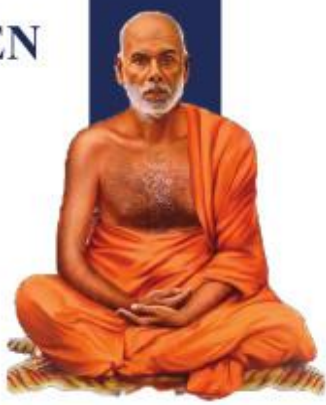
ONE CASTE
ONE RELIGION
ONE GOD

SREE NARAYANA COLLEGE FOR WOMEN

KOLLAM, KERALA- 691 001



COLLABORATIVE ACTIVITIES FOR RESEARCH, FACULTY EXCHANGE, STUDENT EXCHANGE & INTERNSHIP

2023-24

राष्ट्रीय पृथ्वी विज्ञान अध्ययन केन्द्र
NATIONAL CENTRE FOR EARTH SCIENCE STUDIES
पृथ्वी विज्ञान मंत्रालय, भारत सरकार
Ministry of Earth Sciences, Government of India
पी.बी.नं. 7250, आक्कुलम, तिरुवनन्तपुरम - 695011, भारत
PB No. 7250, Akkulam, Thiruvananthapuram-695011, India

06.09.2024

Dr. K. Anoop Krishnan
Scientist & Supervising Guide
Biogeochemistry Group

CERTIFICATE

This is to certify that **Ms. AAVANI RAJ** (Reg. No: 63522129001), a bonafide full-time student of Kerala University, successfully has completed her dissertation entitled **"ANALYSIS OF WATER QUALITY INDEX USING HYDROCHEMICAL PARAMETERS AND EVALUATION OF WATER QUALITY OF DHARMADAM AREA, LOCATED IN THALASSERY TALUK, KANNUR, KERALA, INDIA"** in partial fulfilment for the award of **Master's Degree in Chemistry** (2022-2024), SREE NARAYANA COLLEGE FOR WOMEN, Kollam, Kerala. This is an authentic record of the original research work carried out by her under my supervision and guidance, and no part of this work has been used for any other degree before. The work has been carried out in the Central Chemical Laboratory, Biogeochemistry Group, **National Centre for Earth Science Studies**, Ministry of Earth Science Studies, Akkulam, Trivandrum, Government of India.

Dr. K. Anoop Krishnan
(Supervising Guide)

राष्ट्रीय पृथ्वी विज्ञान अध्ययन केन्द्र
NATIONAL CENTRE FOR EARTH SCIENCE STUDIES
पृथ्वी विज्ञान मंत्रालय, भारत सरकार
Ministry of Earth Sciences, Government of India
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PB No. 7250, Akkulam, Thiruvananthapuram-695011, India

06.09.2024

Dr. K. Anoop Krishnan
Scientist & Supervising Guide
Biogeochemistry Group

CERTIFICATE

This is to certify that **Ms. NIRANJANA UNNI V.V.** (Reg. No: 63522129012), a bonafide full-time student of Kerala University, successfully has completed her dissertation entitled **"HYDROCHEMICAL ANALYSIS AND EVALUATION OF WATER QUALITY FOR IRRIGATION PURPOSES IN TALIPARAMBA, KANNUR DISTRICT, KERALA, INDIA"** in partial fulfilment for the award of **Master's Degree in Chemistry** (2022-2024), SREE NARAYANA COLLEGE FOR WOMEN, Kollam, Kerala. This is an authentic record of the original research work carried out by her under my supervision and guidance, and no part of this work has been used for any other degree before. The work has been carried out in the Central Chemical Laboratory, Biogeochemistry Group, **National Centre for Earth Science Studies**, Ministry of Earth Science Studies, Akkulam, Trivandrum, Government of India.

