

**DR. JOSE K XAVIER**  
Associate Professor

Research and Post Graduate Department of Chemistry  
[DST-FIST Sponsored Department]  
ST. THOMAS COLLEGE, PALA  
[Approved by UGC as College with Potential for Excellence]  
Pala-686574, Kerala



## CERTIFICATE

This is to certify that project report titled "EXTRACTION, ESTIMATION AND ANTIBACTERIAL STUDY OF CURCUMIN" is an authentic record of the project work carried out by **Ms. Alina Mary Simon, (Reg. no: 170011000981)** under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of Master of Science under the Faculty of Science, Mahatma Gandhi University, Kottayam. The work presented in this report has not been submitted for any other degree or diploma earlier

Pala  
July 2019

**Dr. JOSE K XAVIER**  
(Supervising guide)  
Department of Chemistry  
St. Thomas College Pala

Countersigned by, \_\_\_\_\_

**Dr. SUNNY KURIAKOSE**  
Head of the department of chemistry  
St. Thomas College Pala



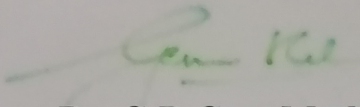
# St. Thomas College, Pala

[COLLEGE WITH POTENTIAL FOR EXCELLENCE]

## CERTIFICATE

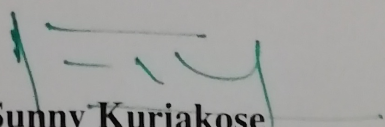
This is to certify that the project report entitled “**SYNTHESIS AND CHARACTERISATION OF CdSe-Cu<sub>2</sub>Se CORE SHELL QUANTUM DOTS**” is an authentic record of the project work carried out by **Ann Maria Thomas (Reg. No. 170011000983)** in partial fulfillment of the requirements for the award of the degree of Masters of Science in Chemistry of Mahatma Gandhi University under our joint guidance and supervision during 2018-2019. The work presented in this project report has not been submitted for any other degree or diploma earlier.

**Dr. Ison V. Vanchipurackal**  
(Project Guide)  
Assistant Professor & Head  
Department of Physics

  
**Dr. G D Gem Mathew**  
(Supervising Teacher)  
Associate Professor  
Department of Chemistry

Counter signed by

Pala  
July 2019

  
**Dr. Sunny Kuriakose**  
Associate Professor & Head  
Department of Chemistry

JITHIN PRAKASH P. A  
Assistant Professor

RESEARCH AND P. G DEPARTMENT OF CHEMISTRY

[DST FIST Sponsored Department]



ST. THOMAS COLLEGE PALA  
NAAC ACCREDITED WITH A GRADE  
[CENTRE WITH POTENTIAL FOR EXCELLENCE]  
PALA – 686574, KERALA

## CERTIFICATE

This is to certify that the project report entitled “**SYNTHESIS AND CHARACTERIZATION OF MnO<sub>2</sub> NANOPARTICLES AND THEIR APPLICATION IN THE ELECTROCHEMICAL SENSING OF ASCORBIC ACID**” is an authentic record, of the work carried out by **ANU MARY GEORGE (REG NO: 170011000984)** under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of **Master of Science** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

Pala

July 2019

JITHIN PRAKASH P. A

(Supervising Teacher)

Countersigned by,

Dr. SUNNY KURIAKOSE

(HOD, Department of Chemistry

St. Thomas College, Pala)

JITHIN PRAKASH P. A  
Assistant Professor

RESEARCH AND P. G DEPARTMENT OF CHEMISTRY  
[DST FIST Sponsored Department]  
ST. THOMAS COLLEGE PALA  
NAAC ACCREDITED WITH A GRADE  
[CENTRE WITH POTENTIAL FOR EXCELLENCE]  
PALA – 686574, KERALA



## CERTIFICATE

This is to certify that the project report entitled “**SYNTHESIS, CHARACTERIZATION AND INTERCALATION CHEMISTRY OF Ca-Al LAYERED DOUBLE HYDROXIDE**” is an authentic record, of the work carried out by **ATHIRA C (REG. NO: 170011000985)** under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of **Master of Science** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

