PUSHPAGIRI RESEARCH CENTRE
UPDATES

FRAIT Team Completes Productive Visit to Pushpagiri

The team from the University of South Wales (UK), leading the Family Resilience Assessment Instrument and Tool (FRAIT) project,successfully completed their two-week visit to Pushpagiri, from June 15 to 28, 2025. During their stay, they oversaw the initial phase of dat collection for the ongoing collaborative study, engaging with Anganwadi workers from Pathanamthitta district.

In addition to their core research activities, the FRAIT team actively contributed to the Bioradiance 2025 International Conference and conducted a hands-on qualitative research workshop. They also visited various institutions under the Pushpagiri Medical Society, interacting with faculty, students, and research scholars.

With initial data collection now complete, the next steps involve data translation and detailed analysis. The visit was both meaningful and productive, laying a strong foundation for the current study and paving the way for future collaborative research initiatives.

Global Evidence, Local Decisions: Pushpagiri Hosts JBI gLOCAL Solution Room 2025

The Pushpagiri Centre for Evidence-Based Practice (PCEBP), a JBI Centre of Excellence, successfully hosted the JBI gLOCAL Solution Room on June 27, 2025, under the theme “Navigating Evidence-Based Practice: Strategies for Local Clinical Decisions.” This global initiative by the Joanna Briggs Institute (JBI), Adelaide, brings together institutions from across continents to explore how international evidence can be adapted to local healthcare contexts. The Pushpagiri session brought together experts and academics to deliberate on evidencebased clinical decision-making in the Indian setting. The event began with a welcome and introduction by Dr. Sunu Alice Cherian, Deputy Director, PCEBP, followed by opening remarks from Dr. Mathew Pulicken, Professor and Head, Critical Care Unit, PIMS & RC, who also moderated the session. Highlights of the session included a presentation on literature search for best evidence by Dr. Rajeev A, Professor and Head, Department of Community and Family Medicine, AIIMS Mangalagiri, and a session on critical appraisal of research by Dr. Biju George, Professor, Department of Community Medicine, Government Medical College Kannur. The program concluded with a panel discussion and participant Q&A on applying global evidence to local clinical practice. Dr. Nisha Kurian, Director of PCEBP, was present and played a pivotal role in overseeing the planning and execution of the program. The event reaffirmed Pushpagiri’s commitment to promoting evidence-based healthcare and fostering global academic collaborations.

PRC SCIENTIST DELIVERS GUEST LECTURE AT VIT, VELLORE

Dr. Nebu George Thomas, Professor and Scientist at Pushpagiri Institute of Medical Sciences and Research Centre, was invited by the School of Advanced Sciences (SAS), Vellore Institute of Technology (VIT) to deliver a guest lecture on “Bioactive Scaffolds: Unveiling Recent Advances in Soft Tissue and Hard Tissue Regeneration.” The lecture was held on July 4, 2025, at TT 311, VIT Campus, Vellore. In his address, Dr. Thomas shared recent breakthroughs in tissue engineering and regenerative biomaterials, focusing on smart injectable scaffolds that promote effective interaction with implant sites. His lecture offered valuable insights into applications in wound healing, bone remodelling, and periodontal regeneration, emphasizing the translational potential of lab-based designs for clinical outcomes.The event saw active participation from faculty and students, fostering academic dialogue on cutting-edge developments in biomedical sciences.

Pushpagiri Officially Onboarded as Spoke Centre in ICMR Rickettsial Surveillance Network.

In a significant development, Pushpagiri Institute of Medical Sciences & Research Centre (PIMSRC) has been formally designated as a Spoke Centre under the ICMR National Rickettsial Surveillance Project, during a four-day hands-on national workshop held at CMC Vellore from July 2–5, 2025. where representatives from Pushpagiri participated as future collaborators. The Pushpagiri team included Dr. George Varghese, Virology In-Charge and Assistant Professor, who will serve as the spoke site supervisor, along with Dr. Teena Jacob,Assistant Professor, and Dr. Aroma,postgraduate in Microbiology. During the workshop, Dr. Jude Antony, Head of the Department of Microbiology at CMC Vellore, ceremoniously handed over the official designation document to the Pushpagiri team, marking the institution's formal inclusion in this prestigious nationwide surveillance network. The project, a ₹12 crore initiative funded by ICMR for a five-year duration, is spearheaded by CMC Vellore.This formal inclusion reinforces Pushpagiri’s growing leadership in infectious disease research and public health surveillance, positioning it for deeper contributions at the national level.