Dr. K. Anoop Krishnan
(Supervising Guide)

राष्ट्रीय पृथ्वी विज्ञान अध्ययन केन्द्र
NATIONAL CENTRE FOR EARTH SCIENCE STUDIES
पृथ्वी विज्ञान मंत्रालय, भारत सरकार
Ministry of Earth Sciences, Government of India
पी.बी.नं. 7250, आक्कुलम, तिरुवनन्तपुरम - 695011, भारत
PB No. 7250, Akkulam, Thiruvananthapuram-695011, India

06.09.2024

Dr. K. Anoop Krishnan
Scientist & Supervising Guide
Biogeochemistry Group

CERTIFICATE

This is to certify that **Ms. NISHA S.F.** (Reg. No: 63522129013), a bonafide full-time student of Kerala University, successfully has completed her dissertation entitled **"HYDROCHEMICAL ASSESSMENT OF GROUNDWATER AND SURFACE WATER QUALITY & EVALUATION OF HYDROCHEMICAL PARAMETERS IN NEYYATTINKARA AREA, KERALA, INDIA"** in partial fulfilment for the award of **Master's Degree in Chemistry** (2022-2024), SREE NARAYANA COLLEGE FOR WOMEN, Kollam, Kerala. This is an authentic record of the original research work carried out by her under my supervision and guidance, and no part of this work has been used for any other degree before. The work has been carried out in the Central Chemical Laboratory, Biogeochemistry Group, **National Centre for Earth Science Studies**, Ministry of Earth Science Studies, Akkulam, Trivandrum, Government of India.

Dr. K. Anoop Krishnan
(Supervising Guide)

राष्ट्रीय पृथ्वी विज्ञान अध्ययन केन्द्र
NATIONAL CENTRE FOR EARTH SCIENCE STUDIES
पृथ्वी विज्ञान मंत्रालय, भारत सरकार
Ministry of Earth Sciences, Government of India
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PB No. 7250, Akkulam, Thiruvananthapuram-695011, India

06.09.2024

Dr. K. Anoop Krishnan
Scientist & Supervising Guide
Biogeochemistry Group

CERTIFICATE

This is to certify that **Ms. NADIYA FATHIMA T** (Reg. No: 63522129011), a bonafide full-time student of Kerala University, successfully has completed her dissertation entitled **"EVALUATION OF HYDROCHEMICAL PARAMETERS & HYDROCHEMICAL ASSESSMENT OF WATER QUALITY INDEX IN WAYANAD DISTRICT, KERALA, INDIA"** in partial fulfilment for the award of **Master's Degree in Chemistry** (2022-2024), SREE NARAYANA COLLEGE FOR WOMEN, Kollam, Kerala. This is an authentic record of the original research work carried out by her under my supervision and guidance, and no part of this work has been used for any other degree before. The work has been carried out in the Central Chemical Laboratory, Biogeochemistry Group, **National Centre for Earth Science Studies**, Ministry of Earth Science Studies, Akkulam, Trivandrum, Government of India.

Dr. K. Anoop Krishnan
(Supervising Guide)

National Institute for Interdisciplinary Science and Technology (NIIST)

Council of Scientific & Industrial Research (CSIR)
Ministry of Science and Technology, Government of India
Industrial Estate P. O., Trivandrum - 695 019
Kerala, INDIA

Dr. Subrata Das
Principal Scientist,
Materials Science and Technology Division

Tel: 91-471-2515360 (O), 7407825435 (M)
Email: subratadas@niist.res.in
physubrata@gmail.com

CERTIFICATE

This is to certify that the work embodied in the project report entitled "Broad emitting divalent Europium-activated $Sr_{0.9}Ba_{0.9}SiO_4$ phosphor for LED lighting and display applications" has been carried out by **Ms. Anu M. Mariyam** under my supervision at the Material Sciences and Technology Division of CSIR-National Institute for Interdisciplinary Science and Technology (NIIST), Trivandrum during the period April 2024-June 2024 in partial fulfillment of the Degree of Master of Science in Chemistry. The present work or any part thereof has not been submitted elsewhere for the award of any other degree.

