Dr. P. Jegathambal

Professor, Water Institute, Karunya Institute of Technology and Sciences
esther.jegatha2011@gmail.com - +91-9940384846 - Coimbatore – 641114

Summary

Dr. Jegathambal Palanichamy is a professional specialized in Environmental and Water Resources Engineering, with research expertise in water treatment technologies and hydrological modeling. With a career spanning over two decades, she has contributed to academia and research, leading several funded projects and participating in international workshops. Her work focuses on innovative solutions for water and wastewater management, soft computing techniques (AI/ML and Data analytics), Hydrological modeling, GIS and RS applications, and sustainable management of ground and. water resources.

Education

- Post Doctoral Programme in Environmental and Water Resources Engineering from RWTH, Aachen, Germany - Jan 2007 - Jan 2009
- Doctor of Philosophy in Environmental and Water Resources Engineering under DAAD Fellowship (Sandwich Programme) - Indian Institute of Technology Madras, Chennai and RWTH, Aachen, Germany - May 2003 - Mar 2005
- Master of Engineering in Environmental Engineering from Govt. College of Technology, Bharathiar University, Coimbatore
  - Ranked First in the Master of Engineering program specializing in Environmental Engineering.
- Bachelor of Engineering in Civil Engineering from Thiagarajar College of Engineering, Madurai Kamarajar University, Madurai
  - Graduated with a Bachelor of Engineering in Civil Engineering, achieving First rank

Work Experience

- Professor at Water Institute, Karunya University, Coimbatore – Current
- DAAD Post Doctoral Fellow at RWTH Aachen - Aug 2007 - Jul 2009
- Assistant Professor at National Institute of Technology - Dec 2006 - Jul 2007
- Assistant Professor at MNM Jain Engineering College, Chennai - Jan 2006 - Nov 2006
- Project Officer at Environmental and Water Resources Engineering Division, IITM, Chennai - Nov 2005 - Dec 2005
- Ph D at IITM, Chennai and IWW, RWTH Aachen– under DAAD Sandwich Programme –2003-2005
- Assistant Professor and Vice Principal, Periyar Maniammai Institute of Science and Technology - 2000

Academic Projects

- Generation of biogas from poultry waste through anaerobic digestion, demonstrating innovative waste management techniques.
- Aggregates from Solid waste utilizing the pyrolysis process, contributing to sustainable waste management.
- Treatment of Textile water using powdered activated carbon in the Activated Sludge process
- Multi Component Reaction Transport Modeling in Porous Media leveraging stochastic algorithms and cellular automata methodologies.

Guidance to Foreign Interns (IAESTE)

Supervised a diverse group of 22 international interns from countries including Austria, Germany, and Japan, providing guidance on innovative projects related to electrocoagulation, desalination technologies, groundwater modeling, and bioremediation techniques.

External Funded Projects

- DST-FIST **Establishment of Environmental Isotope Hydrology & Geochemistry Facility for Sustainable Water Management in Semi-Arid Region of Peninsular India –** Rs. 138,00,000 from 2024-2027

- **Recovery of water from electroplating effluent using hybrid electrocoagulation- adsorption technology - Jan 2020**

  Principal Investigator overseeing a cutting-edge project focused on an integrated two-stage electrochemical system for effectively recovering water from electroplating effluent, secured funding of Rs 43,24,760 from 2020 to 2025.

- **Nano Bio Remediation of Textile Industrial Effluent - Jan 2016 - Dec 2021**

  Principal Investigator for the project on nano bio-remediation of textile industrial effluents in Tirupur District, Tamil Nadu, with a budget of Rs 42,17,000 funded by the Ministry of Environment & Forests from 2016 to 2021.

- **TiO2 Coated Aluminum Electrode Project - Jan 2016 - Dec 2021**

  Led as Principal Investigator on a novel project regarding a TiO2 coated aluminum electrode for treating textile dyeing wastewater via a real-time controlled multichannel electrocoagulation method, financed by the Water Technology Initiative, Department of Science and Technology, with a budget of Rs 37,08,600 from 2016 to 2021.

