



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO ID CODE : 6622

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze Agrarie e Ambientali - Produzione, Territorio, Agroenergia**

Scientist- in – charge: **Prof. Fabrizio Adani**

[Kesharvani Sujeet]

CURRICULUM VITAE

PERSONAL INFORMATION

| | |
|---------|------------|
| Surname | Kesharvani |
| Name | Sujeet |

PRESENT OCCUPATION

| | |
|------------------------|--------------------------------------------------------------|
| Appointment | Structure |
| Senior research fellow | Maulana Azad National Institute of Technology, Bhopal, India |

EDUCATION AND TRAINING

| Degree | Course of studies | University | year of achievement of the degree |
|-----------------------------------|-------------------------|---------------------------------------------------|-----------------------------------|
| Degree | B.Tech | SIET Allahabad | 2016 |
| Specialization | Mechanical Engineering | | |
| PhD | Renewable Energy | National Institute of Technology, Bhopal, India | 2024 |
| Master | M.Tech Renewable Energy | National Institute of Technology, Hamirpur, India | 2019 |
| Degree of medical specialization | ----- | | |
| Degree of European specialization | ----- | | |



| | | | |
|-------|-------|--|--|
| Other | ----- | | |
|-------|-------|--|--|



REGISTRATION IN PROFESSIONAL ASSOCIATIONS

| Date registration | of | Association | City |
|-------------------|----|-------------|------|
| ----- | | | |

FOREIGN LANGUAGES

| Languages | level of knowledge |
|-----------|--------------------|
| English | Professional |

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

| Year | Description of award |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2017 | GATE Qualified in 2017 |
| 2017-2019 | M.Tech. Fellowship under MHRD |
| 2020-2024 | PhD. Fellowship under MHRD |
| 2024 | Best Paper Award in IEEE conference at IAMTSI 2024, held at ABV-IIITM Gwalior from March 14th to March 16th, 2024 |
| 2024 | Awarded International Travel Support (ITS) by Science & Engineering Research Board for participating in “11th International Conference on Sustainable Solid Waste Management” Rhodes, Greece |



description of activity:

Working as “*Research Scholar (PhD)*” at National Institute of Technology Bhopal on the project entitled "Production, Optimization of alternative fuels and its impact assessment".

My research aims to explore the production and optimization of biodiesel, focusing on renewable energy sources such as microalgae and waste cooking oil, and investigation of carbon footprint during its production process and further carry out the feasibility study in diesel fuel engine as a fuel along with ethanol and hydrogen fuel. I have dedicated my research efforts to advancing the field of biodiesel production through innovative and eco-friendly approaches. One of the core objectives of my thesis is to synthesize a heterogeneous CaO catalyst from waste eggshells, contributing to the bioeconomy framework by reducing waste and promoting circular economy principles. I have conducted a comparative life cycle assessment (LCA) to evaluate the carbon footprint associated with different biodiesel production processes, emphasizing the advantages of biodiesel over conventional diesel in terms of reduced greenhouse gas emissions and minimized environmental degradation. Furthermore, I utilized the Diesel RK software to perform numerical simulations that analyze the performance of biodiesel derived from algae in comparison to conventional diesel fuels. Optimization of biodiesel production parameters and engine performance attributes is another critical focus of my research. By enhancing yield and efficiency, my work aims to reduce energy consumption and emissions, ultimately mitigating environmental pollution and promoting sustainable energy practices. My experimental investigations include characterizing combustion, performance, and emission parameters of a single-cylinder, four-stroke, water-cooled, direct-injection diesel engine using various blends of algae biodiesel and ethanol. The goal is to identify optimal fuel blends that offer maximum performance with minimal environmental impact. In addition to these efforts, I am exploring the effect of hydrogen enrichment on engine performance and emissions using a Mahindra four-stroke, water-cooled, direct-injection dual-fuel diesel engine. This research aims to assess the potential for further reducing emissions and improving fuel efficiency through hydrogen supplementation, thereby advancing the frontiers of sustainable energy solutions.