UPGRADED LABORATORY ANIMAL RESEARCH FACILITY INAUGURATED

The renovated Laboratory Animal Research Facility at Pushpagiri Research Centre (PRC) was formally inaugurated and blessed on July 10, 2025. The inauguration was led by Prof. Dr. Sabu Thomas, Chairman of TrEST Research Park and Former Vice-Chancellor of Mahatma Gandhi University, Kottayam. The blessing ceremony was conducted by Rev. Fr. Dr. Biju Varghese,CEO of Pushpagiri Medical Society, at the facility premises. Following the inauguration, a formal meeting was held at the MEU Hall, PIMSRC, attended by faculty and Heads of Departments across various Pushpagiri institutions. Dr. Vikram Gowda, Vice Principal of PIMSRC and Chairman of the Institutional Animal Ethics Committee, delivered the welcome address. Prof. Dr. Sabu Thomas delivered the inaugural address, and Rev. Fr. Dr. Biju Varghese delivered the presidential address, both underscoring the critical role of animal research in advancing scientific discovery. The occasion was graced by Rev. Fr. Dr. Mathew Mazhavancherry, Director of Pushpagiri Research Centre and the Pushpagiri Medicity Campus, and Fr. George Valiyaparambil, Director of PIMS&RC. Dr. Reena Thomas, Principal of PIMS&RC, and Dr. Santosh M Mathews, Principal of Pushpagiri College of Pharmacy, offered felicitations. Also in attendance were Dr. Aby Mathew T, Principal, and Dr. Sunil S, Vice Principal of Pushpagiri College of Dental Sciences..The event also witnessed the participation of officials from Chinmaya Vishwa Vidyapeeth (Deemed to be University), further strengthening inter-institutional academic relationships. The programme concluded with a vote of thanks by Dr. Ampadi A N, Veterinary Officer at PRC. In recognition of their dedication to preparing and maintaining the facility, Dr. Ampadi and the Mrs Sally Joseph, Animal house attender were, felicitated during the meeting. The upgraded facility marks a major milestone in Pushpagiri's preclinical research ecosystem, significantly boosting its capacity for translational and experimental studies. All researchers and faculty members are encouraged to make full use of this enhanced facility for their scientific and academic pursuits.

Inauguration of Upgraded laboratory and animal research facility

- Pharmacological studies
- Behavioural studies
- Surgical studies
- Imaging studies
- Infectious disease research
- Cancer research
- Nutritional studies
- Neurological studies
- Reproductive studies
- Metabolic Studies

Associated Facilities Provided

- Scaffold development
- Histological analysis of tissue scaffold reactions

Tissue processing Facility

Isoflurane Anaesthesia Machine

Why Research with Us?

Our facility is recognized by CCSEA (Committee for Control and Supervision of Experiments on Animals) and boasts an active Institutional Animal Ethics Committee (IAEC), ensuring ethical and high-quality research practices.

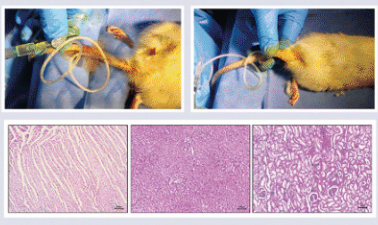
Benefits of using our facility:

- Improved animal care
- Enhanced research quality
- Increased productivity

Diverse Research Capabilities:

Explore a wide range of studies with us, utilizing our comprehensive facilities:

Toxicity Assessment



Histological images of (a) heart, (b) liver, (c) kidney after the acute systemic toxicity test.

Reference: Mohammed R, Chacko SK, Balakrishnan R, Thomas NG, Binsi PK, Muhamed Ashraf P, Krishnan N, Anil S. Catechin as a functional additive in electrospun PCL/gelatin/nHA nanocomposite fibers for tissue engineering applications. Journal of Applied Polymer Science.:e56308. Impact factor: 3

Species Supported

Rat, Mice, Rabbit, Hamster, and Guinea pig

Collaboration & Customized Support

We foster collaborative research initiatives with esteemed institutions, industries, and researchers, providing tailored support for specific research projects. Our services include collecting samples from external agencies, such as institutions and companies, for animal studies, enabling comprehensive research and leveraging diverse resources.