- **Nanoparticle Transport Studies - Jan 2012 - Dec 2014**

  As Principal Investigator, led experimental and modeling studies to analyze the behavior and transport of nanoparticles in aquatic environments, sponsored by the SERC of the Department of Science and Technology, GoI, India for Rs 9,94,000 from 2012 to 2014.

- **Recharge Characteristics of Tanks - Jan 2011 - Dec 2013**

  Principal Investigator of a study on the recharge characteristics of tanks in semi-arid zones utilizing isotope techniques and traditional hydrological models, funded by the Department of Science and Technology, GoI, India for Rs 17,71,000 from 2011 to 2013.

- **Decision Support System for Management of Wetlands - Jan 2010 - Dec 2014**

  Principal Co-Investigator for developing a Decision Support System (DSS) aimed at managing wetlands, particularly focusing on the Point Calimere wetland, with funding from the Ministry of Environment and Forests, GoI, India for Rs 24,50,000 from 2010 to 2014.

Patents (Granted)

- A Novel Foam Block for Treating Textile Dyeing Effluent - TEMP/E-1/17977/2021-CHE
- Household Cost Effective Biocompatible Non-UV Nanocomposite Membrane based Water Purification System - TEMP/E-1/19075/2021-CHE
- A method for decolorization of Dyeing wastewater by electro coagulation using titanium dioxide coated aluminum electrode - C.B.R No 9704.

Key Consultancy Projects

- Hydro-ecological assessment for the GIZ on the Integrated Management of the Point Calimere Ramsar Site, enhancing sustainable practices in ecological conservation (₹42.7 L, 2020–2021) – As a team member
- Conservation and management of *Loktak Lake*; outcome assessment, and monitoring studies for government agencies (₹18 L + ₹25 L, 2010–2012) – As a team member

Professional Development Programs Attended (Funded)

- 2024 – International Germany Alumni Training Seminar: "Photovoltaic: Opportunities for Climate and Nature Protection in Agriculture and Rural Areas", University of Siegen, Germany (24 – 30 Jun 2024).
- 2019 – Leadership Seminar: Haggai Institute, Maui, Hawaii, USA – Funded by Haggai Institute (4 – 28 Jun 2019).
- 2019 – Winter School on Anaerobic Digestion Technologies: Technical University Braunschweig, Germany – Funded by DAAD & BMZ (EXCEED) (19 Feb – 1 Mar 2019).
- 2017 – Regional Expert Seminar on Advanced Technology in Wastewater and Waste Management for Extractive Industries: Bogor Agricultural University, Indonesia – Funded by EXCEED–SWINDON / DAAD / BMZ (22 – 25 Oct 2017).
- 2017 – Indo-German Symposium: "Smart Cities – Challenges and Opportunities", IGSTC, Berlin, Germany (Apr 27 – 29, 2017).
- 2016 – International DAAD Alumni Seminar: "World's Leading Trade Fair for Water, Sewage, Waste and Raw Materials Management", University of Siegen, Germany – Funded by DAAD (22 May – 4 Jun 2016).
- 2016 – IFAT World Trade Fair for Environmental Technology: Munich, Germany (May 30 – Jun 4, 2016).
- 2016 – DAAD Summer School: "Innovative Solutions in Wastewater Treatment", University of Siegen, Germany (May 22 – 29, 2016).

- 2016 – Workshop: “Capacity Building on Bhuvan Map-Based Skill Set”, Periyar Maniammai University in collaboration with ISRO-Bhuvan (Jul 14 – 15, 2016).
- 2013 – DAAD Alumni Summer School: “Water for Life – Source of Food Security”, University of Hohenheim, Germany (Sep 8 – 16, 2013).
- 2013 – DAAD Alumni Special Project: “Tropentag 2013”, Hohenheim / Stuttgart, Germany – Funded by DAAD (Sep 8 – 20, 2013).