Thiruvananthapuram

June 2024

Dr. Subrata Das

(Project Supervisor)

Appendix-II

PROJECT COMPLETION CERTIFICATE
(FOR ASPIRE SCHOLARSHIP - 2023-24)

This is to certify that Smt **S AMRUTHA RAJ,** PG 2nd year student of SREE NARAYANA COLLEGE FOR WOMEN, KOLLAM affiliated to SREE NARAYANA COLLEGE, KOLLAM has successfully completed her Aspire Scholarship Project/Internship entitled **DEVELOPMENT OF MAGNETIC MOLECULARLY IMPRINTED POLYMERS FOR TARGETED DRUG DELIVERY OF 5-FLUOROURACIL** within the stipulated month(s) from 14/12/2023 to 09/02/2024 under the guidance of Prof/Dr. RIJITH .S of our(SREE NARAYANA COLLEGE, KOLLAM) institution

Signature

Name & Designation

(Head of the Host Institution)

PRINCIPAL
SREE NARAYANA COLLEGE
KOLLAM

Name & Designation

(Guide of Host Institution)

Dr RIJITH.S
Associate Professor & Research Guide
Department of Chemistry
Sree Narayana College,Kollam -691001
email: rijithsreenivas@gmail.com
Mob : 9495538668

SREE NARAYANA COLLEGE KOLLAM
ONE CASTE ONE RELIGION ONE GOD

(Office Seal)

Principal - In - Charge
Sree Narayana College for Women
PRINCIPAL
SREE NARAYANA COLLEGE
KOLLAM

(Principal/HOD/Institution)

SREE NARAYANA COLLEGE FOR WOMEN KOLLAM

Encl:1) Project Report

2)Attendance certificate from parent institution(as per notification dated.....)

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF KERALA
Kariavattom Thiruvananthapuram- 695581
Email: chem12aniket@gmail.com, **Phone: 04712308682**
(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as University of Kerala by the Kerala University Act of 1957 and presently governed by the Kerala University Act 1974 passed by the Kerala State Legislative Assembly)
(Re-accredited by NAAC with 'A++' Grade)

05-08-2024

CERTIFICATE

Certified that this report entitled ***"In silico molecular studies on anticancer drugs; Irinotecan and its derivatives for brain tumor"*** is a bonafide record of the project work done by Ms. Aneesha Anilkumar, Reg No. 63522129003 during the period from 1st April 2024 to 3th June 2024 under my guidance at the Department of Chemistry, University of Kerala, towards the partial fulfilment of the requirements for the award of the degree M. Sc Chemistry, Department of Chemistry, Sree Narayana College for Women, Kollam.

Dr.Sandhya K. S.
Asst. Professor (Tenure track)
Department of Chemistry
University of Kerala

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF KERALA
KARIAVATTOM

Dr. Sony George

Associate Professor

Department of Chemistry

School of Physical and Mathematical Science

University of Kerala, Kariavattom

Thiruvananthapuram

CERTIFICATE

This is to certify that the dissertation entitled **"BSA Capped Bimetallic Gold and Silver Nanoclusters (Au-Ag NCs) for the Sensing of Creatinine"** is an authentic record of the research work carried out by **Ms. Ardra J S** under my supervision and guidance at the Department of Chemistry, School of Physical and Mathematical Science, University of Kerala, Kariavattom, Thiruvananthapuram, in partial fulfilment of the requirement for the degree of Master of Science in Chemistry, Kerala University (S N College for Women, Kollam) and no part of this dissertation has been presented before for any other degree.

Kariavattom

01 / 06/ 2024

DEPARTMENT OF CHEMISTRY ★ UNIVERSITY OF KERALA ★ KARIAVATTOM TRIVANDRUM-695 581

Dr. Sony George

(Supervising Teacher)

Dr. SONY GEORGE
ASSOCIATE PROFESSOR
DEPARTMENT OF CHEMISTRY
UNIVERSITY OF KERALA
KARIAVATTOM CAMPUS
THIRUVANANTHAPURAM - 695 581
KERALA, INDIA

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF KERALA
Kariavattom Thiruvananthapuram- 695581
Email: chem12uniker@gmail.com, **Phone: 04712308682**

