

THERMAL AND BIOANALYSIS LABORATORY

Faculty Details:



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About the Laboratory:

The following are the works currently being carried out in our laboratory

- Comparison of the growth rate of free cells and immobilized cells, mainly in terms of hydrodynamics, transport phenomena and design of reactor.
 - Enhance the extraction efficiency of bioactive compounds (mainly carotenoids) from microalgae by using Nano materials.
 - Thermal, Shockwave and Structural analysis over a military aircraft vehicle by both experimental and computational means.
 - CFD Analysis on heat transfer enhancement techniques.
 - Cellulose extraction from biomass for biocomposite films
 - Solar water splitting for Hydrogen generation
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Accomplishment:

Research works published from Thermal and Bio Analysis laboratory includes the following:

International Publications

- R. Udayabhaskar, R. V. Mangalaraja, V. T. Perarasu, Saeed Farhang Sahlevani, B. Karthikeyan, "Effect of Graphene on the Structural and Optical Properties of Ceria:Graphene Nanocomposites", International Journal of Materials and Metallurgical Engineering, published by World Academy of Science and Technology. Vol. 14, Issue 3, (2018).
- Vishnuprasad. S, Haribabu. K, V. T. Perarasu, " Experimental study on the convective heat transfer performance and pressure drop of functionalized graphene nanofluids in electronics cooling system", Heat and Mass Transfer, published by Springer. Vol. 55, pp. 2221-2234 (2019).

- R. Udayabhaskar, R.V. Mangalaraja, Saeed Farhang Sahlevani, V. T. Perarasu, B.Karthikeyan, David Contreras, M.A. Gracia-Pinilla, "Graphene induced band gap widening and luminescence quenching in ceria:graphene nanocomposites", *Journal of Alloys and Compounds*, published by Elsevier. Vol. 770, pp. 1221-1228 (2019).
- Mubashera S M, Saravanathamizhan R, Perarasu V T, "Size Reduction of Groundnut Shell by Ball Mill and Estimation of Breakage Parameters Using Population Balance Model", *Trends in Applied Sciences Research*, published by Academic Journals Inc. Vol. 15, Issue 1, pp. 14-20 (2020).
- V. P. Kalpana, V. T. Perarasu, "Analysis on cellulose extraction from hybrid biomass for improved crystallinity", *Journal of Molecular Structure*, published by Elsevier. Vol. 1217, Issue 128350, pp. 1 - 8 (2020).
- Nagarajan Arumugam, Perarasu Thangavelu, "Purification and anticancer activity of glutaminase and urease free intracellular L-asparaginase from *Chaetomium* sp.", *Protein Expression and Purification*, published by Elsevier. Vol. 190, pp. 106006 (2021).
- Shreejeeth Ramachandriya, Perarasu Thangavelu, Lakshmanan Kasi, " Numerical Analysis of Convective Heat Transfer Characteristics in Microalgae Slurries in Tube Flow", *ChemicalEngineering & Technology*, published by Wiley. Vol. 44, pp. 1 - 8 (2021).
- Poornimaa Murali, Kanika Verma, Thanyada Rungrotmongkol, Perarasu Thangavelu, Ramanathan Karuppasamy, " Targeting the Autophagy Specific Lipid Kinase VPS34 for CancerTreatment: An Integrative Repurposing Strategy", *The Protein Journal*, published by Springer. Vol. 40, pp. 41 - 53 (2021).
- V. Gokila, V.T. Perarasu and R. Delma Jones Rufina, "Qualitative comparison of chemical and green synthesized Fe₃O₄ nanoparticles", *Advances in Nano Research*, published by Techno-Press. Vol. 10, Issue 1, pp. 71 - 76 (2021).
- Haripriyan Uthayakumar, Perarasu Thangavelu, Ramanujam Saravanathamizhan, "Forecasting of outdoor air quality index using adaptive neuro fuzzy inference system", *Journal of AirPollution and Health*, Vol. 6, Issue 3, pp. 161 - 170 (2021).
- Nagarajan Arumugam, Manoj Kumar Shanmugam, Perarasu Thangavelu, "Purification and anticancer activity of glutaminase and urease-free l-asparaginase from novel endophyte *Chaetomium* sp", *Biotechnology and Applied Biochemistry*, published by Wiley. pp. 1 - 15 (2022).
- Perarasu Thangavelu, "Parametric optimization of a coiled agitated vessel with TiO₂/water nanofluid", *International Journal of Chemical Reactor Engineering*, published by DeGruter. Vol. 20, Issue. 2 pp. 171 – 182 (2022).
- Delma Jones Rufina R, Perarasu Thangavelu, "Tuning the optical property of titania nanotubes array using CdS microemulsion sensitization for enhanced photocatalytic activity", *Solid State Communications*, published by Elsevier, Vol. 354, Article 114887, pp. 1-7. (2022).
- Delma Jones Rufina R, Perarasu Thangavelu, "Cds deposited Titania Nanotubes Array Hetero structures and its Investigation for Photocatalytic Application Under Visible Light", Accepted in *Bulletins of Materials Science*, published by Springer. (2022)

Book Chapters

- "Advances in Chemical Engineering "Ultrasonic Assisted Heat Transfer and its Application in Chemical Engineering"" authored by Saravanathamizhan R and Perarasu V T and published by www.openaccessebooks.com. (2019).
- "Wastewater Treatment - Chapter 6 - Improvement of Biodegradability Index of IndustrialWastewater Using Different Pretreatment Techniques" authored by R.Saravanathamizhan and V. T. Perarasu and published by Elsevier.(2021)
- "Photocatalytic Degradation of Dyes, Chapter 28 - Advanced oxidation process for effluent treatment in textile, pharmaceutical, and tannery industries" authored by R. Saravanathamizhan, V. T. Perarasu, Balaji Dhandapani and published by Elsevier.(2021)
- "Nanostructured Materials for Supercapacitors, Chapter 1" authored by Arun Thirumurugan, Kiruthiga Ramakrishnan, Ananthakumar Ramadoss, Prabhakaran Thandapani, Perarasu Thangavelu, R. Udayabhaskar, Mauricio J. Morel, Shanmuga Sundar Dhanabalan, N. Dineshbabu, K. Ravichandran, Radhamanohar Aepuru, R. V. Mangalaraja, and Ali Akbari-Fakhrabadi and published by Springer. (2022)

List of Major Equipments:

S.No.	Name of the Equipment
1.	High Pressure Liquid Chromatography
2.	Gas Chromatography
3.	Probe sonicator
4.	Horizontal Laminar flow chamber

List of Research Scholars:

S. No.	Name	Thesis Title	Year of passing/Status
1.	Dr. Nagarajan A	Screening and Characterization of Glutaminase and Urase Free L-Asparaginase from Fungal Endophytes	2022
2.	Mrs. Delma Jones Rufina R	Ag/CdS Sensitized Titania Nano Architectures as Effective Visible-Light Receptive Photocatalysts for Photoelectrochemical Hydrogen Generation	Synopsis Submitted
3.	Mr. Lakshmanan K	Shock wave and thermal distribution of nanomaterial coating of aircraft at supersonic speed	Ongoing
4.	Mr. Bharathidasan K	Kinetic Modeling and Simulation on Mixotrophic Cultivation Of Micro Algae on	Ongoing

		Bench scale Airlift Photo Bioreactor	
5.	Ms. Rajalakshmi P	Studies on photocatalytic applications of green synthesized hybrid nanofluids.	Ongoing
6.	Mr. Mathew Devaraj N	Computational studies on heat exchanger for generation IV nuclear reactor.	Ongoing