Professional Memberships

Fellow – Institution of Engineers (FIE), IAESTE, IWRA, IAH, IWA, IWWA, ISTE

Coordination of Workshops and Seminars (Selected)

- **International Conference on Integrated Water Resources Management: Prospects and Challenges** 2022 -December 8-10 (as a member)

- **International Conference on Water and Wastewater Management - Mar 2020**
  Challenges and opportunities in water and wastewater management specifically for semi-arid regions held on March 29-30, 2020.

- **Hydrogeochemical Analysis Workshop - Dec 2019 - Dec 2019**
  Hydrogeochemical Analysis & Groundwater Flow and Contaminant Transport Modeling held on December 12-13, 2019.

- **Water Resources Research Consultation - Nov 2018**
  India-Russia consultation meeting focused on water resources research, development, and management for promoting human welfare and environmental protection on November 27, 2018.

- **Advanced Instrumentation Techniques Workshop - Apr 2018**
  Indo-Canada training workshop focusing on 'Advanced Instrumentation Techniques' held on April 24, 2018.

- **Smart Campus Development Initiative - Dec 2017 - Dec 2017**
  UrbanLab – Indo-German initiative - smart campus development held from December 6-8, 2017.

- **Textile Wastewater Management Conference - Sep 2017 - Sep 2017**
  Scoping workshop and national conference discussing 'Issues and Challenges in Textile Wastewater Management' held from September 19-20, 2017.

- **Geospatial Technologies Training Workshop - Feb 2017 - Feb 2017**
  Application of Geospatial Technologies in Natural Resources Management held from February 1-3, 2017.

- **Practical Introduction to MATLAB - Sep 2016 - Oct 2016**
  MATLAB for scientific computing and engineering held from September 30 to October 1, 2016.

- **World Water Day Celebrations - Mar 2015**
  Southern Regional Level Student Meet on March 20, 2015.

- **Water Quality Analysis Workshop - Mar 2014 - Mar 2014**
  Water Quality Analysis: Laboratory Practices and Data Interpretation, held from March 24-26, 2014.

Journal Publications (Selected)

1. Vinodha, S., Palanichamy (Jegathambal), J., Vidhya, R., & Sivakami, A. (2025). Comparison of high-performance TiO_2-coated Al electrode (TiO_2/Al) and conventional electrodes in removal of dyes using electrocoagulation reactor. International Journal of Environment and Waste Management, 37(4), 415–432. https://doi.org/10.1504/IJEWM.2025.147933

2. Megha, M., Elangovan, Y., S. K, P. K., Palanichamy (Jegathambal), J., & Nidheesh, P. V. (2024). Desalination performance of multi-walled carbon nanotubes added polymeric nanocomposite membrane. Water, Air, & Soil Pollution, 235(12), 801. https://doi.org/10.1007/s11270-024-07621-4

3. David, J. J., Asath Murphy, M. S., Sebastian, S. L., Krishnan, S. K., Kavitha, S., Kalivel, P., & Palanichamy (Jegathambal), J. (2024). Evaluation of toxicity in real-time textile effluents post-treatment using Sorghum bicolor and Danio rerio—Potential for reuse. Desalination and Water Treatment, 320, 100752. https://doi.org/10.1016/j.dwt.2024.100752

4. Palanichamy (Jegathambal), J., Brunoc, S., Shobina, S., Mayilswamy, C., & Kalivel, P. (2024). Reuse and recovery of water from industrial textile dyeing effluent using high-performance electrodes continuous flow electrocoagulation reactor. Nature Environment and Pollution Technology, 23(3), 1461–1470. https://doi.org/10.46488/NEPT.2024.v23i03.016

5. David, J. J., Asath Murphy, M. S., Kavitha, S., Krishnan, S. K., Mariappan, S., Sebastian, S. L., Palanichamy (Jegathambal), J., Kalivel, P., & Sathishkumar, P. (2024). Investigating the efficiency of electrocoagulation using similar/dissimilar electrodes for the detoxification of Coralene Rubine dye: A cost-effective approach. Environmental Geochemistry and Health, 46(9), 322. https://doi.org/10.1007/s10653-024-02096-y

