

**PREPARATION OF SILVER COBALT NANO CATALYST FOR HYDROGEN
EVOLUTION IN ALKALINE MEDIA**

Project report submitted to

UNIVERSITY OF CALICUT

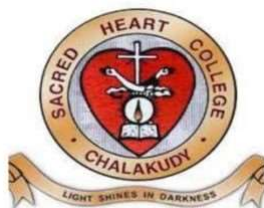
In the partial fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

ADHITTA P B

REG NO: SHATMCH001



DEPARTMENT OF CHEMISTRY

SACRED HEART COLLEGE CHALAKUDY

Project work carried under the guidance of

Dr. V T JOY

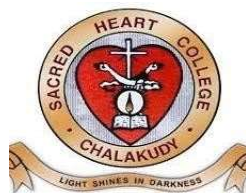
HOD CHEMISTRY

CHRIST COLLEGE IRINJALAKUDA

2021

DEPARTMENT OF CHEMISTRY

Sacred Heart College Chalakudy



CERTIFICATE

This is to certify that the project entitled “PREPARATION OF SILVER COBALT NANOCATALYST FOR HYDROGEN EVOLUTION IN ALKALINE MEDIA” submitted by ADHITTA P B (Reg.No.SHATMCH001) is a bonafide record of project work out by the author under my supervision, in partial fulfillment of the requirement for the Degree of Master of Science in Chemistry from University of Calicut, Kerala.

Chalakudy

27/08/2021

Guided by

Dr. V T JOY

Head of Department of Chemistry

Christ College Irinjalakuda

Forwarded by

Dr. SANTHOSH PAUL

Head of Department of Chemistry

Sacred Heart College Chalakudy



CHRIST COLLEGE
(AUTONOMOUS)
IRINJALAKUDA KERALA 680125

CERTIFICATE FROM THE GUIDE

This is to certify that the project work titled “PREPARATION OF SILVER COBALT NANOCATALYST FOR HYDROGEN EVOLUTION IN ALKALINE MEDIA “is a bonafide work of Ms ADHITTA P B carried out in partial fulfillment of the requirements for the award of the degree of M.Sc Chemistry of Calicut University under my guidance. This project work is original and not submitted earlier for the award of any degree/ diploma or assistance ship of any other university or institution

Place: Irinjalakuda

Date: 27/8/2021

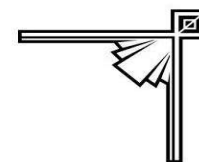
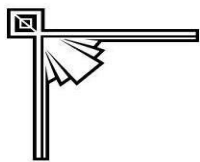
Dr. JOY V.T

Head of Department of Chemistry

Christ College Irinjalakuda



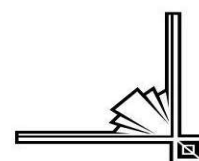
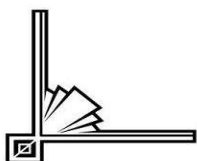
CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP)2020 ONLINE



JUNE TO AUGUST, 2020

SL. NO.: CSIR/SRTP/2020/IICT/019

NAME: Ms. ADHITTA P B





CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP)2020 ONLINE



CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP) 2020 ONLINE HAS THE FOLLOWING ACTIVITIES

Eminent Scientist Lectures, Special Sessions, Project specific classes, Elocution video, Poster designing, Essay writing, Assignments / Project works given by mentor/coordinator & Summer Research Project Completion Report

CANDIDATE'S NAME: Ms. ADHITTA P B SL. NO.: CSIR/SRTP/2020/IICT/019

GRADE:

HOST INSTITUTE: CSIR-NEIST, Jorhat

MENTOR'S NAME: Dr. PUNNA NAGENDER

REMARKS

.....

MENTOR



**CSIR-SUMMER RESEARCH TRAINING PROGRAM
(CSIR-SRTP)2020 ONLINE**



CERTIFICATE

Name: Ms. ADHITTA P B **Sl. No.:** CSIR/SRTP/2020/IICT/019

has completed all the requirements of the CSIR-Summer Research Training Program (CSIR-SRTP) 2020 **online** during June to August, 2020 coordinated by CSIR-NEIST, Jorhat

DR. G. NARAHARI SASTRY
DIRECTOR
CSIR-NORTH EAST INSTITUTE OF
SCIENCE AND TECHNOLOGY

PROF. ALOK DHAWAN
DIRECTOR
CSIR-INDIAN INSTITUTE OF
TOXICOLOGY RESEARCH

DR. SHEKHAR C. MANDE
DIRECTOR GENERAL, CSIR
SECRETARY, DSIR, GOVT. OF INDIA



**A STUDY OF NATURAL RUBBER BIO-
NANOCOMPOSITES REINFORCED NATURAL RUBBER**

Project report submitted to

UNIVERSITY OF CALICUT

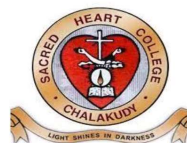
In the partial fulfillment of the requirements for the award of the degree Of

