CHARTERIZATION OF BIO-CLAY

A project work 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 PHYSICS

Submitted by

R. DEEPIKA (Reg.No.2019MSCPO4)

External Guide

Dr. S. RAJENDRAN

Head and Coordinator,

Division of Rural Biotechnology,

Department of Botany

Saraswathi Narayanan College,

Madurai -625022

Internal Guide

Dr. G. JENITA RANI

Assistant Professor,

Research Centre of physics,

Fatima College,

Madurai- 625001

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is certify that this project work entitled **"CHARACTERIZATION OF BIO-CLAY"** submitted in partial fulfillment of the requirements for the Degree of Master of Science in Physics, is a bonafide record of the work done by **R. DEEPIKA** under the guidance of **Dr. JENITA RANI M.Sc., M. Phil., Ph. D.** Assistant Professor, Research Centre of Physics, Fatima College (Autonomous), Madurai and **Dr. S. RAJENDRAN**, Associate Professor, **Division of Rural biotechnology**, Department of Botany, Saraswathi Narayanan College, Madurai during 2020-2021.

Dr. S. Rajendran
Associate Professor,
Division of Rural biotechnology
Department of Botany,
Saraswathi Narayanan College,
Madurai.

Dr. Jenita Rani
Assistant Professor,
Research Center of Physics,
Fatima College,
Madurai.

Dr. A. SHEELA VIMALA RANI
Head, Research Centre of physics,
Fatima College,
Madurai

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH SODIUM PERCHLORATE

A Project work 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 PHYSICS

Submitted by

B.HARISHMA (Reg.No.2019MSCP07)

External Guide

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research Center

(Madurai branch)

Madurai.

Internal Guide

Dr.G.JENITA RANI,

Assistant Professor,

Research Centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH SODIUM PERCHLORATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics ..is a bonafide record of the work done by **B. HARISHMA** under the guidance of **DR.G.JENITA RANI**, Assistant Professor. Research center of physics. Fatima College.(Autonomous). Madurai and **DR.S.SELVASEKARAPANDIYAN,** Director materials Research center(Madurai branch) Madurai during 2020-2021.

S. Selvasekarapandian.

Dr.S.SELVASEKARAPANDIAN

Director Materials Research Center

(Madurai branch)

Madurai.

Dr.G.JENITA RANI,

Assistant Professor.

Research Center of Physics.

Fatima College.

Madurai.

A. Sheela Vimala Rani

Dr.A.SHEELA VIMALA RANI

Head. Research Centre of physics.

Fatima College.

Madurai.

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH AMMONIUM THIOCYANATE

A Project work Submitted to

FATIMA COLLEGE (AUTONOMOUS)

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

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

K. JENIFER (Reg.No.2019MSCP09)

External Guide

Dr. S. SELVASEKARAPANDIAN

Director, Materials Research Centre

(Madurai branch)

Madurai.

Internal Guide

Dr. G. JENITA RANI

Assistant Professor,

Research centre of physics,

Fatima College, Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled "**BLEND POLYMER ELECTROLYTE BASED POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH AMMONIUM THIOCYANATE**" submitted in patrial fulfilment of the requirements for the Degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of the work done by **K. JENIFER** under the guidance of **Dr. G. JENITA RANI, M.Sc., M.Phil., Ph.D.,** Assistant professor, Research Centre of physics, Fatima College,(Autonomous), Madurai and **Dr. S. SELVASEKARAPANDIAN,** Director, Materials Research center (Madurai branch) Madurai during 2021-2021.

Dr. S. SELVASEKARAPANDIAN

Director, Materials Research Centre

(Madurai Branch)

Madurai.

Dr. G. JENITA RANI

Assistant Professor,

Research centre of physics,

Fatima College, Madurai .

(Dr. A. SHEELA VIMALA RANI)

Head, Research centre of physics,

Fatima College,

Madurai – 625 018.

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER WITH MAGNESIUM CHLORIDE

A dissertationSubmitted to

FATIMA COLLEGE (AUTONOMOUS)

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

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

E. JERLIN FATI RANJITHAM (Reg.No.2019MSCP10)

External Guide

Dr. S. SELVASEKARAPANDIYAN

Director

Materials Research center,

Madurai

Internal Guide

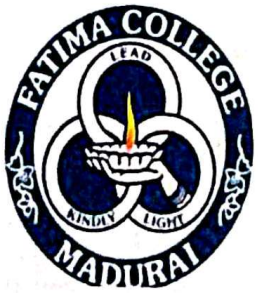
Dr. R. LEENA CHANDRA

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.



FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is to certify that the thesis entitled "**BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER (LLP) DOPED WITH MAGNESUIM CHLORIDE**" submitted to Fatima College, Madurai in atrial fulfilment for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**. This is the record of original project work done by **E. JERLIN FATI RANJITHAM** at Material Science Research Centre, Madurai under the guidance of **Mrs. Dr. M.V. LEENA CHANDRA**, Associate Professor, Research Centre of Physics, Fatima College and **Dr. S. SELVASEKARAPANDIAN**, Director, Materials research Centre, Madurai during the period of study at Fatima college

Dr. S. SELVASEKARAPANDIAN

Director

Material Research Center

Madurai.

Dr. M.V. LEENA CHANDRA

Associate professor

Research Centre of Physics,

Fatima College,

Madurai.

Mrs. Dr. A. SHEELA VIMALA RANI,

Head, Research Centre of Physics,

Fatima College,

Madurai.

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH SODIUM THIOCYANATE

A Project work 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 PHYSICS

Submitted by

A.JOSIBA AROCKIA PAVITHRA (Reg.No.2019MSCP11)

External Guide

Dr.S.SELVASEKARAPANDIYAN

Director Materials Research center

(Madurai branch)

Madurai.

Internal Guide

Dr. M. V.LEENA CHANDHRA

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is certify that this project work entitled **"BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITHSODIUM THIOCYANATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by A.JOSIBA AROCKIA PAVITHRA under the guidance of **Dr. M.V.Leena Chandhra, M.sc., M.phil.,Ph.D**., Associate Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SelvasekaraPandiyan, Director materials Research center(Madurai branch) Madurai** during 2020-2021.

Dr.S.SELVASEKARAPANDIYAN

Director Materials Research center

(Madurai branch)

Madurai.

Dr. M. V.LEENA CHANDHRA

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM TRIFLATE

A Project work Submitted to

FATIMA COLLEGE (AUTONOMOUS)

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

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

V.KEERTHIGA (Reg.No.2019MSCP12)

External Guide

Dr. S. SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Internal Guide

Dr. G. JENITA RANI

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land, MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM TRIFLATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **V.KEERTHIGA** under the guidance of **Dr. G. JENITA RANI** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN**, Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. G. JENITA RANI

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF) WITH MAGNESIUM NITRATE

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 PHYSICS

Submitted by

A.MONICA (Reg.No.2019MSCP17)

External Guide

Dr. S.SELVASEKARAPANDIYAN

Director,

Materials Research center,

Madurai Branch,

Madurai

Internal Guide

Dr. M. V. LEENA CHANDRA

Associate Professor,

Research center of physics,

Fatima College,

Madurai

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL AND NELUMBO NUCIFERA DOPED WITH MAGNESIUM NITRATE"** submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics, is a bonafide record of the work done by **A.MONICA** under the guidance of **Dr. M. V. Leena Chandra,** M.Sc., M.Phil., Ph.D., The Research Centre of Physics, Fatima college (Autonomous), Madurai and **Dr. S. Selvasekarapandian**, Director, Materials Research Centre, Madurai branch, Madurai during 2020-2021.

S. Selvasekarapandian

Dr.S.Selvasekarapandian

Director,

Materials Research Centre,

Madurai branch,

Madurai.

Dr. M. V. Leena Chandra

Research Centre of Physics,

Fatima College,

Madurai.

A. Sheela Vimala Rani

Dr. A. Sheela Vimala Rani

Head, Research Centre of Physics,

Fatima College,

Madurai

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM PERCHLORATE

A Project work 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 PHYSICS

Submitted by

P.PREMIGA (REG.NO.2019MSCP19)

External Guide

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Internal Guide

Dr. ANCEMMA JOSEPH

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM PERCHLORATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **P.PREMIGA** under the guidance of **Dr. ANCEMMA JOSEPH** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN**, Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. ANCEMMA JOSEPH

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH SODIUM CHLORIDE

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 PHYSICS

Submitted by

S.SHEEBA JESIN MERCY (Reg.No.2019MSCP21)

External Guide

Dr.S. SELVASEKARAPANDIYAN

The Director,

Material Research center ,

Madurai branch,

Madurai.

Internal Guide

Dr. ANCEMMA JOSEPH

Associate Professor,

Research centre of physics,

Fatima College, Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH SODIUM CHLORIDE"** submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **S.SHEEBA JESIN MERCY** under the guidance of **Dr. ANCEMMA JOSEPH** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN,** Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. ANCEMMA JOSEPH

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH AMMONUIM NITRATE

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 PHYSICS

Submitted by

N. SWEATHA (Reg.No.2019MSCP26)

External Guide

Dr.S.SELVASEKARAPANDIAN

The Director,

Materials Research center,

Madurai branch,

Madurai.

