coimbatore and Emeritus professor, Bharathiar University, Coimbatore during April-May 2022.


Dr. S. SELVASEKARAPANDIAN

The Director,
Materials Research Centre,
Coimbatore &
Emeritus professor,
Bharathiar University,
Coimbatore.


Mrs. R. ALPHONSA FERNANDO

Associate Professor,
Research Centre of Physics,
Fatima College,
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Dr. A. SHEELA VIMALA RANI

Head, Research Centre of Physics,
Fatima College,
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J. ANUSUYA (2020MSCP03)

PERFORMANCE OF MAGNESIUM ION BATTERY USING
BIOMATERIAL ELECTROLYTE BASED ON WITHANIA
SOMNIFERA(ASHWAGANDHA)WITH MAGNESIUM NITRATE
 $Mg(NO_3)_2$

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

J. ANUSUYA (REG.NO:2020MSCP03)

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Coimbatore.

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Mary Land, Madurai - 625018, Tamil Nadu*

BONAFIDE CERTIFICATE

This is to certify that the work continued in the thesis entitled "PERFORMANCE OF MAGNESIUM ION BATTERY USING BIOMATERIAL ELCTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH MAGNESIUM NITRATE $Mg(NO_3)_2$ " is submitted to Fatima College, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by J.Anusuya at Materials Research Centre, Madurai under the guidance of Mrs.R.Alphonsa Fernando, Associate Professor, Research Centre of Physics, Fatima College, Madurai and Dr.S.Selvasekarapandian, The Director, Materials research Centre ,Coimbatore & Emeritus Professor, Bharathiar University, Coimbatore during April – May 2022.


Dr. S. Selvasekarapandian

The Director,
Materials Research Centre,
Coimbatore
& Emeritus Professor,
Bharathiar University,
Coimbatore.


Mrs. R. Alphonsa Fernando

Associate Professor,
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A. DARATHY CELCIYA (2020MSCP06)

FABRICATION OF SODIUM ION BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA WITH SODIUM NITRATE

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

To the fulfilment of the requirements for the award of the degree

MASTER OF SCIENCE IN PHYSICS

Submitted by

A. DARATHY CELCIYA (REG.NO:2020MSCP06)

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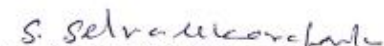
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Mary Land, Madurai - 625018, Tamil Nadu

BONAFIDE CERTIFICATE

This is to certify that the work continued in the thesis entitled “**FABRICATION OF SODIUM ION BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA WITH SODIUM NITRATE (NaNO_3)**” is submitted to Fatima College, Madurai in fulfilment for the award of the degree of Master of Science in Physics. This is the record of original project work done By **A. Darathy Celciya** at Materials Research Centre, Madurai under the guidance of **Dr. M.V. Leena Chandra**, Assistant Professor, Research Centre of Physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials research Centre, Coimbatore and Emeritus Professor, Bharathiar University, Coimbatore during April-May 2022.


Dr. S. SELVASEKARAPANDIAN

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S. DEEPITHA KUMARI (2020MSCP07)

**FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING
BIOMATERIAL ELECTROLYTE BASED ON WITHANIA
SOMNIFERA (ASHWAGANDHA) WITH LITHIUM CHLORIDE**

A project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

S.DEEPITHAKUMARI (Reg. No. 2020MSCP07)

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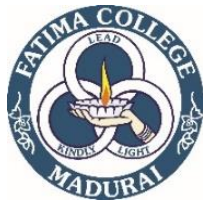


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BONAFIDE CERTIFICATE

This is to certify that the work continued in the thesis entitled "**FABRICATION OF LITHIUM ION CONDUCTING BATTERY USING BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH LITHIUM CHLORIDE**" is submitted to the Fatima College, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by **S.DeepithaKumari** at Materials Research Centre, Madurai under the guidance of **Dr. M.V. Leena Chandra**, Assistant Professor, Research Centre of Physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials Research Centre, Coimbatore & Emeritus Professor, Bharathiar University, Coimbatore during April-May 2022.