(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as University of Kerala by the Kerala University Act of 1957 and presently governed by the Kerala University Act 1974 passed by the Kerala State Legislative Assembly)
(Re-accredited by NAAC with 'A++' Grade)

05-08-2024

CERTIFICATE

Certified that this report entitled ***"In silico analysis of Doxorubicin analogues: PS80 conjugation targeting sustained delivery to the brain for the treatment of brain tumor"*** is a bonafide record of the project work done by Ms. Lekshmi D Karunan S, Reg No. 63522129009 during the period from 1st April 2024 to 3th June 2024 under my guidance at the Department of Chemistry, University of Kerala, towards the partial fulfilment of the requirements for the award of the degree M.Sc Chemistry, Department of Chemistry, Sree Narayana College for Women, Kollam.

Dr.Sandhya K. S.

Asst. Professor (Tenure track)

Department of Chemistry

University of Kerala

Appendix-II

PROJECT COMPLETION CERTIFICATE

(FOR ASPIRE SCHOLARSHIP - 2023-24)

This is to certify that Smt **VIDHYA V** , PG 2nd year student of SREE NARAYANA COLLEGE FOR WOMEN, KOLLAM affiliated to SREE NARAYANA COLLEGE, KOLLAM has successfully completed her Aspire Scholarship Project/Internship entitled **METAL CHELATE IMPRINTED POLYMERS FOR CONTROLLED DELIVERY OF ANTI-DIABETIC DRUG CHROMIUM PICOLINATE** within the stipulated month(s) from 14/12/2023 to 09/02/2024 under the guidance of Prof/Dr. RIJITH .S of our(SREE NARAYANA COLLEGE, KOLLAM) institution

Signature

Name & Designation

(Head of the Host Institution)

SREE NARAYANA COLLEGE
KOLLAM

Dr RIJITH.S

Name & Designation

(Guide of Host Institution)

Associate Professor & Research Guide
Post Graduate & Research Department of Chemistry
Sree Narayana College,Kollam -691001
email: rijithsreenivas@gmail.com
Mob : 9495538668

SREE NARAYANA COLLEGE FOR WOMEN KOLLAM

(Office Seal)

(Principal/HOD/Institution)

Principal In-Charge
Sree Narayana College for Women
Kollam

Encl:1) Project Report

2)Attendance certificate from parent institution(as per notification dated.....)

ADVANCED MOLECULAR MATERIALS RESEARCH CENTRE (AMMRC)
MAHATMA GANDHI UNIVERSITY
Priyadarsini Hills P.O., Kottayam, Kerala, INDIA-686 560
www.ammrc.mgu.ac.in ammrcmgu@gmail.com | ammrc@mgu.ac.in

14/05/2024

P D Hills

This is to certify that **REVATHY R V,** Research Award scholarship student (2023-2024) with registration ID 020414438510, has 97% attendance during her internship period (13th December, 2023 to 13th April, 2024).

ADVANCED MOLECULAR MATERIALS RESEARCH CENTRE (AMMRC) * MAHATMA GANDHI UNIVERSITY * KOTTAYAM

Dr. S. Anas

Honorary Director
Advanced Molecular Materials
Research Centre (AMMRC)
Mahatma Gandhi University
Priyadarsini Hills, Kottayam - 686 560

No. **Institution Address**

MEMO

Sub : Coll.Edu.Aspire Scholarship-Selected Student-relieving Certificate-reg

Ref: .....Dated.....

You are selected for the Aspire Scholarship for the year 2023-24 based on your application and the Institution selected for doing the Project/Internship (Mahatma Gandhi Unversity). you are requested to get relieved from your parent Department/Institution (SREE NARAYANA COLLEGE FOR WOMEN, KOLLAM) within three days of reciept of this Memo/SMS. After joining the host institution, joining report in the prescribed format appended/enclosed should be forwarded to the Director of Collegiate Education within 7 days of joining.