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

ALEENA MARIA PAULSON

REG NO: SHATMCH002



DEPARTMENT OF CHEMISTRY

SACRED HEART COLLEGE, CHALAKUDY

Project work carried under guidance of

SMT. SEENA K. THOMAS

ASSISTANT PROFESSOR

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SREE SANKARA COLLEGE

(Affiliated to Mahathma Gandhi University and included
Under Sec-2(f) list and 12(B) of the U G C Act)
And Re-Accredited By NAAC With B++ Grade

PATRON: HIS HOLINESS JAGADGURU
SREE SANKARACHARYA MAHASWAMIGAL
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ERNAKULAM DIST.
KERALA STATE
INDIA

CERTIFICATE FROM THE GUIDE

This is to certify that the project work titled “A STUDY OF NATURAL RUBBER
BIO-NANOCOMPOSITES REINFORCED WITH CHITIN NANOCRYSTALS”
is a bonafide work of **ALEENA MARIA PAULSON**, Reg no: **SHATMCH002**
carried out in partial fulfillment of the requirements for the award of the degree of
M.Sc. Chemistry OF University Of Calicut under my guidance.

PLACE: KALADY

DATE: 11/08/2021

SMT. SEENA K. THOMAS

Assistant Professor
Department of Chemistry
Sree Sankara College



**PREPARATION OF COBALT NICKEL NANOCATALYST
FOR HYDROGEN EVOLUTION IN ALKALINE MEDIA**

Project report submitted to

UNIVERSITY OF CALICUT

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

MASTER OF SCIENCE IN CHEMISTRY

Submitted by

AMRITHA BINEESH

REG NO:SHATMCH003



DEPARTMENT OF CHEMISTRY

SACRED HEART COLLEGE, CHALAKUDY

Project work carried under the guidance of

Dr V. T JOY

HEAD OF THE DEPARTMENT OF CHEMISTRY

CHRIST COLLEGE, IRINJALAKUDA

2021

DEPARTMENT OF CHEMISTRY

Sacred Heart College Chalakudy



CERTIFICATE

This is to certify that the project entitled “preparation of Cobalt Nickel Nanocatalyst for hydrogen evolution in alkaline media “ submitted by Amritha BINEESH (Reg. No. SHATMCH003) is a bonafide record of project work out by the author under my supervision, in partial fulfilment of the requirement for the Degree of Master of Science in Chemistry from University of Calicut, Kerala

Chalakudy

Date:28/7/2021

Guided by

Dr V. T Joy

Head of department of Chemistry

Christ College Irinjalakuda

Forwarded By

Dr Santhosh Paul

Head of department of chemistry

Sacred heart college Chalakudy



**CHRIST COLLEGE
(AUTONOMOUS)**


IRINJALAKUDA KERALA 680125

CERTIFICATE FROM THE GUIDE

This is to certify that the project work titled "PREPARATION OF COBALT NICKEL NANOCATALYST FOR HYDROGEN EVOLUTION IN ALKALINE MEDIA " is a bonafied work of Ms AMRITHA BINEESH carried out in partial fulfilment of the requirements for the award of the degree of MSc Chemistry of Calicut University under my guidance. This project work is original and not submitted earlier for the award of any degree/ diploma or assistance ship of any other university or institution

Place: Irinjalakuda

Date: 27/8/2021


Dr. JOY V.T

Head of Department of chemistry

Christ College Irinjalakuda

**THERMAL AND MECHANICAL PROPERTIES OF
NATURAL RUBBER AND STARCH
NANOBIOCOMPOSITES**

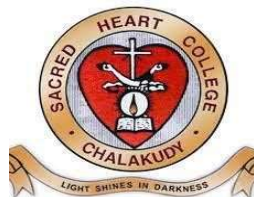
Project report submitted to
UNIVERSITY OF CALICUT

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

Submitted by

AMRITHA RAVI

REG NO: SHATMCH004



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SACRED HEART COLLEGE, CHALAKUDY**

Project work carried under the guidance of

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2021

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This is to certify that the project work titled “**THERMAL AND MECHANICAL PROPERTIES OF NATURAL RUBBER AND STARCH NANOBIOCOMPOSITES**” is a bonafide work of **AMRITHA RAVI**, Reg no: **SHATMCH004** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of University of Calicut under my guidance.