Along with the research exposure, I was good enough trained for organizing a conference of National and international repute. Being a part of the organizing committee of “International Conference on Advancement in Materials, Manufacturing and Energy Engineering) ICAMME 2021”, and 2nd International Conferences Innovation in Clean Energy Technology) ICET 2023 (during PhD) and ICRABR-2022 (during postdoc) an international conference, I actively participated in conducting the technical sessions, edited and compile the abstract book and responsibly responded to queries of all delegates and participants. As of today, I have published twenty-five research paper. Moreover, I have attended and presented in more than 3 international conferences and several workshops. During my Ph.D., I got one research international travel awards from SERB Government of India to present my research paper on “11th International Conference on Sustainable Solid Waste Management”, Rhodes Greece.

TRAINING OR RESEARCH ACTIVITY



PROJECT ACTIVITY

| Year | Project |
|-------------|---------------------------------------------------------------------------------------------------------------|
| July 2024 | “Assessment of Thermal Performance of Parabolic Dish Type Solar Cooker Using Different Phase Change Material” |
| July 2019 | Performance evaluation of thermosyphon flat plate and evacuated tube collector for solar water heating |
| August 2016 | “Fabrication and mechanism analysis of hub less wheel in Mechanical department” |

Patent, Fuel Separator for Separation of Solid Particles, Intellectual property in India (Published)
Multiple Slope Solar Dryer and Solar Still, Intellectual property in India (Published)

PATENTS

CONGRESSES AND SEMINARS

- > Participated in workshop on “Cyber Security” 2015 UP Police Attended the seminar on “Entrepreneurship Summit” 2015 MNIT Allahabad
- > Attended the Five days online workshop on “Future trend in Green Technology” June 2020 MANIT Bhopal
- > Attended the Five days online workshop on “Recent Trend in Clean Energy” March 2021 MANIT Bhopal
- > Attended the Five days online workshop on “Advance Research Methods” March 2021 MANIT Bhopal
- > Presented a research paper entitle “Algae as a feedstock for biodiesel production in Indian perspective” in the international conference on Technology Innovation in Mechanical Engineering May 2021 SISTec Bhopal
- > Reviewer in the international conference on “Innovations in Clean Energy Technologies (ICET-2020)” Feb 2022 MANIT Bhopal
- > Session moderator in the international conference on “Innovations in Clean Energy Technologies (ICET-2020)” Feb 2022 MANIT Bhopal
- > Attended the Five days ATAL Program on “Sustainable Transport Source for Future Mobility Application” Nov 2021 MANIT Bhopal ‘
- > Participated an online quiz on “Green energy: The new Paradigm for Cleaner Environment” March 2022 NIT Srinagar



- Attended the Seven days High End National Workshop on “Statistical Tools: Modelling and Optimization” Jul 2022 NIT Jalandhar
- Successfully conducted Seven days High End National Workshop on “Research Ethics in Engineering” Nov 2022 MANIT Bhopal Successfully conducted Seven days High End National Workshop on “Advance research tool application in Renewable Energy” Dec 2022 MANIT Bhopal
- Successfully conducted Seven days High End National Workshop on “Hybrid Electric Vehicles and Alternative Fuels” Jun 2023 MANIT Bhopal
- Keynote Speaker in the High-End National Workshop on “Hybrid Electric Vehicles and Alternative Fuels” Jun 2023 MANIT Bhopal
- Successfully conducted Seven days High End National Workshop on “Developing Soft Skill and Effective Science Communications” Jul 2023 MANIT Bhopal
- Attended the One Week FDP online workshop on “Machine Learning Applications for Mechanical Engineers” Dec 2023 CVR College of Engineering
 - Delivered a talk on RSM and its Application on three days national workshop on “Synergetic Research Approach through RSM, Molecular Docking and SPSS for Scientific Computation” Jan 2024 ST. Aloysius College, Jaba

PUBLICATIONS

Journal Publications:

- **Kesharvani, Sujeet**, Ipseeta Nanda, Altayeb Qasem, Sakshi Sarathe, Vinita Verma, and Gaurav Dwivedi. "Designing and simulation of a grid-connected solar plant in Mathura city region employing PVsyst." *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering* (2024): 09544089241239323.
- **Kesharvani Sujeet**, Sakhi Katre, Suyasha Pandey, Sakshi Sarathe, Gaurav Dwivedi, and Tikendra Nath Verma. "Escalating the performance of Diesel Engine and Combustion Attributes Via Algae Biodiesel and Hydrogen Enrichment." In *2024 IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI)*, vol. 2, pp. 1-6. IEEE, 2024.
- Sarathe, Sakshi, Sachin Banait, Gaurav Dwivedi, Prashant Baredar, and **Sujeet Kesharvani**. "Monitoring and Analysis of Particulate Matter and Ambient Conditions near Traffic Area." In *2024 IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI)*, vol. 2, pp. 1-4. IEEE, 2024.
- **Kesharvani, Sujeet**, Gaurav Dwivedi, Tikendra Nath Verma, and Mayank Chhabra. "Optimization,



- production, and environmental sustainability of clean energy fuel utilizing reused cooking oil employing CaO catalysts." *Sustainable Energy Technologies and Assessments* 63 (2024): 103655.
- Agrawal, Anjali, **Sujeet Kesharvani**, Gaurav Dwivedi, Tushar Choudhary, Ritu Verma, and Puneet Verma. "Quantifying the impact of lockdown measures on air pollution levels: A comparative study of Bhopal and Adelaide." *Science of The Total Environment* 909 (2024): 168595.
 - **Kesharvani, Sujeet**, Gaurav Dwivedi, and Tikendra Nath Verma. "OPTIMIZATION OF PROCESS PARAMETER OF BIODIESEL DERIVED FROM A HYBRID BLEND OF KARANJA AND CHLORELLA VULGARIS OIL." *International Journal of Energy for a Clean Environment* 25, no. 5 (2024).
 - Paul, Aneesh, **Sujeet Kesharvani**, Anjali Agrawal, Gaurav Dwivedi, Vishal Singh, and Kuldeep K. Saxena. "Mechanical and tribological properties of nano clay/PMMA composites extruded with a twin-screw extruder." *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering* (2023): 09544089231215224.
 - Bawankar, Swapnil, Gaurav Dwivedi, Ipseeta Nanda, Víctor Daniel Jiménez Macedo, **Sujeet Kesharvani**, Kundan Meshram, Siddharth Jain, Sachin Mishra, Varun Pratap Singh, and Puneet Verma. "Environmental impact assessment of lithium ion battery employing cradle to grave." *Sustainable Energy Technologies and Assessments* 60 (2023): 103530.
 - **Kesharvani, Sujeet**, Mayank Chhabra, Gaurav Dwivedi, Tikendra Nath Verma, and Arivalagan Pugazhendhi. "Execution and emission characteristics of automotive compression ignition engine powered by cerium oxide nanoparticles doped water diesel emulsion fuel." *Fuel* 349 (2023): 128670.
 - **Kesharvani, Sujeet**, Gaurav Dwivedi, Tikendra Nath Verma, and Puneet Verma. "Sustainable alternative fuel derived from different feedstocks and its comparative life cycle assessment." *Sustainable Energy Technologies and Assessments* 57 (2023): 103159.
 - **Kesharvani, Sujeet**, Gaurav Dwivedi, and Tikendra Nath Verma. "Optimization of performance characteristics in diesel engine utilizing Chlorella vulgaris fuel—a green approach towards sustainable development." *Environmental Science and Pollution Research* (2023): 1-27.
 - Rehman, Madeeha, **Sujeet Kesharvani**, and Gaurav Dwivedi. "Numerical investigation of



