



Dineshkumar MUNIYAPPAN

Postdoctoral Researcher

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- Autres...

Actual position and research subjects

Postdoctoral Researcher, working on consequential lifecycle assessment of biobased materials.

Education and Diploma

National Institute of Technology, Tiruchirappalli, Tamil Nadu, India (Jul 2018 - Dec 2023)

Doctor of Philosophy (Ph.D.) in Mechanical Engineering (Indo-Brazil) (CGPA: 9.00 / 10)

- Thesis: Co-pyrolysis of biomass residue with plastic waste towards synergistic recovery of renewable hydrocarbons and its use in IC Engine
- Advisor: Dr. R. Anand, Professor, Department of Mechanical Engineering, NIT-Trichy

Government College of Technology, Coimbatore, Tamil Nadu, India (Aug 2016 - May 2018)

Master of Engineering (M.E.), Thermal Engineering (CGPA: 8.93 / 10 Distinction)

- Thesis: Experimental Study on the Impact of Oxygen Enrichment on Exergy, Performance, and Emissions behaviours in Turbocharged Engines.
- Advisor: Dr. R. Ramesh, Professor, Department of Mechanical Engineering, GCT

Anna University, Chennai, Tamil Nadu, India (Aug 2012 - Apr 2015)

- **Bachelor of Engineering (BE), Mechanical Engineering (CGPA: 7.89 / 10)**
- Thesis: Advanced Biofuel Production from Agricultural Waste

St. Joseph Polytechnic College, Tamil Nadu, India (Aug 2009 - Apr 2012)

- **Diploma (DME), Mechanical Engineering (CGPA: 7.9 / 10)**
- Thesis: Emission Measurement and Control in Waste Incineration Plants

Others

- Institut National des Sciences Appliquées (INSA), TBI, Toulouse, France** *Postdoctoral researcher-ALIGNED project (Funded by Horizon Europe).*
Host: Prof. Lorie Hamelin, INRAE Research Chair, TBI, INSA Toulouse, France.
Research Focus: Aligning Advanced Lifecycle Assessment (LCA) Methods with Bio-Based Sectors to Improve Environmental Performance.
- Universidade Federal do Rio de Janeiro (UFRJ), Brazil** *(June 2022 - Sep 2022)*
Overseas Visiting Doctoral Researcher in Department of Energy Planning, UFRJ, Brazil.
Host: Prof. Amaro Olimpio Perira, Dept. of Energy Planning, Federal University of Rio
Research Focus: Experimentation on co-pyrolysis and conducting techno-economic and life cycle assessments (LCA) of a co-pyrolysis plant using SimaPro
Key Responsibilities:
 (a). Conducted experimentation on microwave pyrolysis and interpreted experimental results
 (b). Analyzed environmental impacts of waste recycling plants using SimaPro software
 (c). Delivered guest lectures to B.Tech and M.Tech Energy Planning students at UFRJ
- Indian Institute of Technology (IIT), Palakkad, Kerala, India** *(Mar 2024 – Oct 2024)*
Institute Postdoctoral Research Fellow - Renewable & Advanced Combustion Laboratory.
Host: Prof. Krishna Sesha Giri, Dept. of Mechanical Engineering IIT Palakkad, India.
Research Focus: Catalytic Co-pyrolysis of Plastic and Biomass using Modified Carbon Catalyst: Hydrogen Production from Unsegregated Waste.
- National Institute of Technology (NIT), Tiruchirappalli, India** *(July 2018 - Dec 2023)*
Senior Research Fellow - Advanced Bioenergy Laboratory.
Host: Prof. Anand Ramanathan, Dept. of Mechanical Engineering, NIT Trichy, India.
Research Focus: Co-pyrolysis behavior of biomass and e-waste plastics for producing value-added chemicals and high-quality bio-oil.

List of selected publications

- [10]. Uthayakumar Azhagu, Dineshkumar Muniyappan, Anand Ramanathan, Advancements in Plasma Technology for Circular Waste Management and Green Hydrogen Production: A Review. *Journal of Renewable and Sustainable Energy*. <https://doi.org/10.1063/5.0250350>
- [9]. Dineshkumar Muniyappan, Guilherme Rodrigues Lima, Amaro Olimpio Pereira Junior, Anand Ramanathan, "Multivariate combined optimization strategy and comparative life-cycle assessment of biomass and plastic residues via microwave co-pyrolysis approach towards a sustainable synthesis of renewable hydrocarbon fuel" *Journal of Environmental Chemical Engineering*. <https://doi.org/10.1016/j.jece.2023.111436>
- [8]. Dineshkumar Muniyappan, Amaro Olimpio Pereira Junior, Angkayarkan Vinayakaselvi M, Anand Ramanathan, "Synergistic recovery of renewable hydrocarbon resources via microwave co-pyrolysis of biomass residue and plastic waste over spent toner catalyst towards sustainable solid waste management" *Energy*. <https://doi.org/10.1016/j.energy.2023.127652>
- [7]. Dineshkumar Muniyappan, Banagiri Shrikar, Uthayakumar Azhagu, Meera Sheriffa Begum K.M, Angkayarkan Vinayakaselvi M, Anand Ramanathan. "Research progress in the co-pyrolysis of renewable biomass with plastic wastes for the synergetic production of chemicals and biofuels: A review." *Journal of Renewable and Sustainable Energy*. <https://doi.org/10.1063/5.0142355>
- [6]. Dineshkumar Muniyappan, Madhangi Ramanathan, Anand Ramanathan, Kartikeya Shukla, Meera Sheriffa Begum K.M, Sustainable valorization of waste keyboard keys via microwave assisted pyrolysis over Fe-Ni doped green catalyst towards clean fuel production. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*. <https://doi.org/10.1080/15567036.2023.2182845>
- [5]. Gopi R, Dineshkumar Muniyappan, Anand Ramanathan, Biodiesel Production using Microreactor with Integrated Microheater through Multi-Objective Optimization Approach. *Chemical Engineering and Processing – Process Intensification*. <https://doi.org/10.1016/j.cep.2023.109646>
- [4]. Dineshkumar Muniyappan, Begum KM, Shrikar B, Ramanathan A. Synthesis and characterization study of solid carbon biocatalyst produced from novel biomass char in a microwave pyrolysis. *Materials Today: Proceedings*. 2021 Jan 1;46:9814-9. <https://doi.org/10.1016/j.matpr.2020.10.885>

- [3]. Dineshkumar Muniyappan, Shrikar B, Kasimani R, Ramanathan A. Study on availability analysis, performance and emission behavior for an oxygen enriched turbocharged diesel engine. *Materials Today: Proceedings*. 2021 Jan 1;46:9862-8. <https://doi.org/10.1016/j.matpr.2020.12.104>
- [2]. Arul M, Dineshkumar Muniyappan, Ramanathan A. Aspen HYSYS simulation of biomass pyrolysis for the production of methanol. *Earth and Environmental Science* 2019 Sep 1 (Vol. 312, p. 012015). <https://doi.org/10.1088/1755-1315/312/1/012015>
- [1]. Dineshkumar Muniyappan, Shrikar B, Ramanathan A. Development of computer aided modelling and optimization of microwave pyrolysis of biomass by using aspen plus. *Earth and Environmental Science* 2019 Sep 1 (Vol. 312, No. 1, p. 012006). IOP Publishing. <https://doi.org/10.1088/1755-1315/312/1/012006>