DIRECTOR OF COLLEGIATE EDUCATION

(Sd/-)

Name : REVATHY R V
Date : 25/07/2024
Copy to : HOD of Parent Institution
HOD of Host Institution

CERTIFICATE

This is to certify that project work entitled **"DETERMINATION OF DIFFERENT QUALITY INDICATORS PRESENT IN APPLE JUICE"** has been carried out by ADITHYA SS, APARNA A, MEGHA S PRATHEEP, PONNUKRISHNA BS, NANDANA VASANTH as a partial fulfilment of the requirements for the bachelor of science degree in chemistry from Kerala university during the academic year 2021- 2024 is an authentic record of original research work carried out under my supervision in the chemistry of department of **CASHEW EXPORT PROMOTION COUNCIL OF INDIA (CEPCI)** Kerala India. The present work or any part thereof has not been submitted to any other university or institution for the award of any degree or diploma.

Haseena

Ms Arya
Department of chemistry
CEPCI,Kollam

Ms Haseena M
Head of department of chemistry
CEPCI,Kollam

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM - 1

HASEENA. M
Senior Scientist

CERTIFCATE

Certified that the dissertation entitled **"DETERMINATION OF PROTEIN AND FAT CONTENT IN PULSES"**, is an authentic record of work carried out by Akhila S, Aswathy Krishna S, Nilofar Fathima I, Sreeja J, Anakha M Namboothiri, Nidhi S Pillai under the guidance of Ms. HASEENA M, SENIOR SCIENTIST OF CEPCI LABORATORY AND RESEARCH INSTITUTE, KOLLAM in partial fulfilment for the award of degree of Bachelor of Science in Chemistry during the academic year 2023-2024 the present work or any part thereof has not been submitted to any other university or institution for the award of any degree or diploma.

Mr. Arun Kumar

Department of Chemistry

CEPCI, Kollam

Ms. Haseena M

Head, Department of Chemistry

CEPCI, Kollam

HASEENA. M
Senior Scientist

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM - 1

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY (CIPET)

केंद्रीय पेट्रोरसायन अभियांत्रिकी एवं प्रौद्योगिकी संस्थान (सिपेट)

(Formerly Central Institute of Plastics Engineering & Technology)

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

HEAD OFFICE : GUINDY, CHENNAI - 600 032.

CENTRE: CIPET:PALAKKAD

Certificate No.: A 171164

CERTIFICATE / प्रमाणपत्र

This is to certify that

Shri / Smt. / Ms. **AKSHAYA RAJ**

S/o / D/o / W/o ***Shri. Shenraj R S***

has successfully completed the training programme titled

Fundamentals of Polymer Synthesis and Characterization Techniques

Organized at ***CIPET:Palakkad*** *from* ***16.10.2023*** *to* ***20.10.2023***

Date: 20.10.2023

COURSE COORDINATOR

TRAINING I/C - VTC

CENTRE HEAD

CERTIFICATE

Certified that the dissertation entitled "**DETERMINATION OF DIFFERENT QUALITY INDICATORS PRESENT IN MANGO JUICE**", is an authentic record of work carried out by Ansalna S, Asna R, Aavani M S, Gowthami Krishna A, Parvathy Babu, and Subisha Sajeev under the guidance of Ms. HASEENA M, SENIOR SCIENTIST OF CEPCI LABORATORY AND RESEARCH INSTITUTE KOLLAM in partial fulfilment for the award of degree of Bachelor of Science in Chemistry during the academic year 2023-2024 the present work or any part there of has not been submitted to any other university or institution for the award of any degree or diploma.

Ms. Arya

Department of Chemistry

CEPCI, Kollam

Haseena

Ms. Haseena M

HASEENA. M
Senior Scientist

Head of Department of Chemistry

CEPCI, Kollam

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM-1

CERTIFICATE

This is to certify that Miss. ***ARYA BHADRAN A B,AVANI J B, GOPIKA B , LEKSHMI J AJAYA SURYA S L ,RESHMA S R,*** Department of Chemistry , Sree Narayana College For Women's F worked on project entitled ***"DETERMINATION OF ALKALINITY, CHLORIDES, AND FLUORIDES WATER "*** under my supervision in the for the partial fulfillment of the requirement for the Degr of Bachelor of science in Chemistry from Kerala university during the academic year 2021-2024 is authentic record of original research work carried out under my supervision in the Chemis Department of ***Cashew Export Promotion Council of India, Kollam, Kerala*** .The present work any part thereof has not been submitted to any other university or institution for the award of a degree or diploma.