6. Asath Murphy, M. S., David, J. J., Robin, R. S., Sahaya Leenus, L. S., Palanichamy (Jegathambal), J., & Kalivel, P. (2024). An investigation on the treatment of wastewater disperse dye by electrocoagulation and examine the use of the treated dye for flora and fauna. Iranian Journal of Chemistry and Chemical Engineering, 43(5), 1970–1983. https://doi.org/10.30492/ijcce.2023.2003823.6057

7. Sebastian, S. L., Kalivel, P., Kavitha, S., Asath Murphy, M. S., David, J. J., & Palanichamy (Jegathambal), J. (2024). Assessing titanium vs. aluminium electrodes for wastewater remediation in the small-scale industries (SSI) textile sector. Environmental Nanotechnology, Monitoring & Management, 21, 100950. https://doi.org/10.1016/j.enmm.2024.100950

8. Anand, A. M., Palanichamy (Jegathambal), J., Jannet, S. S., & Mayilswami, C. (2024). Treatment of acidic electroplating effluent from small scale industries using batch and continuous flow adsorption reactor. Environmental Research Communications, 6(1), 15104. https://doi.org/10.1088/2631-8695/ad22bd

9. Sebastian, S. L., Kalivel, P., Kavitha, S., David, J. J., Asath Murphy, M. S., & Palanichamy (Jegathambal), J. (2024). Electrocoagulation using Ti/Ti for the remediation and reuse of aqueous Dispersive Blue-79. Environmental Monitoring and Assessment, 196(2), 177. https://doi.org/10.1007/s10661-024-12320-y

10. Aruchamy, K., Palanichamy (Jegathambal), J., & Praveen, A. (2023). Performance evaluation of polysulfone/MWCNT nanocomposite membrane for the efficient removal of blue CA dye. Ionics, 6(5), 1519–1526. https://doi.org/10.1007/s42247-023-00548-2

11. David, J. J., Asath Murphy, M. S., Robin, R. S., Leenus, S. S., Palanichamy (Jegathambal), J., & Kalivel, P. (2023). An attempt to reduce the electrocoagulation costs and to ensure the reuse of treated aqueous dye solution. Nature Environment and Pollution Technology, 22(3), 1277–1288. https://doi.org/10.46488/NEPT.2023.v22i03.015

12. Asath Murphy, M. S., David, J. J., Sahaya Leenus, S., Robin, R. S., Palanichamy (Jegathambal), J., & Kalivel, P. (2023). Electrochemical treatment of textile wastewater using copper electrodes. Journal of Environmental Science and Health, Part A, 58(12), 971–980. https://doi.org/10.1080/10934529.2023.2274257

13. David, J. J., Asath Murphy, M. S., Robin, R. S., Sebastian, S. L., Palanichamy (Jegathambal), J., & Kalivel, P. (2023). Comparative study on the electrocatalytic activity of dissimilar electrode combinations for the treatment of textile effluent by electrocoagulation process and their subsequent reuse. Iranian Journal of Chemistry, 13(3), 341–358. https://doi.org/10.30495/IJC.2023.1991117.2022

14. Arulraj, L. L., Palanichamy (Jegathambal), J., & James, E. J. (2023). Removal of methylene blue using naturadsorbents. World Review of Science, Technology and Sustainable Development, 19(3), 225–240. https://doi.org/10.1504/WRSTSD.2023.131926

15. Kalivel, P., Choondal Jisson, J., Kavitha, S., Padmanabhan, D., Bhagavathsingh, J., Palanichamy (Jegathambal), J., Asath Murphy, M. S., & David, J. J. (2023). Efficiency assessment of Cu and Al electrodes in the removal of anthraquinone-based disperse dye aqueous solution in electrocoagulation—An analytical approach. International Journal of Environmental Analytical Chemistry, 103(17), 5619–5638. https://doi.org/10.1080/03067319.2021.1940988

16. Kannan (Shobina), S., Palanichamy (Jegathambal), J., Thankappan, S., & Mayilsami, C. (2022). Bioremediation of textile dyeing industry effluent from small scale industries using a microbial consortium of Bacillus sp., Escherichia coli, and Aspergillus niger. Journal of Applied Biology & Biotechnology, 10(Suppl. 2), 100–106. https://doi.org/10.7324/JABB.2022.10s211