Training and Internship Programs:

- Enhance your research skills with our specialized programs

Si. no	Course Title	Minimum Duration	Major Areas Covered	Target Group
1)	Trainee	Six months	Laboratory Animal research basics	Degree Life Science
2)	Internship	2 weeks	An introduction to Laboratory animal research	Degree Life Science
3)	Thesis (MSc, MS, MD, MDS, PhD)	Six months	As per the work	Masters/PhD life science

Contact Us:

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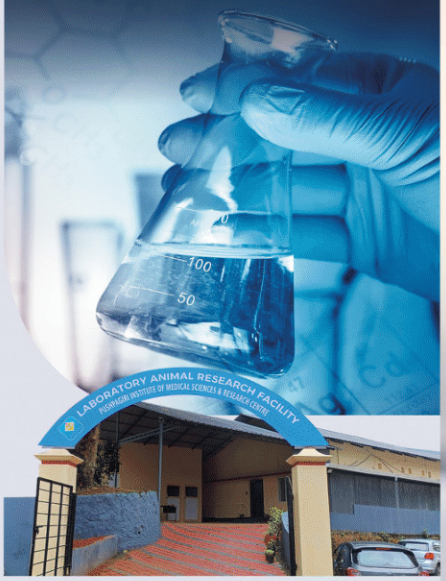
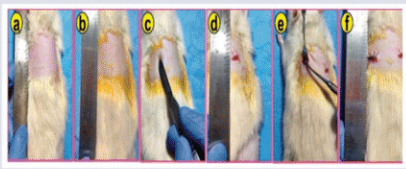
PUSHPAGIRI

LABORATORY ANIMAL RESEARCH FACILITY

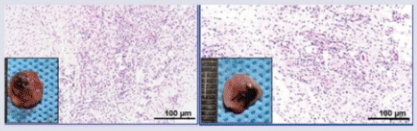
PUSHPAGIRI INSTITUTE OF MEDICAL SCIENCES AND RESEARCH CENTRE



In Vivo Biocompatibility



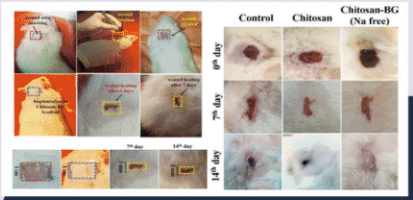
(a)–(f) - Biocompatibility study. (a) Inspection of the surgical site, (b) and (c) dorsal skin after fur removal and disinfection with 10% povidone-iodine solution, (d) wound creation, (e) scaffold implantation, and (f) wound closure with sutures



Histological Analysis

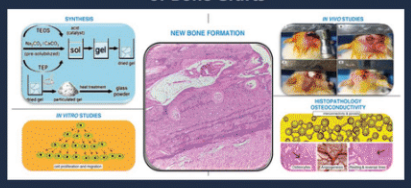
Reference: Sowndarya, A., Daniel Thangadurai, T., Thomas, N. G., Sreedharan, R., Anil, S., Manjubaashini, N., Satheesh Babu, T. G., & Megha Kumar, S. (2025). Effect of surface-engineered AuNPs on gene expression, bacterial interaction, protein denaturation, and toxicology assay: an in vitro and *in vivo* model. Journal of materials chemistry. B, 10.1039/d4tb01731e.

In Vivo Wound Healing



Reference: Manjubaashini N, Bargavi P, Thomas NG, Krishnan N, Balakumar S. Chitosan bioactive glass scaffolds for *in vivo* subcutaneous implantation, toxicity assessment, and diabetic wound healing upon animal model. International Journal of Biological Macromolecules. 2024 Jan 1; 256:128291. Impact Factor:8.20