Ms. Sandhya

Department of Chemistry

CEPCI, Kollam

Haseena

Ms. Dr. M. Haseena

Head of Department of Chemistry

CEPCI, Kollam

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM - 1

HASEENA. M
Senior Scientist

CERTIFICATE

This is to certify that project work entitled " **DETERMINATION OF VARIOUS PARAMETERS IN DIFFERENT TYPES OF WATER** " has been carried out by ARYA B, AMRUTHA V M, APARNA AJAY, ASNA S, FERHANA NAUREEN R as a partial fulfilment of the requirements for the bachelor of science degree in chemistry from Kerala University during the academic year 2021-2024 is an authentic record of original research work carried out under my supervision in the chemistry of department of **CASHEW EXPORT PROMOTION COUNCIL OF INDIA (CEPCI)** Kerala, India. The present work or any part there has not been submitted to any other university or institution for the award of any degree or diploma.

Ms Arya

Department of Chemistry

CEPCI, Kollam

Haseena

Ms Haseena M

Head of department of chemistry

CEPCI, Kollam

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM - 1

HASEENA. M
Senior Scientist

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY (CIPET)

केंद्रीय पेट्रोरसायन अभियांत्रिकी एवं प्रौद्योगिकी संस्थान (सिपेट)

(Formerly Central Institute of Plastics Engineering & Technology)

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

HEAD OFFICE : GUINDY, CHENNAI - 600 032.

CENTRE: CIPET:PALAKKAD

Certificate No.: A 171166

CERTIFICATE / प्रमाणपत्र

This is to certify that

Shri / Smt. / Ms. ATHULYA S

S/o / D/o / W/o Shri. Muraleedharan.V

has successfully completed the training programme titled

Fundamentals of Polymer Synthesis and Characterization Techniques

Organized at CIPET:Palakkad from 16.10.2023 to 20.10.2023

20.10.2023

Date:

COURSE COORDINATOR

TRAINING I/C - VTC

CENTRE HEAD

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY (CIPET)

केंद्रीय पेट्रोरसायन अभियांत्रिकी एवं प्रौद्योगिकी संस्थान (सिपेट)

(Formerly Central Institute of Plastics Engineering & Technology)

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

CIPET सिपेट

HEAD OFFICE : GUINDY, CHENNAI - 600 032.

CENTRE: CIPET:PALAKKAD

Certificate No.: A 171170

CERTIFICATE / प्रमाणपत्र

This is to certify that

Shri / Smt. / Ms. **KANISHA A**

S/o / D/o / W/o ..... *Shri. V. Amirtharaj*

has successfully completed the training programme titled

Fundamentals of Polymer Synthesis and Characterization Techniques

Organized at CIPET:Palakkad from 16.10.2023 to 20.10.2023

Date: 20.10.2023

COURSE COORDINATOR

TRAINING I/C - VTC

CENTRE HEA

CERTIFICATE

Certified that the dissertation entitled **'DETERMINATION OF PROTEIN AND CARBOHYDRATE CONTENT IN DIFFERENT TYPES OF MILLETS'**, is an authentic record of work carried out by Mariya joymon , Navya V A , Aiswarya S , Archana S, Arya Rajesh , Vaishnavi Unnikrishnan under the guidance of Ms. HASEENA M , SENIOR SCIENTIST OF CEPCI LABORATORY AND RESEARCH INSTITUTE KOLLAM in partial fulfilment for the award of degree of Bachelor of Science in Chemistry during the academic year 2023 – 2024 the present work or any part there of has not been submitted to any other university or institution for the award of any degree or diploma.