Pala

July 2019

  
JITHIN PRAKASH P.A

(Supervising Teacher)

Countersigned by,

**Dr. SUNNY KURIAKOSE**  
(HOD, Department of Chemistry  
St. Thomas College, Pala)

Prof. TOJO JOSEPH  
Assistant Professor

RESEARCH AND P. G DEPARTMENT OF CHEMISTRY

[DST FIST Sponsored Department]

ST. THOMAS COLLEGE PALA

NAAC REACCREDITED WITH A GRADE  
[CENTRE WITH POTENTIAL FOR EXCELLENCE]

PALA - 686574, KERALA

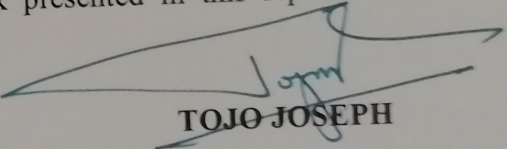


## CERTIFICATE

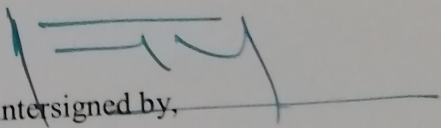
This is to certify that the project report entitled "GREEN SYNTHESIS, CHARACTERIZATION AND ANTIBACTERIAL STUDY OF NICKEL NANOPARTICLES" is an authentic record, of the work carried out by CHRISTINE FRANCIS (REG. NO: 170011000986) under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of **Master of Science** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

Pala

July 2019

  
TOJO JOSEPH

(Supervising Teacher)

  
Countersigned by,

Dr. SUNNY KURIAKOSE

(HOD, Department of Chemistry)



Research and PG Dept. of Chemistry  
**St. Thomas College, Palai**

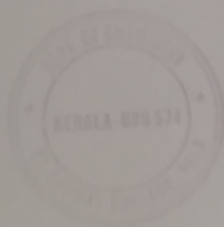
UGC APPROVED COLLEGE WITH POTENTIAL FOR EXCELLENCE  
REACCREDITED WITH A GRADE BY NAAC IN 2015

**CERTIFICATE**

This is to certify that the project report entitled **QUANTUM MECHANICAL CALCULATIONS ON THE VIBRATIONAL PROPERTIES OF 2-METHYL-1-VINYLMIDAZOLE DERIVATIVES** is an authentic record of the project work carried out by **Mr. Dijo Ann Johns (Reg. No. 170011000988)** under my supervision and guidance during 2019-2020 in partial fulfilment of the requirements for the award of the degree of Master of Science in Chemistry under the faculty of science, Mahatma Gandhi University, Kottayam. The work presented in this project report has not been submitted for any Degree or Diploma earlier.

Palai

July 2019



**Dr. Thomas V. Mathew**

(Supervising Teacher)

Assistant Professor

Research and PG Dept. of Chemistry

St. Thomas College, Palai

**Countersigned by**

**Dr. Sunny Kuriakose**

Vice Principal and HoD

Research and PG Department of Chemistry

St. Thomas College, Palai



Research and PG Dept. of Chemistry  
**St. Thomas College, Palai**

UGC APPROVED COLLEGE WITH POTENTIAL FOR EXCELLENCE  
REACCREDITED WITH A GRADE BY NAAC IN 2015

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**CERTIFICATE**

This is to certify that the project report entitled **DFT STUDY ON THE DIELS-ALDER REACTION BETWEEN DANISHEFSKY'S DIENE AND DIENOPHILES** is an authentic record of the project work carried out by **Ms. Dayana Mathew** (Reg no.170011000987) under my supervision and guidance during 2018-2019 in partial fulfilment of the requirements for the award of the degree of Master of Science in Chemistry under the faculty of science, Mahatma Gandhi University, Kottayam. The work presented in this project report has not been submitted for any Degree or Diploma earlier.