17. Palanichamy (Jegathambal), J., Palani, S., Anita Hebsiba, G., Viola, J., Tungsrimvong, A., & Sankara Babu, B. (2022). Simulation and prediction of groundwater quality of a semi-arid region using fuzzy inference system and neural network techniques. Smart and Sustainable Civil Engineering, 6(1), 110–126. https://doi.org/10.22115/SCCE.2022.285106.1314

18. Kalivel, P., Moses, V., & Palanichamy (Jegathambal), J. (2021). Statistical modelling of a comparative phytotoxicity study of treated Yellow 10Gw dye solution with copper and aluminum in electrocoagulation process. Nature Environment and Pollution Technology, 20(5), 2149–2156. https://doi.org/10.46488/NEPT.2021.V20I05.032

19. Palanichamy (Jegathambal), J., Gafoor, A., & Parameswari. (2021). Two-stage hybrid electrocoagulation–adsorption in the removal of disperse dyes and inorganic salts from the textile dyeing effluent. Desalination and Water Treatment, 237, 251–258. https://doi.org/10.5004/dwt.2021.27685

20. Palanichamy (Jegathambal), J., Grace, P., Tridi, R., Kalivel, P., & Palani, S. (2020). Water quality parameters as indicators to study the interactions of nanoparticles in an aqueous environment. Environmental Nanotechnology, Monitoring & Management, 14, 100329. https://doi.org/10.1016/j.enmm.2020.100329

21. Raja, R., Palanichamy (Jegathambal), J., Jannet, S., Thanckachan, T., Glen Paul, C. S., Reji, S., & Kandavalli, S. R. (2020). Fabrication and study of Al6061-T6 reinforced with TiO_2 nanoparticles by the process of friction stir processing. AIP Conference Proceedings, 2270, 30002. https://doi.org/10.1063/5.0019916

22. Sajil Kumar, P. J., Palanichamy (Jegathambal), J., Sankara Babu, B., Kokkat, A., & James, E. J. (2020). A hydrogeochemical appraisal and multivariate statistical analysis of seawater intrusion in Point Calimere wetland, lower Cauvery region, India. Groundwater for Sustainable Development, 11, 100392. https://doi.org/10.1016/j.gsd.2020.100392

23. Kalivel, P., Singh, R. P., Kavitha, S., Padmanabhan, D., Krishnan, S. K., & Palanichamy (Jegathambal), J. (2020). Elucidation of electrocoagulation mechanism in the removal of Blue SI dye from aqueous solution using Al–Al, Cu–Cu electrodes—A comparative study. Ecotoxicology and Environmental Safety, 201, 110858. https://doi.org/10.1016/j.ecoenv.2020.110858

24. Kalivel, P., Jagadeesh, T., Kavitha, S., Padmanabhan, D., Palanichamy (Jegathambal), J., & Asath Murphy, M. S. (2020). Comparative study on removal of Yellow 10GW dye from aqueous solution using Al, Cu electrodes in electrocoagulation. Materials Today: Proceedings, 47, 807–813. https://doi.org/10.1016/j.matpr.2020.10.561

25. Kalivel, P., Moses, V., & Palanichamy (Jegathambal), J. (2020). Optimization of color removal of Blue SI dye solution with Al–Al, Cu–Cu electrodes in electrocoagulation process using statistical modelling. [Journal not specified], 39(3), 778–783.

Awards and Recognitions

- Outstanding Scientist Award - 2021
- Women Researcher Award - 2018
- Rula Research Leadership Award - 2020
- Excellence in Technology Development World Aqua Congress - 2018
- DAAD Short-Term Stay & Postdoctoral Fellowship
- DAAD Sandwich Fellowship
- Second Best B.E. Project Award -TANSCST
- Awarded for achieving the second-best B.E. project and received a Gold Medal as the best outgoing Civil Engineering student.