Preclinical Analysis of *In Vivo* Bone Regeneration Potential of Bone Grafts

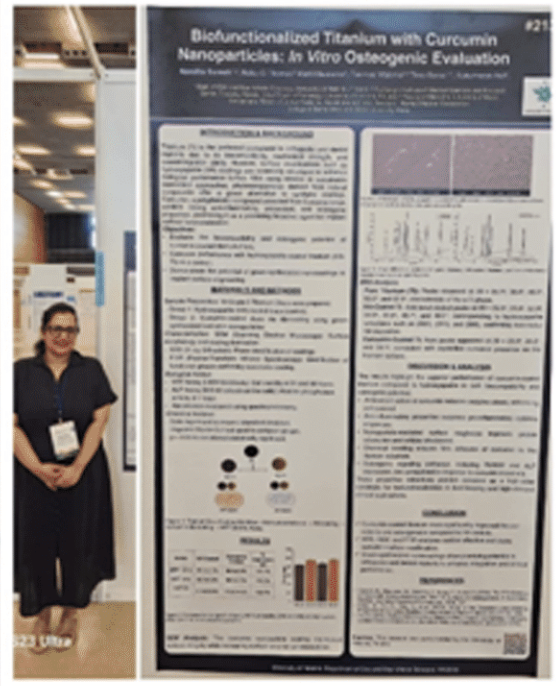


Reference: Thomas NG, Manoharan A, Anbarasu A. Preclinical evaluation of sol-gel synthesized modulated 45S5-bioglass based biodegradable bone graft intended for alveolar bone regeneration. Journal of Hard Tissue Biology. 2021;30(3):303-8.

SESSION 2 OF EVIDENCE IMPLEMENTATION TRAINING CONDUCTED FOR CRITICAL CARE PROJECT TEAMS

Session 2 Implementation of the Training Evidence Program (EITP), led by the Joanna Briggs Institute (JBI), Adelaide University, was successfully conducted from June 14–16, 2025. The training was part of the ongoing JBI Grant-in-Aid implementation project and involved critical care teams from Pushpagiri Medical College Hospital, Believers Church Medical College Hospital, and SH Medical Hospital, Kottayam.

JBI
Pushpagiri Centre for Evidence Based Practice (PCEBP)
A JBI Centre of Excellence



Pushpagiri Research Highlighted at International Conference

A collaborative research project from Pushpagiri Research Centre (PRC) was showcased at the International Association for Dental, Oral and Craniofacial Research Conference held in Barcelona, Spain, with a poster titled "Biofunctionalized Titanium with Curcumin Nanoparticles: In Vitro Osteogenic Evaluation." The scientific poster was presented by Dr Nadita Suresh & was co-authored by Dr. Nebu George Thomas, Scientist at PRC, and Dr. Sukumaran Anil, Adjunct Faculty at PRC, in collaboration with researchers from the University of Helsinki (Finland), University of Basel (Switzerland), and Qatar University. The study explored the osteogenic potential of curcumin modified titanium implants and demonstrated significant enhancement in cell viability and bone regeneration markers. This work highlights PRC's growing global footprint in the field of biomaterials and regenerative dentistry.