Palai

July 2019

**Dr. Thomas V. Mathew**

(Supervising Teacher)

Assistant Professor

Research and PG Dept. of Chemistry

St. Thomas College, Palai

**Countersigned by**

**Dr. Sunny Kuriakose**

Vice Principal and HoD

Research and PG Department of Chemistry

St. Thomas College, Palai

**Dr. SAJEEV MARTIN GEORGE**  
**ASSISTANT PROFESSOR**

**RESEACH AND POST GRADUATE**  
**DEPARTMENT OF CHEMISTRY**  
**[ DST FIST Sponsored Department ]**



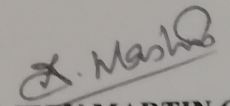
**ST. THOMAS COLLEGE PALA**  
NAAC ACCREDITED WITH **A** GRADE  
[CENTRE WITH POTENTIAL FOR EXCELLENCE]  
PALA – 686574, KERALA

### **CERTIFICATE**

This is to certify that the project report entitled **“BIOSYNTHESIS OF COPPER NANOPARTICLES BY USING SYZYGIUM AROMATIUM (CLOVES) AQUEOUS EXTRACT AND THEIR ANTIMICROBIAL ACTIVITY”** is an authentic record, of the work carried out by **GOPIKA SUKUMARAN (REG NO: 170011000989)** under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of **Master of Science** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

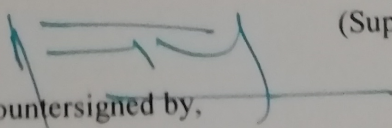
Pala

July 2019

  
**Dr. SAJEEV MARTIN GEORGE**

(Supervising Teacher)

Countersigned by,

  
**Dr. SUNNY KURIAKOSE**

(HOD, Department of Chemistry St. Thomas College, Pala)



**Amal Jose Baby**  
Assistant Professor

RESEARCH AND P. G DEPARTMENT OF CHEMISTRY  
[DST FIST Sponsored Department]  
**ST. THOMAS COLLEGE PALA**  
NAAC ACCREDITED WITH **A** GRADE  
[CENTRE WITH POTENTIAL FOR EXCELLENCE]  
PALA – 686574, KERALA



## CERTIFICATE

This is to certify that the project report entitled “***SYNTHESIS AND CHARACTERIZATION OF N,N'-ETHYLENEBIS(SALICYLALDIMINATE) COBALT(II) COMPLEX***” is an authentic record, of the work carried out by **Greeshma James (REG. NO: 170011000990)** under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of **Master of Science** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

**Amal Jose Baby**

Assistant Professor

(Supervising Teacher)

Pala

July 2019

Countersigned by,

**Dr. SUNNY KURIAKOSE**

(HOD, Department of Chemistry

St. Thomas College, Pala)



# St. Thomas College, Pala

[COLLEGE WITH POTENTIAL FOR EXCELLENCE]

## CERTIFICATE

This is to certify that the project report entitled “**SYNTHESIS AND CHARACTERISATION OF LIGNIN FUNCTIONALISED WIT AZO DYES**” is an authentic record of the project work carried out by **Mr. Jithu James (Reg. No. 170011000992)** in partial fulfillment of the requirements for the award of the degree of Masters of Science in Chemistry of Mahatma Gandhi University under our joint guidance and supervision during 2018-2019. The work presented in this project report has not been submitted for any other degree or diploma earlier.

**Mr. Jogy Alex**  
(Supervising Teacher)  
Associate Professor  
Department of Chemistry

Counter signed by

**Dr. Sunny Kuriakose**  
Associate Professor & Head  
Department of Chemistry

Pala  
July 2019

# ST.THOMAS COLLEGE PALA



## CERTIFICATE

This is to certify that the project report entitled "GREEN SYNTHESIS OF IRON OXIDE NANOPARTICLES USING AZADIRACHTA INDICA LEAF EXTRACT, CHARACTERISATION AND APPLICATION" is an authentic record, of the work carried out by LAIBYMOL BABY (Reg.No.:170011000993) under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of **Master of Science** under the Faculty of Science, **Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

**Mr. MANJESH MATHEW**

(Supervising Teacher)

PG Department of Chemistry

St. Thomas College, Pala

Counter signed by,

**Dr. SUNNY KURIAKOSE**

(HOD, Department of Chemistry)

St. Thomas College, Pala

**Pala**

**May 2019**

**DR. JOSE K XAVIER**  
**Associate Professor**

Research and Post Graduate Department of Chemistry  
**[DST-FIST Sponsored Department]**  
**ST. THOMAS COLLEGE, PALA**  
[Approved by UGC as College with Potential for Excellence]  
Pala-686574, Kerala