PLACE: KALADY

DATE: 11/08/2021

SMT. SEENA K. THOMAS

Assistant Professor

Department of Chemistry

Sree Sankara College



**PREPARATION AND STUDY OF ANTIBACTERIAL ACTIVITY OF
ZINC OXIDE NANOPARTICLES FROM NEEM LEAVES**

PROJECT REPORT

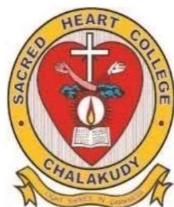
Submitted to the University of Calicut in partial fulfillment of the
requirements for the award of the degree of

MASTER OF SCIENCE IN CHEMISTRY

Submitted By:

ANNMARIA PAUL

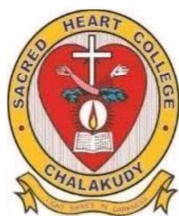
Register Number: **SHATMCH005**



**DEPARTMENT OF CHEMISTRY
SACRED HEART COLLEGE CHALAKUDY
AUGUST 2021**

DEPARTMENT OF CHEMISTRY

Sacred Heart College Chalakudy



CERTIFICATE

This is to certify that the project entitled "Preparation And Study Of Antibacterial Activity Of Zinc Oxide Nanoparticles From Neem Leaves" submitted by ANNMARIA PAUL (Reg.No.SHATMCH005) is a bonafide record of project work carried out by the author under my supervision, in partial fulfillment of the requirement for the degree of Master of Science in Chemistry from Calicut University.

Chalakudy

Guided by

Date:

Dr. Sandhya P K

Lecturer

Dept.of Chemistry

Sree Sankara college

Kalady

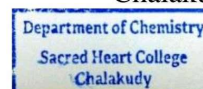
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SREE SANKARACHARYA MAHASWAMIGAL, ERNAKULAM DIST.
SRI SARADA PEETHAM, SRINGERI KERALA, INDIA.

CERTIFICATE FROM THE GUIDE

This is to certify that the Project Work Titled “ **PREPARATION AND STUDY OF ANTIBACTERIAL ACTIVITY OF ZINC OXIDE NANOPARTICLES FROM NEEM LEAVES** is a bonafide work of **ANNMARIA PAUL** Reg no: **SHATMCH005** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of Calicut University under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021

Dr. Sandhya P K
Lecturer
Department of Chemistry
Sree Sankara College



**Study of Electrical Conductivity of Phenol
Formaldehyde –Reduced Graphene Oxide (RGO) with
varying weight percent**

Project work done at

SREE SANKARA COLLEGE, KALADY

Submitted to

FACULTY OF SCIENCE, UNIVERSITY OF CALICUT

By

Ms. ANU MENACHERY

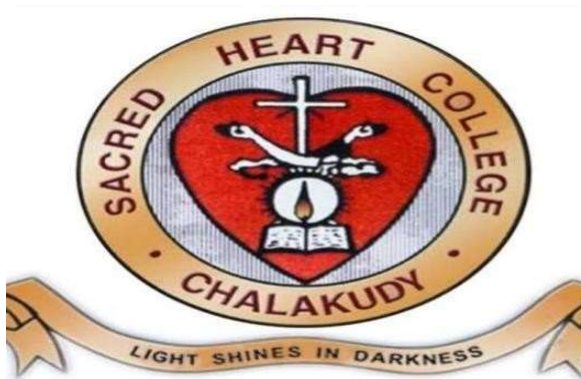
(Register Number : SHATMCH006)

As partial fulfillment of the requirement for the award of degree

MASTER OF SCIENCE

in

CHEMISTRY



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2019-2021

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CERTIFICATE FROM THE GUIDE

This is to certify that the Project Work Title “**STUDY OF ELECTRICAL CONDUCTIVITY OF PHENOL FORMALDEHYDE-REDUCED GRAPHENE OXIDE (RGO) WITH VARYING WEIGHT PERCENT**” is a bonafide work of **ANU MENACHERY** , Reg no: **SHATMCH006** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of University of Calicut, under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021



DR. SREEKALA M S
Assistant Professor,
Department of Chemistry
Sree Sankara College

DEPARTMENT OF CHEMISTRY

Sacred Heart College Chalakudy



CERTIFICATE

This is to certify that the project entitled 'Flame Retardancy of Rigid phenol Formaldehyde foam with POSS' submitted by HIMA JOHNY (Reg.No.SHATMCH007) is a bonafide record of project work carried out by the author under my supervision, in partial fulfillment of the requirement for the degree of Master of Science in Chemistry from Calicut Universty.

