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St. JOSEPH'S COLLEGE OF ENGINEERING

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St. Joseph's Group of Institutions

OMR, CHENNAI - 119



BIO



VOICE



DEPARTMENT OF BIOTECHNOLOGY NEWSLETTER

March 2026

About Us

The Biotechnology Department was incepted in the year 2002 and Accredited by NBA.

Having a state-of-art laboratory, the department offers both Bachelors and Ph.D courses which are affiliated with Anna University, Chennai

Vision

To provide a world-class department to facilitate learning, training and research in Biotechnology by providing infrastructural facilities and competent faculty leading to technological innovations to serve the global society

Mission

The Mission of the Department is to provide quality education to students and to produce competent Biotechnologists to meet the challenges faced by industry and mankind.

To inculcate high moral and professional standards among our students.

To develop the overall personality of the students.

STUDENT ACHIEVEMENTS

Academic Excellence: A Celebration of Hard Work and Dedication

Biotechnology students shine bright! With flying colors, they soar to new heights. Achieving **ranks in GATE 2026** their success is clear, A testament to dedication and hard work, year after year.

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DEPARTMENT OF BIOTECHNOLOGY
CONGRATULATIONS
GATE 2026 QUALIFIED STUDENT

IV YEAR
BATCH (2022-26)

Sai Srinivas S
GATE SCORE:540
RANK:549

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The Choice of
Disciplined Toppers

STUDENT ACHIEVEMENTS



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DEPARTMENT OF BIOTECHNOLOGY **CONGRATULATIONS** GATE 2026 QUALIFIED STUDENTS

III YEAR
BATCH (2023-27)



Jafferin D R
312323214020
GATE SCORE:459
RANK:1257



Nandita R
312323214034
GATE SCORE:428
RANK:1639



Harsha D
312323214017
GATE SCORE:371
RANK:2651



Varshini B
312323214057
GATE SCORE:339
RANK:3514



Karpagam R
312323214026
GATE SCORE:339
RANK:3514



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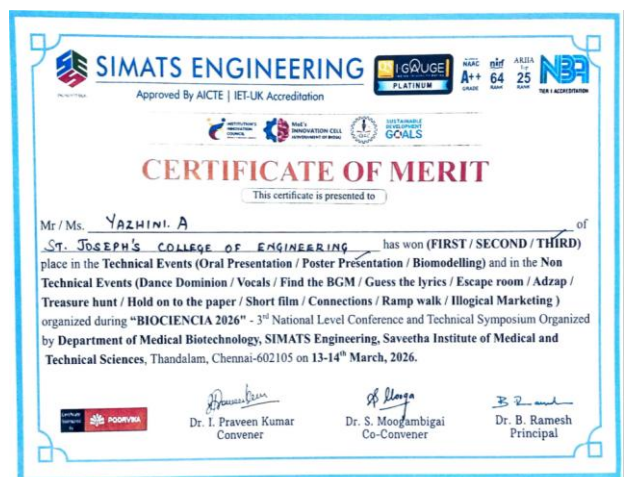
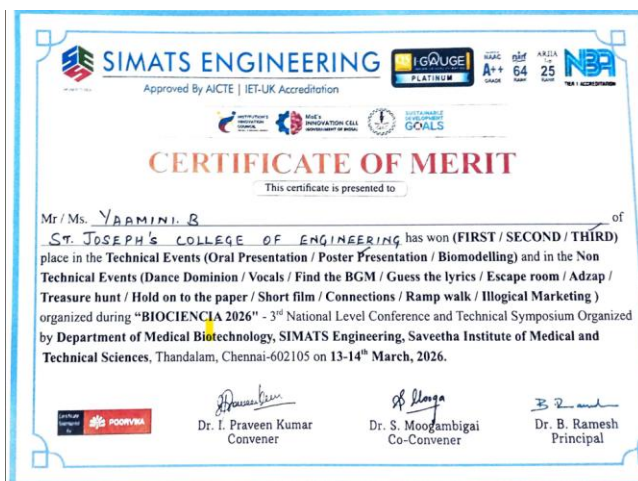
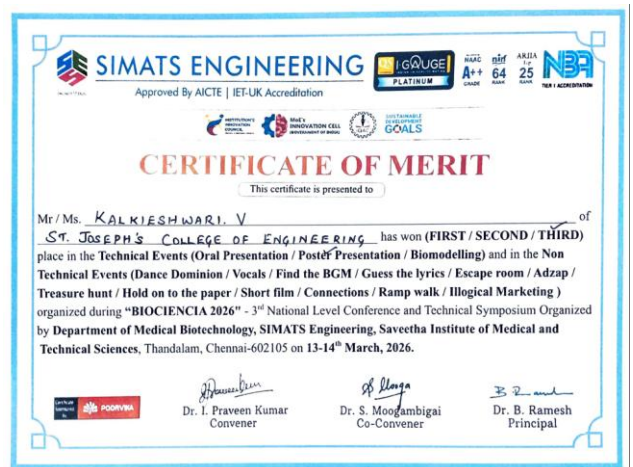
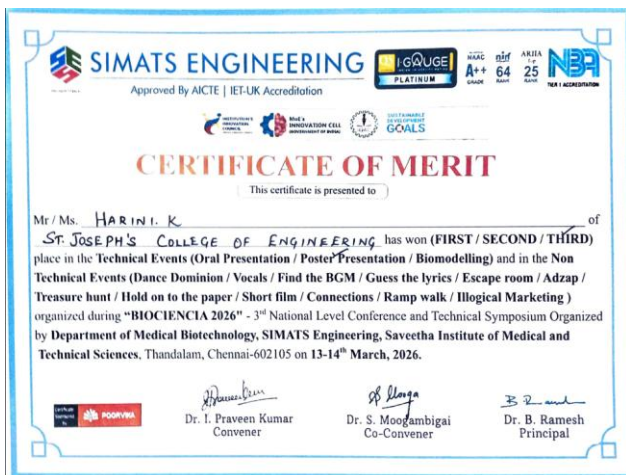