Dr. Ampadi Completes Training in Emergency Veterinary Practices

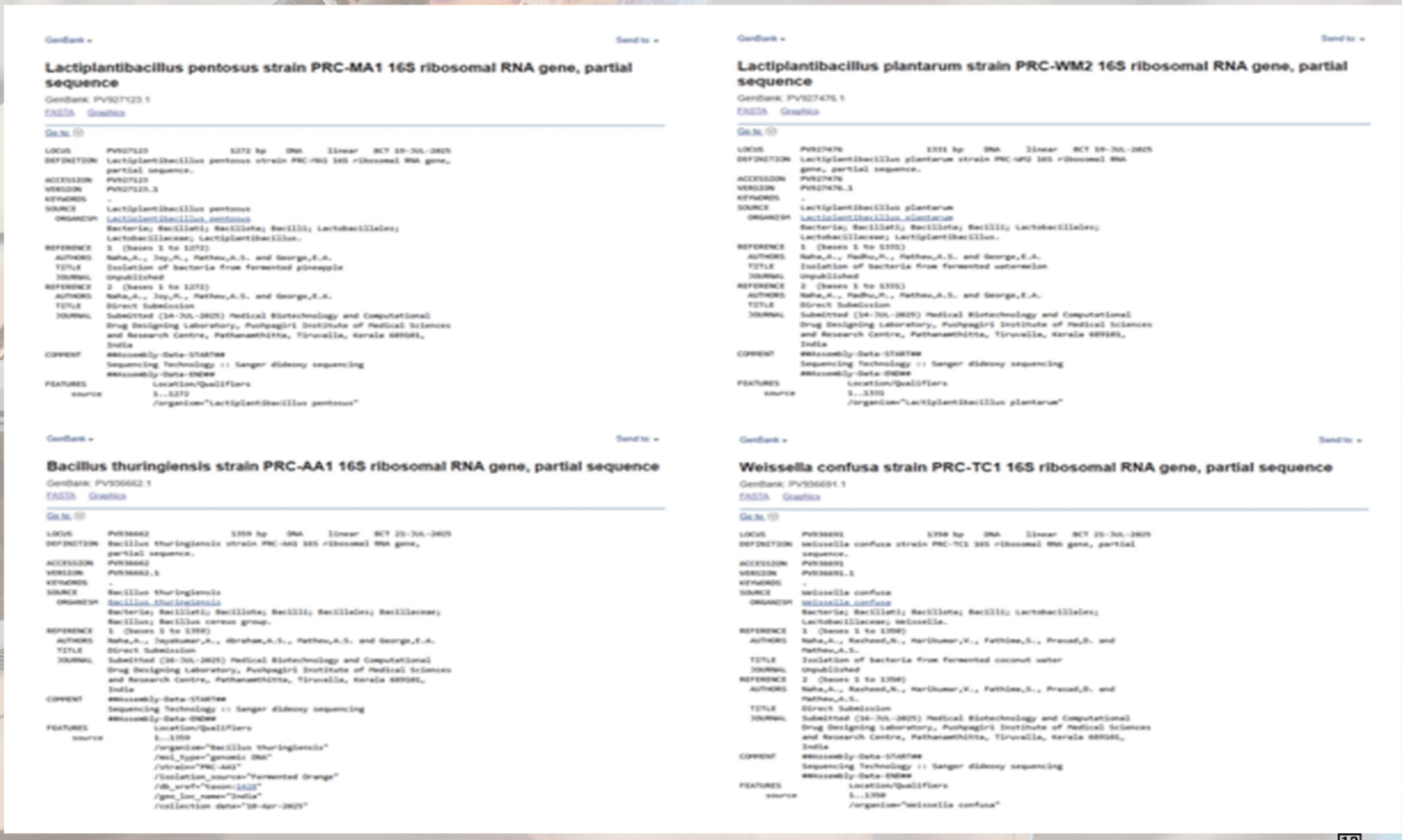
Dr. Ampadi A N,Veterinary Officer at Pushpagiri Research Centre, has successfully completed specialized training in Emergency Veterinary Practices conducted by the Kerala State Veterinary Council. The training, designed as part of Continuing Veterinary Education (CVE), enhances Dr. Ampadi's preparedness in handling critical care andemergency situations in small and large animals—further strengthening the veterinary research and animal care capabilities at Pushpagiri

PROBIOTIC STRAINS IDENTIFIED BY PRC's MEDICAL BIOTECHNOLOGY LAB

The Medical Biotechnology and Computational Drug Designing Lab at Pushpagiri Research Centre (PRC), led by Dr. Aniket Naha, has made notable advancements in the search for natural probiotics. As part of undergraduate and postgraduate dissertation projects, several bacterial strains isolated from fermented fruits were found to possess strong probiotic potential.

The research led to the identification and genomic sequencing of the following strains:

Project	Authors	NCBI Accession No & Link
Biochemical Characterization, Genomic Screening and Technological Speculations Revealed ***Lactiplantbacillus pentosous*** **PRC-MA1** as Potential Probiotic Strain from Fermented Pineapple	Ms. Minu Joy, Dr. Aniket Naha	**NCBI Accession No-** PV927123 https://www.ncbi.nlm.nih.gov/nuccore/PV927123
Evaluating the Safety Assessments, Technological Speculations and Probiotic Potency of **Bacillus thuringiensis strain PRC-AA1** Isolated from Fermented Orange	Mr. Athul Jayakumar, Dr. Aniket Naha	**NCBI Accession No-** PV936662 https://www.ncbi.nlm.nih.gov/nuccore/PV936662
Deciphering the Probiotic Potency of ***Lactiplantibacillus plantarum strain*** **WM2** Isolated from Fermented Watermelon Through Genomics and *In-Vitro* Experimentation	Ms. Megha Madhu, Dr. Aniket Naha	**NCBI Accession No-** PV927476 https://www.ncbi.nlm.nih.gov/nuccore/PV927476
In Vitro Evaluation, Safety Assessments and Technological Speculations of ***Weisella confusa*** **strain PRC-TC1** Isolated from Fermented Tender Coconut Water	Ms. Nafiya Rasheed, Ms. Deepthi Prasad, Ms. Shifana Fathima, Ms. Vaishnavi Harikumar, Dr. Aniket Naha	**NCBI Accession No-** PV936691 https://www.ncbi.nlm.nih.gov/nuccore/PV936691