Internal Guide

Dr.ANCEMMA JOSEPH

Associate professor,

Research center of Physics,

Fatima college,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH AMMONIUM NITRATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **N.SWEATHA** under the guidance of **Dr. ANCEMMA JOSEPH** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN,** Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. ANCEMMA JOSEPH

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

CHARACTERIZATION OF PROTON CONDUCTING POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH AMMONIUM FORMATE

A dissertationSubmitted to

FATIMA COLLEGE (AUTONOMOUS)

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

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

MASTER OF SCIENCE IN PHYSICS

Submitted by

V. VINOTHA (Reg.No.2019MSCP27)

External Guide

Dr. S. SELVASEKARAPANDIAN

Director,

Material Research Centre ,

Madurai.

Internal Guide

Dr. ANCEMMA JOSEPH

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

Scanned by TapScanner

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"CHARACTERIZATION OF PROTON CONDUCTING POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND LOTUS LEAF POWDER DOPED WITH AMMONIUM FORMATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **V.VINOTHA** under the guidance of **Dr. ANCEMMA JOSEPH** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN,** Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. ANCEMMA JOSEPH

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.

Scanned by TapScanner

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF) WITH LITHIUM CHLORIDE

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 PHYSICS

Submitted by

S.IRUDAYA NICHOMI (Reg.No.2019MSCP29)

External Guide

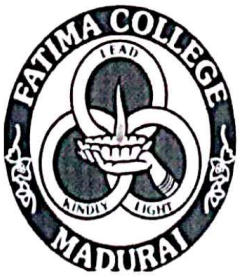
Dr.S.SELVASEKARAPANDIYAN

Director Materials Research Center
(Madurai branch)
Madurai

Internal Guide

Dr. M. V. LEENA CHANDRA M.Sc. , M.Phil, Ph.D.,

Associate Professor,
Research centre of physics,
Fatima College,
Madurai.



FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2021 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH 2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled "CHARACTERIZATION OF POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL AND NELUMBO NUCIFERA DOPED WITH LITHIUM CHLORIDE" submitted in partial fulfillment of the requirements for the Degree of Master of Science in Physics, is a bonafide record of the work done by S.Irudaya Nichomi under the guidance of Dr. M.V. Leena Chandra, M.Sc., M.Phil., Ph.D., The Research Centre of Physics, Fatima college (Autonomous), Madurai and Dr.S.SELVASEKARAPANDIYAN Director, Materials Research center (Madurai branch) Madurai during 2020-2021.

S. Selvasekarapandian

Director Materials

Research Center

(Madurai branch)

Madurai

Dr. M. V. Leena Chandra

Research Centre of Physics,

Fatima College,

Madurai.

A. Sheela Vimala Rani

Dr. A. Sheela Vimala Rani

Head, Research Centre of Physics,

Fatima College,

Madurai

BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM NITRATE

A Project work 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 PHYSICS

Submitted by

B.YOGADHARSHINI (REG.NO.2019MSCP30)

External Guide

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Internal Guide

Dr. ANCEMMA JOSEPH

Associate Professor,

Research centre of physics,

Fatima College,

Madurai.

FATIMA COLLEGE (AUTONOMOUS)

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

(74th Rank in India Ranking 2020 (NIRF) by MHRD)

Mary Land

MADURAI – 625 018

MARCH-2021

BONAFIDE CERTIFICATE

This is to certify that this project work entitled **"BLEND POLYMER ELECTROLYTE BASED ON POLYVINYL ALCOHOL (PVA) AND NELUMBO NUCIFERA (LOTUS LEAF POWDER) WITH LITHIUM NITRATE** "submitted in partial fulfilment of the requirements for the Degree of Master of Science in Physics , is a bonafide record of the work done by **B.YOGADHARSHINI** under the guidance of **Dr. ANCEMMA JOSEPH** Assistant Professor, Research centre of physics, Fatima College,(Autonomous), Madurai and **Dr.S.SELVASEKARAPANDIAN,** Director ,Materials Research center (Madurai branch) Madurai during 2020-2021.

Dr.S.SELVASEKARAPANDIAN

Director, Materials Research center

(Madurai branch)

Madurai.

Dr. ANCEMMA JOSEPH

Assistant Professor,

Research centre of physics,

Fatima College,

Madurai.

Dr.A.SHEELA VIMALA RANI

Head, Research centre of physics,

Fatima College,

Madurai.