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STUDENT ACHIEVEMENTS

Prize Winners

Our final students **Harini K, Kalkieshwari V, Yaamini B, Yazhini A** won 3rd place in the poster presentation with the cash prize of Rs. 1000 in **BIOCIENCIA 2026**, held at **SIMATS Engineering** on 14th of March



STUDENT ACHIEVEMENTS

Prize Winners

Our third-year students **Kavindra L, Moushiga S.M and Sushmithaa S** as won **3st place (Cash Prize Rs. 2000)** in the paper presentation, National Level Conference, held at **Sree Sastha Engineering and Technology** held on **4th of March**.



STUDENT ACHIEVEMENTS

Prize Winners

Our third-year students **Abhirami S, Harisudan S, Kabilan D and Sivaprakash S** as won **1st place (Cash Prize Rs. 2000)** in the paper presentation, **National Level conference on Integrating Science, Technology and Society for Sustainable Agriculture**, held at **Karpaga Vinayaga College of Engineering and Technology**



STUDENT ACHIEVEMENTS

Prize Winners

Our third-year students **Vansi Jerolee A** and **Varshini B** as won **2nd place (Cash Prize Rs. 750)** in the paper presentation, **ESCAPE'26**, held at **Jeppiaar Engineering College** held on **4th of March**.



STUDENT ACHIEVEMENTS

Prize Winners

Our second-year student **Keerthi Shri S** as won **1st place** (Cash Prize Rs. 1000) in the Ideathon, **ESCAPE'26**, held at **Jeppiaar Engineering College** held on **4th of March**.



STUDENT ACHIEVEMENTS

Prize Winners

Our second-year student **Akshaya S** as won **1st place (Cash Prize Rs. 2000)** in the **Concept 2 cure, TEXUS'26**, held at **SRM Institute of Science and Technology**.



International Conference

Our department has organized an **3rd International conference on Frontiers in Biotechnology** with eminent speaker from different countries. A total of **4 plenary lectures and 36 invited talks** were delivered to students.



STAFF ACHIEVEMENTS

Paper Published


Dr. L. F. A. Anand Raj has published a paper titled “Green nano emulsion formulation of *Citrus hystrix* essential oil: characterization, biological potentials and eco-biocompatibility profiling”

Flavour and Fragrance Journal

WILEY

ORIGINAL ARTICLE

Green Nanoemulsion Formulation of *Citrus hystrix* Essential Oil: Characterisation, Biological Potentials, and Eco-Biocompatibility Profiling

L. F. A. Anand Raj¹ | D. Alice Jasmine¹ | S. Shreya¹ | S. Karthick Raja Namastvayam² 

¹Department of Biotechnology, St Joseph's College of Engineering, Chennai, Tamil Nadu, India | ²Centre for Applied Research, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, Tamil Nadu, India