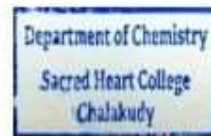
Chalakudy

Date

Dr.Prof.Santosh Paul

Head of the chemistry department

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POSTGRADUATE AND RESEARCH DEPARTMENT OF CHEMISTRY
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INDIA

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This is to certify that the Project Work Title “**FLAME RETARDANCY OF RIGID PHENOL FORMALDEHYDE FOAMS REINFORCED WITH POSS**” is a bonafide work of **HIMA JOHNY**, Reg no: **SHATMCH007** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of University of Calicut, under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021



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POSTGRADUATE AND RESEARCH DEPARTMENT OF CHEMISTRY

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KERALA STATE
INDIA

CERTIFICATE FROM THE GUIDE

This is to certify that the Project Work Titled “**PROPERTIES OF PF NANO-CELLULOSE FOAM**” is a bonafide work of **MERIN BABY, Reg no SHATMCH009** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of Calicut University under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021

DR. SREEKALA M S
Assistant Professor,
Department of Chemistry
Sree Sankara College



DEPARTMENT OF CHEMISTRY

Sacred Heart College Chalakudy



CERTIFICATE

This is to certify that the project entitled , A comparative study on the "Mechanical properties of banana fibre and flax fabric reinforced phenol formaldehyde composites" submitted by Reem Salam (Reg.No.SHATMCH010) is a bonafide record of project work carried out by the author under my supervision, in partial fulfilment of the requirement for the degree of Master of Science in Chemistry from Calicut University.

Chalakudy
Date:

Guided By,

Dr.Sreekala M.S
Assistant professor
Dept of Chemistry
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Forwarded By,

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POSTGRADUATE AND RESEARCH DEPARTMENT OF CHEMISTRY
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PATRON: HIS HOLINESS JAGADGURU
SREE SANKARACHARYA MAHASWAMIGAL
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CERTIFICATE FROM THE GUIDE

This is to certify that the Project Work Titled “**COMPARITATIVE STUDY ON THE MECHANICAL PROPERTIES OF BANANA FIBRE AND FLAX FABRIC REINFORCED PHENOL FORMALDEHYDE COMPOSITES**” is a bonafide work of **REEM SALAM, Reg no: SHATMCH010** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of Mahatma Gandhi University under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021



DR. SREEKALA M S
Assistant Professor,
Department of Chemistry
Sree Sankara College

**ELECTRICAL PROPERTIES OF PHENOL
FORMALDEHYDE MWCNT-IONIC LIQUID
NANOCOMPOSITES**

Project work done at

SREE SANKARA COLLEGE, KALADY

Submitted to

FACULTY OF SCIENCE, UNIVERSITY OF CALICUT

By

Ms. RESHMA VARGHESE

(Register Number : SHATMCH011)

As partial fulfillment of the requirement for the award of degree

MASTER OF SCIENCE

in

CHEMISTRY



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SREE SANKARA COLLEGE

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and Re – accredited by NAAC with B++ grade

PATRON: HIS HOLINESS JAGADGURU
SREE SANKARACHARYA MAHASWAMIGAL
SRI SARADA PEETHAM, SRINGERI

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CERTIFICATE FROM THE GUIDE

This is to certify that the Project Work Title “ **ELECTRICAL PROPERTIES OF PHENOL FORMALDEHYDE MWCNT-IONIC LIQUID NANOCOMPOSITES** ” is a bonafide work of **RESHMA VARGHESE**, Reg no: **SHATMCH011** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of University of Calicut, under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021



DR. SREEKALA M S
Assistant Professor,
Department of Chemistry
Sree Sankara College

THERMAL PROPERTIES OF NANOSILICA REINFORCED PHENOL FORMALDEHYDE NANO- COMPOSITE

Project work done at

SREE SANKARA COLLEGE, KALADY

Submitted to

FACULTY OF SCIENCE, UNIVERSITY OF CALICUT

By

Ms. SHIMA SURENDRAN

(Register Number: **SHATMCH012**)

As partial fulfillment of the requirement for the award of degree **MASTER OF SCIENCE**
in **CHEMISTRY**



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SACRED HEART COLLEGE CHALAKUDY 2019-2021

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POSTGRADUATE AND RESEARCH DEPARTMENT OF CHEMISTRY
SREE SANKARA COLLEGE

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PATRON: HIS HOLINESS JAGADGURU
SREE SANKARACHARYA MAHASWAMIGAL
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This is to certify that the Project Work Title “ **THERMAL PROPERTIES OF NANO SILICA REINFORCED PHENOL FORMALDEHYDE NANOCOMPOSITES** ” is a bonafide work of **SHIMA SURENDRAN** , Reg no: **SHATMCH012** carried out in partial fulfillment of the requirements for the award of the degree of M.Sc. Chemistry of University of Calicut, under my guidance. This project work is original and not submitted earlier for the award of any degree.

Place: Kalady
Date: 11/08/2021



DR. SREEKALA M S
Assistant Professor,
Department of Chemistry
Sree Sankara College