

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "DEVELOPMENT AND CHARACTERIZATION OF NANO CELLULOSE BASED HYDROGEL FOR WATER HOLDING AND CONTROLLED RELEASE OF NUTRIENTS" is the bonafide work of "POOJA K (20114035), ASHFAQ HASSAN M (20114012), SREEJITH R (20114047), RAJIV S (20114039)" who carried out the project work under my supervision.

SIGNATURE



Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE



Dr. SEENUVASAN M
SUPERVISOR

Professor & Head
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted

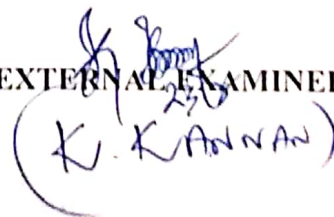
on

23/05/2024

INTERNAL EXAMINAR



EXTERNAL EXAMINER



(K. K. ARNAN)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "DEVELOPMENT AND CHARACTERIZATION OF NANO-CHITIN BASED HYDROGEL FOR ENHANCING WATER HOLDING CAPACITY AND CONTROLLED RELEASE OF NUTRIENTS" is the bonafide work of "HARISH KUMAR M (20114023), SENTHILVEL V P (20114042), MANOJ KUMAR K (20114803), ABDULLA E (20114001)" who carried out the project work under my supervision.

SIGNATURE



Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE



Dr. SEENUVASAN M
SUPERVISOR

Professor & Head
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23-5-24



INTERNAL EXAMINAR



EXTERNAL EXAMINER

(K. KANNAN)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this 19CH8901 – Project Work – Phase II report “ECO-FRIENDLY RECOVERY OF CuCl FROM E-WASTE – SYNTHESIS AND CHARACTERIZATION OF COBALT-DOPED COPPER OXIDE” is the bonafide work of “ABHINAND SADAN (20114003), AYDINSHA S (20114014), MUHAMMED ROSHAN A K (20114031)” who carried out the project under my supervision.



HEAD OF THE DEPARTMENT

Dr. SEENUVASAN M
Professor

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032



SUPERVISOR

MR DINESHKUMAR M
Assistant Professor

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous institution Project Phase II viva – voce conducted on

23-05-2024



INTERNAL EXAMINER



EXTERNAL EXAMINER

23/5
K. KARANAN

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi. Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "UNVEILING UNIQUE SYNERGIES FOR INNOVATIVE SUSTAINABLE CELLULOSE FROM NEEMSEED AND COCONUT FIBER: HYBRID BIOMASS" is the bonafide work of "JANATH SARAVANAN S (20114026), MOHAMED ASIF M (20114804), RAMAJAYAM S (20114805), SANJAY K (20114806)" who carried out the project work under my supervision.

SIGNATURE

Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE

Ms. KALPANA V P
SUPERVISOR

Associate Professor
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23-05-2024

INTERNAL EXAMINAR

EXTERNAL EXAMINER



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "EXTRACTION OF POLYPHENOL FROM PHYLLANTHUS EMBLICA SEEDS" is the bonafide work of "ARUNAGIRI S (20114011), A PALANI MUTHU (20114034), PRASANNA A (20114036)" who carried out the project work under my supervision.

SIGNATURE


Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE


Ms. KALPANA V P
ASSISTANT PROFESSOR
SUPERVISOR

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted
on

28-05-2024


INTERNAL EXAMINER


EXTERNAL EXAMINER



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report " PREPARATION AND CHARACTERISATION OF FIRE RETARDANT USING AMINO FUNCTIONALISED TINOXIDE NANOPARTICLE DERIVED FROM EWASTE " is the bonafide work of "SAKTHISURYA K (20114041), ASRITH M (20114013), KANAGALAKSHMI R (20114027), ARJUN G (20114010)" who carried out the project work under my supervision.

SIGNATURE



Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE



Dr. SEENUVASAN M
SUPERVISOR

Professor & Head
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23/05/2024


INTERNAL EXAMINER


EXTERNAL EXAMINER



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "DEVELOPMENT AND CHARACTERISATION OF NANO-LIGNIN BASED HYDROGEL FOR WATER HOLDING AND CONTROLLED RELEASE OF NUTRIENT" is the bonafide work of "SAFNA K A (20114040), MUHAMMED JASEEM (20114030), ALKA DINESH (20114007), ABHINEW KRISHNA (20114004)" who carried out the project work under my supervision.