S. Selvasekarapandian
Dr. S. SELVASEKARAPANDIAN

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C.MARSHALIN REENA (2020MSCP15)

**SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE
BASED ON WITHANIA SOMNIFERA AND AMMONIUM NITRATE (NH_4NO_3)
FOR PROTON BATTERY APPLICATION**

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

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

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

C.MARSHALIN REENA (REG.NO. 2020MSCP15)

External Guide

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APRIL - 2022.



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BONAFIDE CERTIFICATE

This is to certify that the work continued in the thesis entitled "SYNTHESIS AND CHARACTERIZATION OF BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA AND AMMONIUM NITRATE (NH_4NO_3) FOR PROTON BATTERY APPLICATION" is submitted to Fatima college, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by **C. Marshalin Reena** at Materials Research Center, Madurai under the guidance of **Mrs. R. Alphonsa Fernando** Associate professor, Research center of physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials Research center, Coimbatore & Emeritus professor, Bharathiar University, Coimbatore during April-May 2022

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J.ROSHINI (2020MSCP19)

**PRELIMINARY STUDY OF BIOMATERIAL ELECTROLYTE BASED
ON WITHANIA SOMNIFERA WITH AMMONIUM FORMATE
(NH₄HCO₃) FOR FABRICATION OF PROTON CONDUCTING
BATTERY**

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

J.ROSHINI (REG.NO:2020MSCP19)

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This is to certify that the work contained in the thesis entitled "PRELIMINARY STUDY OF BIOMATERIAL ELECTROLYTE BASED ON ASHWAGANDHA WITH AMMONIUM FORMATE FOR FABRICATION OF PROTON CONDUCTING BATTERY" is submitted to Fatima College, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by J. Rashini, at Materials Research Centre, Madurai under the guidance of Dr. M.V. Leena Chandra, Assistant Professor, Research Centre of Physics, Fatima College, Madurai and Dr. S. Selvasekarapandian, The Director, Materials Research Centre, Coimbatore and Emeritus professor, Bharathiar University, Coimbatore during April-May 2022.


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FABRICATION OF MAGNESIUM ION BATTERY USING
BIOMATERIAL ELECTROLYTE BASED ON WITHANIA
SOMNIFERA(ASHWAGANDHA) WITH MAGNESIUM
CHLORIDE(MgCl₂)

A Project work submitted to

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This is to certify that the work continued in the thesis entitled "**FABRICATION OF MAGNESIUM ION BATTERY USING BIOMATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA (ASHWAGANDHA) WITH MAGNESIUM CHLORIDE ($MgCl_2$)**" is submitted to Fatima College, Madurai in fulfillment for the award of the degree of Master of science in Physics. This is the record of original project work done by **M.Shrinidhy** at Materials Research Centre, Madurai under the guidance of **Dr. M. V. Leena Chandra**, Assistant Professor, Research Centre of Physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials research Centre, Coimbatore & Emeritus professor, Bharathiar University, Coimbatore during April-May 2022.


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S. M. SONALEE (2020MSCP27)

**DEVELOPMENT OF BIO MATERIAL ELECTROLYTE BASED ON
WITHANIA SOMNIFERA WITH ZINC CHLORIDE ($ZnCl_2$) FOR
SOLID STATE BATTERY APPLICATION**

A Project work submitted to

FATIMA COLLEGE (AUTONOMOUS)

(Affiliated to MADURAI KAMARAJ UNIVERSITY, Madurai)

to the fulfillment of the requirements for the award of the degree

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This is to certify that the work continued in the thesis entitled "**DEVELOPMENT OF BIO MATERIAL ELECTROLYTE BASED ON WITHANIA SOMNIFERA WITH ZINC CHLORIDE ($ZnCl_2$) FOR SOLID STATE BATTERY APPLICATION**" is submitted to Fatima College, Madurai in fulfillment for the award of the degree of Master of Science in Physics. This is the record of original project work done by **S. M. Sonalee** at Materials Research Centre, Madurai under the guidance of **Mrs. R. Alphonsa Fernando** Associate Professor, Research Centre of Physics, Fatima College, Madurai and **Dr. S. Selvasekarapandian**, The Director, Materials Research Centre, Coimbatore & Emeritus Professor, Bharathiar University, Coimbatore during April-May 2022.


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