- performance, combustion, and emission characteristics of various microalgae biodiesel on CI engine." *Fuels* 4, no. 2 (2023): 132-155.
- Kharkwal, Verendra Singh, **Sujeet Kesharvani**, Shrawani Verma, Gaurav Dwivedi, and Siddharth Jain. "Numerical investigation of engine characteristics of a diesel engine fuelled with ethanol and diethyl ether supplemented diesel-WCO biodiesel blend." *Materials Today: Proceedings* (2023).
 - Mohapatra, Subhashree, Dileep Mohanachandran, Gaurav Dwivedi, **Sujeet Kesharvani**, V. S. K. V. Harish, Shrey Verma, and Puneet Verma. "A comprehensive study on the sustainable transportation system in India and lessons to be learned from other developing nations." *Energies* 16, no. 4 (2023): 1986.
 - **Kesharvani, Sujeet**, Tikendra Nath Verma, and Gaurav Dwivedi. "Computational analysis of chlorella protothecoides biofuels on engine combustion, performance and emission." *Sustainable Energy Technologies and Assessments* 55 (2023): 102972.
 - Paswan, Amit Kumar, **Sujeet Kesharvani**, Kavita Gidwani Suneja, and Gaurav Dwivedi. "Performance and emissions characteristics of CI engine fueled with blends of diesel and Polanga biodiesel." *Materials Today: Proceedings* 78 (2023): 647-655.
 - Srivastava, Eka, **Sujeet Kesharvani**, Anjali Agrawal, and Gaurav Dwivedi. "Binary blending of different types of biofuels with diesel, and study of engine performance, combustion and exhaust emission characteristics." *Materials Today: Proceedings* 78 (2023): 378-389.
 - Singh, M., Sharma, N., Sarin, A., **Kesharvani, S.**, Tiwari, C., Verma, T.N. and Dwivedi, G., 2022. Influence of irradiation and addition of antioxidants on the oxidation stability of Jatropha, Pongamia and Tectona Grandis biodiesels. *International Journal of Ambient Energy*, 43(1), pp.7006-7019.
 - **Kesharvani, Sujeet**, Gaurav Dwivedi, Tikendra Nath Verma, and Puneet Verma. "The experimental investigation of a diesel engine using ternary blends of algae biodiesel, ethanol and diesel fuels." *Energies* 16, no. 1 (2022): 229.
 - Rehman, Madeeha, **Sujeet Kesharvani**, Gaurav Dwivedi, and Kavita Gidwani Suneja. "Impact of cultivation conditions on microalgae biomass productivity and lipid content." *Materials Today: Proceedings* 56 (2022): 282-290.



- **Kesharvani, Sujeet**, and Gaurav Dwivedi. "Algae as a feedstock for biodiesel production in Indian perspective." *Materials Today: Proceedings* 47 (2021): 5873-5880.

Book Chapters:

- Malik, Prashant, Santosh Kumar Saraswat, Rajesh Vanshpati, Gautam Raina, Shubham Sharma, **Sujeet Kesharvani**, Renu Bansal, and Anurag Kumar Tiwari. "Hydrogen-integrated renewable systems for power generation: an overview of technologies and applications." *Sustainable Hydrogen Energy: Production, Storage & Transportation* 9 (2024): 319.
- **Kesharvani, Sujeet**, Gaurav Dwivedi, and Puneet Verma. "Life cycle perspective assessment of waste-based biofuels." In *Waste Valorization for Bioenergy and Bioproducts*, pp. 505-525. Woodhead Publishing, 2024.
- **Sujeet Kesharvani**, Sarathe Sakshi, Agrawal Anjali, Dwivedi Gaurav, Malik Prashant" *Sustainable Hydrogen Energy: Production, Storage & Transportation* 9 (2024): 1.
- Gaurav, Adarsh, **Sujeet Kesharvani**, Sakshi Sarathe, Gaurav Dwivedi, Gaurav Saini, Anuj Kumar, and Kamaraj Nithyanandhan. "Application of alternative clean energy." In *Sustainable Developments by Artificial Intelligence and Machine Learning for Renewable Energies*, pp. 1-20. Elsevier, 2022.
- Singh, Meetu, Amit Sarin, Deeptam Trivedi, **Sujeet Kesharvani**, Anjali Agrawal, and Gaurav Dwivedi. "Effect of Antioxidant Psidium guajava Extract on the Stability of Oxidation of Various Biodiesels." In *Thermal Energy Systems*, pp. 249-273. CRC Press, 2023.

| |
|--|
| |
| |

OTHER INFORMATION

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

Please DO NOT SIGN this form.



Place and date: _Bhopal, 27/05/2024