SIGNATURE



Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE



Dr. SEENUVASAN M
SUPERVISOR

Professor & Head
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23/05/2024

INTERNAL EXAMINAR



EXTERNAL EXAMINER

23/5
(K. KANHAN)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC

(An Autonomous Institution, Affiliated to Anna University, Chennai)

COIMBATORE - 641032

BONAFIDE CERTIFICATE

Certified that this project report "PREPARATION OF GO/TIO₂ NANOCOMPOSITE FOR REMOVAL OF MICROPOLLUTANT: ISOTHERMS, KINETICS, OPTIMATIZATION" is the bonafide work of "ANAL JAI P (20114008), BISHAR MUQUESITH (20114017), CHITRA N (20114018), HARISH S (20114024)" who carried out the projectwork under my supervision.



SIGNATURE

Dr. M. Seenuvasan

Professor

HEAD OF THE DEPARTMENT

Department of Chemical
Engineering

Hindusthan College of Engineering
and Technology, Coimbatore-
641032



SIGNATURE

Dr. K. Balasubramani

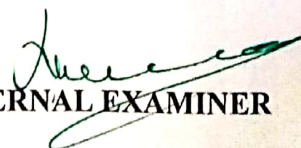
Associate Professor

SUPERVISOR

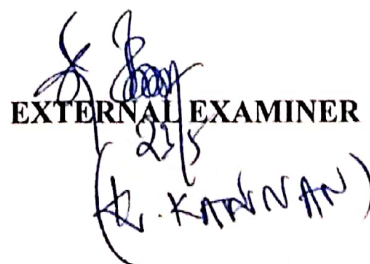
Department of Chemical
Engineering

Hindusthan College of Engineering
and Technology, Coimbatore-
641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted
on



INTERNAL EXAMINER



EXTERNAL EXAMINER
(H. KANNAN)

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE - 641032

BONAFIDE CERTIFICATE

Certified that this project report "PREPARATION OF EMULSION LIQUID MEMBRANE FOR REMOVAL OF MICROPOLLUTANT FROM AQUEOUS SOLUTION" is the bonafide work of "DEVANAND S (20114020), SURENDHAR T (20114050), VAISHNAV UV (20114052)" who carried out the project work under my supervision.

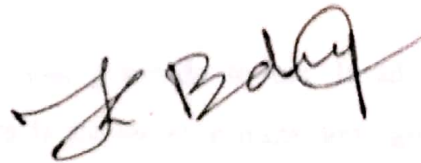

SIGNATURE

Dr. M. Seenuvasan

Professor

HEAD OF THE DEPARTMENT

Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032



SIGNATURE

Dr. K. Balasubramani

Associate Professor

SUPERVISOR

Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted
on 23/05/24


INTERNAL EXAMINAR


EXTERNAL EXAMINAR



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)

COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "MODELLING AND OPTIMIZATION OF MAIN INDEPENDENT PARAMETERS FOR BIODIESEL PRODUCTION OVER USING HYBRID POROUS COORDINATION POLYMER CATALYST" is the bonafide work of "IN AAMUL AKRAM A (20114025), SHREYA KRISHNAN (20114046), THANVEER AHAMED K S (20114051), SRI RITHIK A (20114048)" who carried out the project work under my supervision.



SIGNATURE

Dr. SEENUVASAN M

Professor

HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032



SIGNATURE

Mr. SEENUVASAN M

Professor

SUPERVISOR

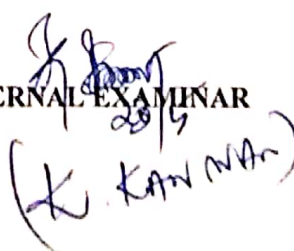
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase – II. Viva-Voce conducted on

..... 23/5/24



INTERNAL EXAMINAR



EXTERNAL EXAMINAR

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

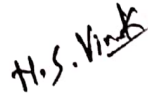
Certified that this project report "REMOVAL OF LEAD FROM AQUEOUS SOLUTION BY A POLYVINYL CHLORIDE INCLUSION MEMBRANE WITHOUT ADDED PLASTICIZER " is the bonafide work of " KARTHIK N (20114028) , BALAGANESH R (20114015), SETHURAMAN M (20114043), VIPIN V (20114056) who carried out the project work under my supervision.


SIGNATURE

Dr. M. Seenuvasan

Professor

HEAD OF THE DEPARTMENT
Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032



SIGNATURE

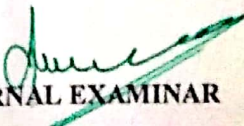
Dr. M.S.VIVEK


Assistant Professor

SUPERVISOR
Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032

Submitted for the Autonomous Institution Project Phase-II Viva-voce

conducted on.. 23/..5/24


INTERNAL EXAMINAR


EXTERNAL EXAMINER
23/5
(K. KANNAN)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "REPURPOSING ORGANIC WASTE AND EXTRACTED CELLULOSE FROM CLADOPHORA.WM FOR THE PRODUCTION OF BIO-PLASTIC USING EPICHLORO HYDRIN CROSS LINKER" is the bonafide work of "E.P Shalooob Ahammed, Rahul Rajeev, Nihil K Babu, Krishna Nandana P N" who carried out the project work under my supervision.