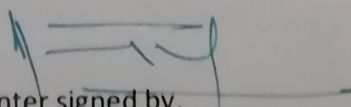
## CERTIFICATE

This is to certify that project report titled "A STUDY OF LYCOPENE AND BETA-CAROTENE CONTENTS IN VARIOUS FRUITS AND VEGETABLES" is an authentic record of the project work carried out by Ms. Lydia Mary Simon, (Reg. no: 170011000994) under my supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of Master of Science under the Faculty of Science, Mahatma Gandhi University, Kottayam. The work presented in this report has not been submitted for any other degree or diploma earlier

**Dr. JOSE K XAVIER**

(Supervising guide)

Department of Chemistry  
St. Thomas College Pala

Counter signed by, 

**Dr. SUNNY KURIAKOSE**

Head of the department of chemistry  
St. Thomas College Pala

**Dr. SAJEEV MARTIN GEORGE**  
Assistant Professor



Research & P. G. Department of Chemistry  
[DST FIST SPONSORED DEPARTMENT]

**St. Thomas College, Pala**

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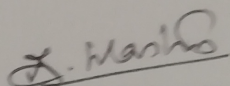
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Tel: +91 4822212317

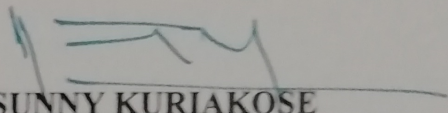
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### CERTIFICATE

This is to certify that the project report entitled "GREEN SYNTHESIS OF ZINC OXIDE NANOPARTICLES USING OCIMUM TENUIFLORUM LEAVES" is an authentic record of the project work carried out by MS.MARIAMMA AUSTINE (Reg. No. 170011000995) under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of Master of Science in Chemistry under the Faculty of Science, Mahatma Gandhi University, Kottayam. The work presented in this report has not been submitted for any other degree or diploma earlier

  
**Dr. SAJEEV MARTIN GEORGE**  
(Supervising Teacher)

Countersigned by

  
**Dr. SUNNY KURIAKOSE**  
Head of the Department of Chemistry  
St. Thomas College, Pala

Pala

July 2019

Amal Jose Baby  
Assistant Professor

RESEARCH AND P. G DEPARTMENT OF CHEMISTRY

[DST FIST Sponsored Department]

ST. THOMAS COLLEGE PALA

NAAC ACCREDITED WITH **A** GRADE

[CENTRE WITH POTENTIAL FOR EXCELLENCE]

PALA – 686574, KERALA

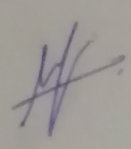


## CERTIFICATE

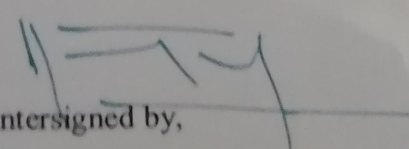
This is to certify that the project report entitled “**SYNTHESIS CHARACTERISATION AND THERMAL STUDIES OF SELF DOPED AND UNDOPED POLYANILINE**” is an authentic record, of the work carried out by **Ms. Minnu K.S (REG. NO: 170011000997)** under supervision and guidance during the period 2017-2019 in partial fulfilment of the degree of **Master Science under the Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

Pala

July 2019

  
Amal Jose Baby

(Supervising Teacher)

  
Countersigned by,

**Dr. SUNNY KURIAKOSE**

(HOD, Department of Chemistry)

**Prof. JOGY ALEX**  
Associate Professor



Research & P. G. Department of Chemistry  
[DST FIST SPONSORED DEPARTMENT]

**St. Thomas College, Pala**

NAAC REACCREDITED WITH A GRADE

[CENTRE WITH POTENTIAL FOR EXCELLENCE]

Pala -686574, Kerala INDIA

Tel:+91 4822212317

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## CERTIFICATE

This is to certify that the project report entitled “**SYNTHESIS AND CHARACTERISATION OF ALBUMIN FUNCTIONALISED WITH AZO DYES**” is an authentic record of the project work carried out by **Ms.NEETHA NOBLE**(Reg. No. **170011000998**) under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of **Master of Science** in Chemistry under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