Haseena

Ms. Haseena M

Head of Department of Chemistry

CEPCI , Kollam

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM -1

HASEENA. M
Senior Scientist

CERTIFICATE

This is to certify that the dissertation entitled **"DETERMINATION OF FAT & PROTEIN CONTENT IN DIFFERENT TYPES OF NUTS"** is an authentic record of work carried out by Parvathy S, Sivarenjini M, Amina Ansari, Amina I, Anannya S Balaji and Jyothi Lekshmi G under the guidance of Ms Haseena M, Senior Scientist of CEPCI Laboratory and Research Institute Kollam in partial fulfillment for the award of degree of Bachelor of Science in Chemistry during the academic year 2023-2024 the present work or any part there of has not been submitted to any other University of Institution for the award of any degree or diploma.

Haseena

Mr. Arun Kumar
Department of Chemistry
CEPCI, Kollam

Ms Haseena M
Head of Department of Chemistry
CEPCI, Kollam

HASEENA. M
Senior Scientist

THE CEPCI LABORATORY & RESEARCH INSTITUTE
THE CASHEW EPC OF INDIA
KOLLAM-1

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY (CIPET)

केंद्रीय पेट्रोरसायन अभियांत्रिकी एवं प्रौद्योगिकी संस्थान (सिपेट)

(Formerly Central Institute of Plastics Engineering & Technology)

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

HEAD OFFICE : GUINDY, CHENNAI - 600 032.

CENTRE: CIPET:PALAKKAD

Certificate No.: A 171168

CERTIFICATE / प्रमाणपत्र

This is to certify that

Shri / Smt. / Ms. ..... **SHAHINA S S** .....

S/o / D/o / W/o ..... ***Shri. Shajahan M*** .....

has successfully completed the training programme titled

Fundamentals of Polymer Synthesis and

Characterization Techniques

Organized at ***CIPET:Palakkad*** ..... *from* ***16.10.2023*** .... *to* ***20.10.2023*** ....

Date: **20.10.2023**

COURSE COORDINATOR

TRAINING I/C - VTC

CENTRE HEA

CERTIFICATE

This is to certify that project work entitled "A PANORAMIC ANALYSIS: DECIPHERING ACIDIC AND IODINE VALUES ACROSS MULTIPLE OIL TYPES " has been carried out by SREE LEKSHMI S, ALEESHA A, AMRUTHA S, SAMIYA S, SHAHINA S as a partial fulfilment of the requirements for the bachelor of science degree in chemistry from Kerala university during the academic year 2021-2024 is an authentic record of original research work carried out under my supervision in the chemistry department of CASHEW EXPORT PROMOTION COUNCIL OF INDIA (CEPCI) Kerala India .The present work or any part thereof has not been submitted to any other university or institution for the award of any degree or diploma.

Ms. Sandhya

Department of Chemistry

CEPCI, Kollam

Haseena

Ms. Haseena M

Head of Department of Chemistry

CEPCI, Kollam

HASEENA. M
Senior Scientist

THE CEPCI LABORATORY & RESEARCH INSTITUTE
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(Formerly Central Institute of Plastics Engineering & Technology)

(Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India)

HEAD OFFICE : GUINDY, CHENNAI - 600 032.

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CENTRE: CIPET:PALAKKAD

Certificate No.: A 171167

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Shri / Smt. / Ms. SRUTHI S R

S/o / D/o / W/o *Shri. Sugunan B*

has successfully completed the training programme titled

Fundamentals of Polymer Synthesis and Characterization Techniques

Organized at *CIPET:Palakkad* *from* *16.10.2023* *to* *20.10.2023*

Date: 20.10.2023

COURSE COORDINATOR

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E-mail : contact@kmml.com, URL : www.kmml.com

CIN-U14109KL1972SGC002399

TP/PD/T-14/24
30.05.2024

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This is to certify that **Ms.Amrutha M, (Reg No-15922129002) B.Com** student at Sree Narayana College For Women,Kollam has successfully completed **Internship** in Finance Department of the Titanium Dioxide Pigment Unit of KMML at Chavara from **29.04.2024 to 30.05.2024**.

