

## Dr. Tamilmani Jayabalan



**Assistant Professor**

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**UG:** Coimbatore Institute of Technology, Anna University, India






**PG:** National Institute of Technology Tiruchirappalli (NIT Trichy), India

**PhD:** National Institute of Technology Tiruchirappalli (NIT Trichy), India

### Educational Qualifications (as per chronological order)

- 2006-2010- B.Tech., Chemical Engineering from Coimbatore Institute of Technology, Anna University, Tamil Nadu, India.
- 2012-2014 M.Tech., Energy Engineering from National Institute of Technology, Tiruchirappalli, India
- 2016-2021- Doctor of Philosophy from National Institute of Technology, Tiruchirappalli, India

### Area of Interest:

-  Biohydrogen Production
-  Bioelectrochemical systems-MEC&MFC
-  Microalgae for CO<sub>2</sub> Capture
-  Photobioreactors
-  Renewable Energy

### Professional Experience:

- ❖ 5 years of Teaching Experience (Lecturer at MKCE, Karur, Assistant Professor SCE Tiruchengode, Assistant Professor MAMCE Trichy, Assistant Professor (Adhoc) NIT AP)
- ❖ 5 years of Research Experience (Institute research fellowship -NIT Trichy)
- ❖ 3 years of Industrial Experience (Sakthi sugars Pvt Limited, Erode and Armstrong international Private Limited, Chennai)

### Awards and Recognitions

Recipient of **Budding Researcher Award 2020** from NIT Tiruchirappalli for outstanding research performance

### Outreach activities

- Short term course in Fluid Mechanics, Heat Transfer and Mass transfer for the students of Sethu Institute of Technology (Autonomous), Virudhunagar, Tamil Nadu
- Visiting Faculty for CIPET-CSTS Madurai in association with Kodankulam Nuclear Power Plant, engaged in one month coaching for KKNPP Competitive Exam
- Research consultant in the area of Microbial Fuel Cell, Bioelectrochemical systems and other aspects of Chemical and Energy Engineering

### Courses taught at SBCE

Fundamentals of Heat and Mass Transfer  
Food Plant Layout and Design

Industrial Waste Management

### Research Publications

#### RESEARCH ARTICLE (SCI/SCIE indexed)

**Tamilmani Jayabalan**, Matheswaran M, Radhakrishnan T K, Samsudeen N, “*Influence of Nickel Molybdate Nanocatalyst for Enhancing Biohydrogen Production in Microbial Electrolysis Cell Utilizing Sugar Industrial Effluent*”, Bioresource Technology, 2020 <https://doi.org/10.1016/j.biortech.2020.124284>

Boobalan T, **Tamilmani Jayabalan**, Murugan S, W Kim, Sudhakar M, Nallathambi S, Samsudeen N, Kumar P, Arun A, “*Bioelectricity generation by natural microflora of septic tank wastewater (STWW) and biodegradation of persistent petrogenic pollutants by basidiomycetes fungi: An integrated microbial fuel cell system*”, Journal of Hazardous Materials, 2021 <https://doi.org/10.1016/j.jhazmat.2021.125228>

Prabu Govindarajan, Muthukannan Duraiselvam, Manickam Matheswaran, Amrishi Prabakaran, **Tamilmani Jayabalan**, Varatharajulu Muthukrishnan, “*Laser surface texturing for enhancing microbial fuel cell-based electricity generation from wastewater*”, Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy, 2022, <https://doi.org/10.1177/09576509211068280>

Samsudeen N, Nikhil T, **Tamilmani Jayabalan**, Boobalan T, Matheswaran M, Kalaichelvi P, Arun A, Arivalagan P “*Bioelectricity generation using iron (II) molybdate nanocatalyst coated anode during treatment of sugar wastewater in microbial fuel cell*”, Fuel, 2020 <https://doi.org/10.1016/j.fuel.2020.118119>

Boobalan T, James E, Abhispa B, Arumugam N, Arivalagan P, **Tamilmani Jayabalan**, Samsudeen N, Mukesh Doble, Arun A, “*Bioelectricity generation and analysis of anode biofilm metabolites from septic tank wastewater in microbial fuel cells*”, International Journal of Energy Research. 2020 <https://doi.org/10.1002/er.5734>

Satheesh M R, Boobalan T, Dinesh G H, Abhispa B, **Tamilmani Jayabalan**, Samsudeen N, Mukesh D, Pugazhendhi A, Arun A “*Fermentative hydrogen production and bioelectricity generation from food based industrial waste: An integrative approach*”, Bioresource Technology, 2020 <http://dx.doi.org/10.1016/j.biortech.2020.123447>