Correspondence: S. Karthick Raja Namastvayam (btologtask@gmail.com)

Received: 19 January 2026 | Revised: 19 January 2026 | Accepted: 5 March 2026

Keywords: antibacterial | antioxidant | biocompatibility | *Citrus hystrix* | ecotoxicity | essential oil | nanoemulsion | plants

ABSTRACT

Innovative nanotechnology based on plants and plant-based resources presents unique opportunities for sustainable science. This study meticulously describes the multi-step fabrication and thorough bioevaluation of a plant-origin nanostructure in the form of a nano-emulsion utilising *Citrus hystrix* seed essential oil. The process commenced with a dual extraction strategy, integrating ultrasonic activation with hydrodistillation to optimise essential oil yield and purity. Subsequent catastrophic phase inversion transformation enabled the generation of highly stable nanodroplets with a uniform size distribution of 397–400 nm. The biological potential of the formulation was rigorously scrutinised: in vitro assays confirmed its superior antimicrobial efficacy against pathogenic strains. Additional analyses demonstrated impressive radical scavenging and glycemic regulatory properties alongside marked anti-inflammatory activity. The product's biocompatibility was validated through hemocyte integrity assessments, and detailed eco-suitability was established through comprehensive soil microbial profiling and enzyme assays, which revealed no cytotoxic or environmental risks. Collectively, these findings demonstrate that such plant-origin nanostructures offer a compelling, environmentally conscious platform for future biomedical and ecological innovations.

1 | Introduction

The emergence of nanomaterials as a transformative force in modern science and technology is underscored by their singular physicochemical characteristics, which underpin their application in diverse domains ranging from biomedicine to environmental management. Their widespread use and environmental dissemination, particularly in soils, have necessitated the advancement of a robust understanding of their synthesis, application, and ecological interactions, foundational for the formulation of effective management strategies [1]. Nanoemulsions, a specialised class of nanomaterials, are valued for their proficiency in delivering hydrophobic drugs and nutraceuticals with enhanced bioavailability, a capability further augmented by

eco-friendly synthetic approaches that yield a suite of beneficial biological properties [2].

The historical and ongoing exploitation of botanical resources for drug discovery reflects the unparalleled chemical diversity and pharmacological promise of plant-derived metabolites [3]. Within this investigative context, a nanoemulsion based on *Citrus hystrix* essential oil was fabricated through a green, in situ protocol and subjected to a battery of biological activity assays. *Citrus hystrix*, a member of the *Rutaceae* and native to Southeast Asia and southern China, is chemically profuse, comprising at least 78 known constituents with coumarins, flavonoids, phenolic acids, and terpenoids predominating. The literature substantiates the broad-spectrum therapeutic potential



STAFF ACHIEVEMENTS

Workshop

Dr. L. F. A. Anand Raj from the Department of Biotechnology has participated in the online workshop on **“Research Methodology and data Analysis- A smart Learning”** held at **Star International Foundation for Research and Education**



STAFF ACHIEVEMENTS

Patent Published

Dr. L. F. A. Anand Raj and Dr. B. Sangeetha from the Department of Biotechnology have published a patent titled **“Development of sustainable Bio-hybrid electrolyte based on soy lechthin choline chloride”**

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202641025836 A

(19) INDIA

(22) Date of filing of Application :05/03/2026

(43) Publication Date : 20/03/2026

(54) Title of the invention : DEVELOPMENT OF SUSTAINABLE BIO-HYBRID ELECTROLYTE BASED ON SOY LECITHIN DERIVED CHOLINE CHLORIDE

(51) International classification	:H01M 10/0568, H01M 10/0569, H01M 10/0567, H01M 10/0525, H01M 10/0565	(71)Name of Applicant : 1)L F A Anand Raj Address of Applicant :Matira 1006, PBEL City, OMR, Tamil Nadu India 2)B. Sangeetha 3)Madeehah 4)Anjanha R 5)Poshikal B T 6)Aloysius Rancy A
(31) Priority Document No	:NA	(72)Name of Inventor : 1)L F A Anand Raj 2)B. Sangeetha 3)Madeehah 4)Anjanha R 5)Poshikal B T 6)Aloysius Rancy A
(32) Priority Date	:NA	
(33) Name of priority country	:NA	
(86) International Application No	:	
Filing Date	:01/01/1900	
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