SIGNATURE



Dr. SEENUVASAN M
HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032



Ms P. INDUJA
SUPERVISOR
Professor & Head
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

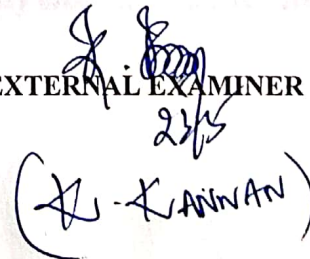
Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23/5/24

INTERNAL EXAMINAR



EXTERNAL EXAMINER



23/5
(K. K. ANAND)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC

(An Autonomous Institution, Affiliated to Anna University, Chennai)

COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "ESTERIFIED FATTY OIL FROM ANIMAL FAT FOR THE SYNTHESIS OF FLOOR SURFACTANT" is the bonafide work of "AISHA HANNATH A.N (20114006), DURAI SUNDARESAN B (20114021), KARTHIKEYAN I (20114029), SHAHIN K (20114044)" who carried out the project work under my supervision.

SIGNATURE


Dr. SEENUVASAN M

Professor

HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE

Mr. Sathish J

Assistant Professor

SUPERVISOR

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on


INTERNAL EXAMINAR


EXTERNAL EXAMINAR

(K. KANNAN)



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NACC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE

Certified that this project report "Molecularly Imprinted Polymer-Based Nanoporous Carbon Nanocomposite For Effective Removal Of DiChromate Ions From Aqueous Suspensions" is the bonafide work of BHARATH K (20114016), DEEPAK S (20114020), SRIDHAR J K (20114049), VIGNESH G (20114054)" who carried out the projectwork under my supervision.

SIGNATURE


Dr. SEENUVASAN M
PROFESSOR

HEAD OF THE DEPARTMENT

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE


Mr. NAGUL DEV S
ASSISTANT PROFESSOR

SUPERVISOR

Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

23/05/2024


INTERNAL EXAMINAR


EXTERNAL EXAMINAR



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A++' Grade by NAAC

(An Autonomous Institution, Affiliated to Anna University,
Chennai)COIMBATORE - 641032

BONAFIDE CERTIFICATE

Certified that this project report "CFD ANALYSIS OF HEAT TRANSFER IN SPIRAL COIL HEAT EXCHANGER WITH CONSTANT WALL HEAT TRANSFER CO-EFFICIENT" is the bonafide work of "ABHINAND C (20114002), ABISHA J (20114005), VENKASTESH T (20114053), VINAYAGAM M (20114055)" who carried out the project work under my supervision.



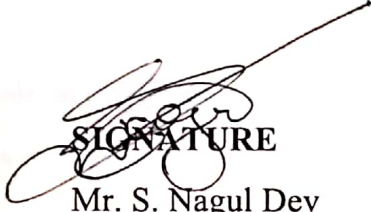
SIGNATURE

Dr. M. Seenuvasan

Professor

HEAD OF THE DEPARTMENT

Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032



SIGNATURE

Mr. S. Nagul Dev

Assistant Professor

SUPERVISOR

Department of Chemical
Engineering
Hindusthan College of Engineering
and Technology, Coimbatore-
641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce
conducted on 23/05/24



INTERNAL EXAMINAR



EXTERNAL EXAMINAR

K. KANAN



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with A++ Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
COIMBATORE-641032

BONAFIDE CERTIFICATE


Certified that this project report "A GREEN AND SUSTAINABLE RECOVERY: CuO@ZnO NANOCOMPOSITE FROM E-WASTE WITH CHELATION TECHNOLOGY AND ITS APPLICATION AS ANTIBACTERIAL AGENT" is the bonafide work of "ANJANA DAS(20114009), GOWATHAM B (20114002), MUHAMMAD RISHAL MF (20114007)" who carried out the project work under my supervision.

SIGNATURE



Dr. N. VENKATESAN M
HEAD OF THE DEPARTMENT
Professor
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

SIGNATURE



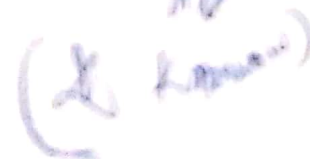
Mr. DEVENKUMAR M
SUPERVISOR
Assistant Professor
Department of Chemical Engineering
Hindusthan College of Engineering and
Technology
Valley Campus, Pollachi Highway,
Coimbatore-641032

Submitted for the Autonomous Institution Project Phase-II Viva-Voce conducted on

28.05.2024

INTERNAL EXAMINER

EXTERNAL EXAMINER



(L. Kumar)