**Prof. JOGY ALEX**  
Associate Professor

Countersigned by,

**Dr. SUNNY KURIAKOSE**

Head, Department of Chemistry  
St. Thomas College, Pala

PALA

10/07/2019



Research and PG Dept. of Chemistry  
**St. Thomas College, Palai**

UGC APPROVED COLLEGE WITH POTENTIAL FOR EXCELLENCE  
REACCREDITED WITH A GRADE BY NAAC IN 2015

**CERTIFICATE**

This is to certify that the project report entitled **COMPUTATIONAL ANALYSIS ON VIBRATIONAL AND ELECTRONIC PROPERTIES OF [(E)-(3-HYDROXYNAPHTHALEN-2-YL) DIAZENYL]BENZOIC ACID** is an authentic record of the project work carried out by **Mr. Robin John** (Reg no.170011000999) under our supervision and guidance during 2018-2019 in partial fulfilment of the requirements for the award of the degree of Master of Science in Chemistry under the faculty of science, Mahatma Gandhi University, Kottayam. The work presented in this project report has not been submitted for any Degree or Diploma earlier.

Palai

July 2019

**Dr. Thomas V. Mathew**

(Project Guide)

Assistant Professor

Research and PG Dept. of Chemistry

St. Thomas College, Palai



**Dr. G. D. Gem Mathew**

(Supervising Teacher)

Associate Professor

Research and PG Dept. of Chemistry

St. Thomas College, Palai

**Countersigned by**

**Dr. Sunny Kuriakose**

Vice Principal and HoD

Research and PG Department of Chemistry

St. Thomas College, Palai



**Prof. MANJESH MATHEW**  
Assistant Professor



Research & P. G. Department of Chemistry  
[DST FIST SPONSORED DEPARTMENT]

**St. Thomas College, Pala**

NAAC ACCREDITED WITH A GRADE

[CENTRE WITH POTENTIAL FOR EXCELLENCE]

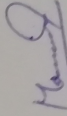
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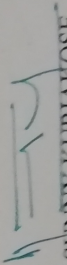
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### CERTIFICATE

This is to certify that the project report entitled "**GREEN SYNTHESIS OF COPPER OXIDE NANOPARTICLES FROM OCIMUM TENUIFLORUM, ITS CHARACTERIZATION AND ANTIBACTERIAL STUDY**" is an authentic record of the project work carried out by **Mr. VISHNU T K (Reg. No. 170011001000)** under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of **Master of Science** in Chemistry under the **Faculty of Science, Mahatma Gandhi University, Kottayam**.  
The work presented in this report has not been submitted for any other degree or diploma earlier.

  
Prof. MANJESH MATHEW  
(Supervising Teacher)

Countersigned by,

  
Dr. SUNNY KURIAKOSE

Head of the Department of Chemistry  
St. Thomas College, Pala

JULY 2019

---

**Prof. TOJO JOSEPH**  
Assistant Professor



Research & P. G. Department of Chemistry  
[DST FIST SPONSORED DEPARTMENT]

**St. Thomas College, Pala**

NAAC ACCREDITED WITH A GRADE

[CENTRE WITH POTENTIAL FOR EXCELLENCE]

Pala -686574, Kerala INDIA

Tel:+91 4822212317

## CERTIFICATE

This is to certify that the project report entitled "**GREEN SYNTHESIS OF SILVER NANOPARTICLE FROM ALOE VERA AND IT'S CATALYTIC BEHAVIOR FOR THE SYNTHESIS OF BENZIMIDAZOLE**" is an authentic record of the project work carried out by **MS. MARIYA MATHEW (Reg. No. 170011000996)** under my supervision and guidance during the period 2017-2019 in partial fulfillment of the degree of **Master of Science in Chemistry** under the **Faculty of Science, Mahatma Gandhi University, Kottayam**. The work presented in this report has not been submitted for any other degree or diploma earlier.

**Prof TOJO JOSEPH**  
(Supervising Teacher)

Countersigned by,

**Dr. SUNNY KURIAKOSE**

Head of the Department of Chemistry

Pala