With the increased demand for renewable energy systems there is a need for energy storage with high performance, environmentally safe, and sustainable devices. As lithium-ion batteries do not biodegrade and contain toxic, flammable electrolytes (e.g., lithium hexafluorophosphate dissolved in carbonates) this presents serious concerns regarding environmental impact and safety. The Eco-Ion Project provides a novel Eco-Ion Device that utilizes a biodegradable hybrid electrolyte produced from Deep Eutectic Solvents (DES) created from renewable resources. The DES consists of mixed choline chloride from soy lecithin and glycerol a by-product of the production of biodiesel at certain temperatures to form a low-toxicity biodegradable electrolyte with the potential for stability when mixed with lithium salts including LiBF₄, LiTFSI or LiClO₄, while also maintaining excellent electrochemical performance and significant environmental benefits as these materials are inexpensive, non-flammable, and safe for use in both lithium-ion batteries and supercapacitors. This new biodegradable electrolyte has many potential applications including power generation systems that utilize ionic conductivity for energy storage, flame resistant power systems, and bio-disinfection systems for treating drinking water, waste water, and sterilizing surgical equipment. In alignment with and developing through the principles of Green Chemistry and Sustainable Engineering, the Eco-Ion Project represents an ideal scalable, environmentally safe alternative to traditional electrolytic materials used for renewable energy and healthcare applications.

No. of Pages : 10 No. of Claims : 7

STAFF ACHIEVEMENTS

Invited Talk

Dr. G. Baskar from the Department of Biotechnology has presented an **Invited Lecture in International Conference on Sustainable Biotechnology and Bio-Innovations (SBB-2026)**, held from 25th to 27th February 2026, organized by the **Amity Institute of Biotechnology, Amity University, Uttar Pradesh, Noida.**



 **AMITY UNIVERSITY**
UTTAR PRADESH

   **Anusandhan National Research Foundation**

International Conference on Sustainable Biotechnology and Bio-innovations (SBB-2026)
in association with
The Biotech Research Society, India (BRSI)
International Bioprocessing Association (IBA-IFIBiop) & Centre for Energy, Environment and Sustainability (CEES)

CERTIFICATE

This is to certify that
Dr. Baskar Gurunathan
St. Joseph's College of Engineering, India
has delivered an **INVITED LECTURE**

Titled "*Madhuca indica: Exploring its Potential as an Industrial Crop for Diverse Applications*" at the International Conference on Sustainable Biotechnology and Bio-Innovations (SBB-2026), held from 25th to 27th February 2026, organized by the Amity Institute of Biotechnology, Amity University, Uttar Pradesh, Noida.


Prof. Sunghoon Park
Chair Professor, Ulsan-NIIST, Ulsan, South Korea
International Conference Chair


Prof. (Dr.) Rachana Singh
Chairperson, SBB 2026


Dr. Vivek Kumar Gaur
Convener, SBB 2026


Prof. (Dr.) Pooja Vijayaraghavan
Chairperson, SBB 2026

STAFF ACHIEVEMENTS

Invited Talk

Dr. G. Baskar from the Department of Biotechnology has presented **Invited Lecture in National Conference on Biotechnology and Circular Bio-Economy: Engineering Solutions for Global Sustainability (HAPTEN2026) & Popular Lectures in Biotechnology** (Sponsored by DBT, Govt. of India) on 12.03.2026, Organized by Department of Biotechnology, **Arunai Engineering, College, Tiruvannamalai.**



STAFF ACHIEVEMENTS

Guest Lecture

Dr. G. Baskar from the Department of Biotechnology has presented a **Guest Lecture** in STTP on **“Current Trends & ML applications in Green Nanomedicine Development and its Sustainable goal gvs in future”** on **18/03/26**, organized by the Department of Biotechnology, **Sri Venkateswara College of Engineering, Chennai.**

Dr. G. Baskar from the Department of Biotechnology has participated as **Guest** in the inauguration of **Biotech Research Society, India (BRSI) Unit** and launching of **BRSI–SVCE Institutional Membership** on **11 March 2026** at the Department of Biotechnology, **Sri Venkateswara College of Engineering, Sriperumpudur.**

STAFF ACHIEVEMENTS

Invited Talk

Dr. M. Chamundeeswari from the Department of Biotechnology has **Invited Lecture** on **“Advances in the nanoworld and their practical implications in biomedicine”** held at **Saveetha Dental College**, on **10th of March** .