**Tamilmani Jayabalan**, Samsudeen N, Matheswaran M, Radhakrishnan T K, Pugazhendhi A, Arun A, “*Enhanced biohydrogen production from sugar industry effluent using nickel oxide and cobalt oxide as cathode nanocatalysts in microbial electrolysis cell*”, International Journal of Energy Research, 2020 <https://doi.org/10.1002/er.5645>

**Tamilmani Jayabalan**, Matheswaran M, Samsudeen N “*NiCo<sub>2</sub>O<sub>4</sub>-graphene nanocomposites in sugar industry wastewater fed microbial electrolysis cell for enhanced biohydrogen production*”, Renewable Energy, 2020 <https://doi.org/10.1016/j.renene.2020.03.071>

**Tamilmani Jayabalan**, Matheswaran M, Preethi V, Samsudeen N “*Enhancing biohydrogen production from sugar industry wastewater using metal oxide/graphene nanocomposite catalysts in microbial electrolysis cell*”, International Journal of Hydrogen Energy, 2020 <https://doi.org/10.1016/j.ijhydene.2019.09.068>

Samsudeen N, Ajit P H, Muthukumar K, **Tamilmani Jayabalan** “*Bioelectricity production from kitchen wastewater using microbial fuel cell with photosynthetic algal cathode*” Bioresource Technology, 2020 <https://doi.org/10.1016/j.biortech.2019.122226>

Samsudeen N, **Tamilmani Jayabalan**, Muthukumar K “*Simultaneous bioenergy generation and carbon dioxide sequestration from food wastewater using algae microbial fuel cell*”, Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, 2019 <https://doi.org/10.1080/15567036.2019.1666932>

Aiswarya D S, **Tamilmani Jayabalan**, Harshiny M, Nivedhini C, Samsudeen N, Matheswaran M, “*Enhancing power generation and treatment of dairy waste water in microbial fuel cell using Cu-doped iron oxide nanoparticles decorated anode*”, Energy, 2019 <https://doi.org/10.1016/j.energy.2019.01.102>

**Tamilmani Jayabalan**, Matheswaran M, Samsudeen N, “*Biohydrogen production from sugar industry effluents using nickel based electrode materials in microbial electrolysis cell*”, International Journal of Hydrogen Energy, 2019 <https://doi.org/10.1016/j.ijhydene.2018.09.219>

Nithiya E M, **Tamilmani Jayabalan**, Vasumathi K K, Premalatha M “*Improved CO<sub>2</sub> fixation with Oscillatoria sp . in response to various supply frequencies of CO<sub>2</sub> supply*”, Journal of CO<sub>2</sub> Utilization, 2017 <https://doi.org/10.1016/j.jcou.2017.01.025>

Anjana P A, C Jaya Prakash, O Bangarraju, **Tamilmani Jayabalan**, “*Catalytic pyrolysis of algae: kinetics and thermodynamic analysis*”, Chemical Engineering Communications, 2024

AP Anantharaman, O Bangarraju, CJ Prakash, **Tamilmani Jayabalan**, “*Thermochemical behavior and kinetics study of algae pyrolysis using iron oxide catalyst*”, International Journal of Chemical Kinetics, 2023

B Thulasinathan, **T Jayabalan**, N Arumugam, MR Kulanthaisamy, W Kim, P Kumar, M. Govarthanam, Arun A “*Wastewater substrates in microbial fuel cell systems for carbon-neutral bioelectricity generation: An overview*”, Fuel 317, 123369

## BOOK CHAPTER

Samsudeen N, Matheswaran M, **Tamilmani Jayabalan**, “*Microbial electrolysis cells for converting wastes to biohydrogen*”, Biovalorisation of Wastes to Renewable Chemicals and Biofuels, Elsevier, 2020 <https://doi.org/10.1016/B978-0-12-817951-2.00015-8>

Pappu, S.M.J., Gummadi, S.N., **Jayabalan, T.**, “*Modeling and optimization of microbial production of xylitol*”, Role of Microbes in Industrial Products and Processes John Wiley & Sons, Inc , 2022 <https://doi.org/10.1002/9781119901198.ch9>

Samsudeen N, Boobalan T, Arun A, Sharon M P J, Bindhya KP, **Tamilmani Jayabalan**,” *Role of Microorganisms in Bioelectrochemical Systems for Hydrogen and Bioelectricity Production*”, Role of Microbes in Industrial Products and Processes John Wiley & Sons, Inc , 2022, <https://doi.org/10.1002/9781119901198.ch11>

## Membership of Professional Bodies

- Life member in ISTE (Indian Society of Technical Education)

Website link:

<https://scholar.google.com/citations?user=WXIJaTsAAAAJ&hl=en>