Lactiplantibacillus pentosus strain PRC-MA1 16S ribosomal RNA gene, partial sequence

Lactiplantibacillus plantarum strain PRC-WM2 16S ribosomal RNA gene, partial sequence

Bacillus thuringiensis strain PRC-AA1 16S ribosomal RNA gene, partial sequence

Weissella confusa strain PRC-TC1 16S ribosomal RNA gene, partial sequence

PUBLICATIONS

1. Arun R Nair H. Venkatesan Soumya R.S M. Sridevi. Acute Promyelocytic Leukemia Unraveled: Biotechnological Approaches in Targeted Therapies and Molecular Mechanisms- A Review.Research Journal of Biotechnology, 2025, 20 (7), 204-211.

Sankar, Surya; George, Snehamol Varkey; Arun, Shruthishree; Abraham, Stephen; Varghese, Rosin George; Johns, Felix; Mani, Sapna Meryl; Durgachith, S. Sree1; Vijayan, Vandana. Knowledge, Attitude, and Practice toward Basic Life Support among Medical Students in South Kerala. Current Medical Issues 23(3):p 152-156, Jul–Sep 2025. | DOI: 10.4103/cmi.cmi_9_25

Nath, S., Naha, A., Saikia, K., Choudhury, C. P., & Venkatramanan, V. (2025). Degradation of organic pollutants using lignin-derived carbon materials as a sustainable approach to environmental remediation. Biotechnology for Sustainable Materials, 2(1), 11. https://doi.org/10.1186/s44316-025-00036-z

Nath et al. Biotechnology for Sustainable Materials (2025) 2:11
https://doi.org/10.1186/s44316-025-00036-z

Biotechnology for Sustainable Materials

REVIEW Open Access

Degradation of organic pollutants using lignin-derived carbon materials as a sustainable approach to environmental remediation

Soumitra Nath[1*], Aniket Naha[2], Kankana Saikia[3], Chandan Paul Choudhury[4] and Veluswamy Venkatramanan[5]

Abstract

Rapid industrialization and urbanization have caused widespread discharge of organic pollutants, including dyes, pesticides, and pharma compounds into the environment, leading to environmental crisis and human health risks. This paper explores the potential of lignin-derived carbon materials (LDCMs) as sustainable solutions to degrade organic pollutants, due to their abundance, renewability, and versatile physicochemical properties. Lignin, an abundant terrestrial and renewable biomass, due to its unique physicochemical and structural properties, such as high surface area, tunable porosity, and functional groups, make it a suitable candidate for advanced adsorbents and environmental remediation. LDCMs synthesis methods, including pyrolysis, hydrothermal carbonization (HTC), chemical and physical activation techniques are discussed, stressing their ability to optimize the electrochemical and structural properties of LDCMs. The mechanisms of pollutant degradation, such as biological (microbial and plant-based), chemical (oxidation, reduction, hydrolysis, photochemical), physical (adsorption, photocatalysis), and advanced hybrid systems, are reviewed. The paper emphasizes the performance of LDCMs in removing persistent pollutants like dyes, phenolic compounds, pharmaceuticals, and heavy metals, showcasing their versatility and reusability. Despite challenges in synthesis scalability, pollutant selectivity, and material stability, advancements in functionalization, hybridization, and industrial integration are making LDCMs increasingly viable for large-scale applications. Future perspectives focus on developing multifunctional LDCMs, integrating them into hybrid treatment systems, and scaling up their production for wastewater treatment industries. The study also emphasises the significance of supportive policies and industry-driven approaches to accelerate the adoption of lignin-based solutions. LDCMs represent a promising pathway toward sustainable environmental remediation, contributing to a circular economy and a greener future.

Keywords Circular economy, Biological degradation, Hybrid degradation, Photocatalysis, Sustainable wastewater treatment