SAVEETHA DENTAL COLLEGE **nirf 1ST RANK**
Amongst All Private & Deemed Universities in India

ADVANCES IN THE NANOWORLD AND THEIR PRACTICAL IMPLICATIONS IN BIOMEDICINE

FACULTY DEVELOPMENT PROGRAM (FDP)

2026
10th
March

Dr. M. Chamundeeswari
B.Pharm., M.Tech., Ph.D
Associate Professor, Department of Biotechnology,
St.Joseph's College of Engineering, OMR, Chennai-600119

venue :
Department of Pharmacology (Gold Lab)

Organized by
Department of Pharmacology Saveetha Dental College, Chennai

11.00 am
to 12.00 Pm

SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES
(Declared as Deemed to be University under Section 3 of UGC Act 1956)

NAAC **A++** GRADE

INSTITUTION'S INNOVATION COUNCIL

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Certificate of Appreciation

Dr. M. Chamundeeswari from the Department of Biotechnology has presented an oral presentation in “Ankara International Congress on Scientific Research” on March 1st to 3rd 2026.



STAFF ACHIEVEMENTS

Top Cited Article in Wiley

Dr. M. Chamundeewari from the Department of Biotechnology has got her work recognized as top cited article in Wiley for the article entitled “ Optimization of hematite nanoparticles from natural ore as novel imaging agents: A green chemistry approach”.

The certificate is a vertical rectangular document with a green and white color scheme. At the top, it features the logos of St. Joseph's College of Engineering and St. Joseph's Group of Institutions, along with the motto "You Choose, We Do It". The main title "WILEY Top Cited Article" is prominently displayed in a green banner. Below this, a circular emblem on the left reads "Top cited article WILEY 2025". To the right, the text congratulates "Dr. Chamundeewari M, Associate Professor" whose work in "Biotechnology and Applied Biochemistry" has been recognized. A portrait of Dr. Chamundeewari is shown next to the title of her article: "Optimization of hematite nanoparticles from natural ore as novel imaging agents: A Green Chemistry approach". At the bottom, another circular emblem repeats "Top cited article WILEY 2025" and the journal name "Biotechnology and Applied Biochemistry". The footer includes the St. Joseph's Group of Institutions logo and the slogan "The Choice of Disciplined Toppers".

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WILEY
Top Cited Article

Congratulations to
Dr. Chamundeewari M
Associate Professor

Whose work has been recognized as a
top cited article" in:
Biotechnology and Applied Biochemistry

**Optimization of hematite
nanoparticles from natural ore as
novel imaging agents:
A Green Chemistry approach**

**Top cited
article
WILEY
2025**

**Biotechnology and
Applied Biochemistry**

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article
WILEY
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Faculty Development Program

Dr. M. Chamundeeswari from the Department of Biotechnology has participated in the one day FDP on “**Next generation teaching with AI**” held at **Ganadipathy Tulasi’s Jain Engineering College**



STAFF ACHIEVEMENTS

Certificate of Recognition

Dr. M. Chamundeeswari from the Department of Biotechnology has presented her research topic entitled **“Green Fabricated Iron Nanoparticle Assisted Biodegradation of disposable facemask”** held at **Bannari Amman College of Engineering, Erode** on **20th March**



CERTIFICATE OF RECOGNITION

This is to certify that Dr./Mr./Mrs. Ms Chamundeeswari M of St. Joseph's College of Engineering has presented the research topic entitled

GREEN FABRICATED IRON NANOPARTICLES ASSISTED BIODEGRADATION OF DISPOSABLE FACE MASKS: A BIOECONOMIC APPROACH

in the **National Conference on “Futuristic Biotechnology for Sustainable Development (NCFBSD-2026)”** held on 20th March 2026 organized by the Department of Biotechnology, Bannari Amman Institute of Technology, Sathyamangalam, Erode - 638401, Tamil Nadu.


Dr Pavithra M K S
ORGANISING SECRETARY


Dr Kannan K P
CONVENOR


Dr Balakrishnaraja R
HOD BIOTECHNOLOGY


Dr Palanisamy C
PRINCIPAL

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March 2026

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 Department of Biotechnology

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 Assistant Professor
 Department of Biotechnology