She was found to be an industrious and motivated person with good Conduct and Character during the period.

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Hybrid Advances • Volume 5 • April 2024 • Article number 100162

Document type
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2773207X

DOI
10.1016/j.hybadv.2024.100162

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Biomass derived cellulose nanofiber loaded PVA-nanocurcumin coating for extending the shelf life of Mandarin oranges (Citrus reticulata)

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Abstract

The concern over agricultural waste disposal can be resolved by converting them into value-added products. Here, sustainable fruit coatings and films have been developed via. wealth from waste concept. The cellulose nanofibers (CNF) have been extracted from the waste onion skin. The isolated CNF has been characterised using scanning electron microscopy (SEM), transmission electron microscopy (TEM), optical microscopy (OM), dynamic light scattering (DLS) and solid-state ^{13}C NMR spectroscopy. A combination of cellulose nanofiber (CNF) and nanocurcumin in polyvinyl alcohol (PVA) matrix has been used for the fabrication of coating over fresh mandarin oranges. The effect of nanocurcumin in PVA-CNF nanocomposite on the post-harvest maintenance of mandarin oranges has been investigated. The morphology of the prepared films is studied by SEM and atomic force microscopy (AFM). The quality of the orange fruits coated using the above formulation by dip coating method was analysed via. weight loss analysis, total soluble solid (TSS), pH, titrable acidity (TA) and antioxidant activities. It was found that the nanocurcumin incorporated PVA-CNF coating was effective in reducing mass loss and maintaining the physiochemical properties of oranges in comparison with other formulations. The developed method could be extended to use as food packaging films, which would be a sustainable solution for agricultural waste valorisation and plastic

Author keywords

Cellulose nanofiber (CNF); Fruit coating; Mandarin oranges; Nanocurcumin; Polyvinyl alcohol (PVA) films

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ACS Applied Polymer Materials • Volume 6, Issue 10, Pages 5932 - 5944 • 24 May 2024

Document type
Article

Source type
Journal

ISSN
26376105

DOI
10.1021/acsapm.4c00601

Insights into the Synergistic Effect of Graphene Oxide/Silica Hybrid Nanofiller for Advancing the Properties of Epoxy Resin

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Abstract

Tuning the interfacial interaction between the filler and the matrix is essential to fabricate high-performance polymer nanocomposites. Herein, a hybrid nanofiller based on graphene oxide (GO) and nanosilica (SiO_2) was prepared via electrostatic charge attraction. Amine-functionalized nanosilica was decorated over the surface of the GO sheet via simple aqueous mixing. The hybrid nanofiller approach of GO with nanosilica reduces the cohesive force between the GO sheets, facilitating better dispersion and thereby enhancing the properties of epoxies (preventing GO-GO and silica-silica agglomeration). The high-resolution transmission electron microscopy showed that the d spacing between GO sheets in the GO-SiO_2 hybrid nanofiller (0.32 ± 0.70 nm) was higher than that in pristine GO. The synergistic effect of GO and nanosilica in the GO-SiO_2 hybrid nanofiller of varying content (0.25 to

0.75 phr) as a reinforcement for advancing the properties of epoxies was monitored systematically. The effect of the GO-SiO_2 hybrid nanofiller on the chain confinement, structure, and mechanics was studied by dynamic mechanical analysis. It was found that the hybrid nanofiller incorporation improved the filler matrix interaction and, thereby, the mechanical properties and glass transition temperature (T_g) of epoxy. Epoxy chains near the vicinity of the hybrid filler have become immobilized because of the strong filler-matrix interaction and form a confined zone around the filler-matrix interface. The quantitative measurement of the immobilized epoxy chains formed by the hybrid nanofiller was determined from the tan delta curve. A maximum enhancement in the storage modulus, T_g, impact strength, and other theoretical parameters was observed for epoxy nanocomposite with 0.5 phr loading of the hybrid nanofiller. © 2024 American Chemical Society.

Author keywords

amine modification; epoxy; graphene oxide; hybrid nanofiller; synergism

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