

Biodata

Name: Dr. Manjula Das
Present Position: Assistant Professor, Grade-I, Department of Mechanical Engineering, NIT Arunachal Pradesh



Educational Qualification:

- PhD., in 2015 from IIT Guwahati, India.
- M.E. (Fluid Mechanics), in 2009 from IEST, Shibpur (former BESU), India.
- B.Tech. (Mechanical Engineering), in 2003 from Jorhat Engineering College, Jorhat, Assam, India.

Professional Experience:

- Assistant Professor, Department of Mechanical Engineering, NIT Arunachal Pradesh, India, from July 2015- till date.
- Assistant Professor, Department of Mechanical Engineering, NIT Arunachal Pradesh, India from March 2015- May 2015.
- Lecturer in the Department of Mechanical Engineering, Sikkim Manipal Institute of Technology, Sikkim, India from February 2004- December 2009.

Research areas:

- Energy conservation and Renewable Energy
- IC engine
- Gasification, Fluidized bed, Drying
- Biogas, Biomass
- Organic Fertilizer

Sponsored Projects:

1. Seed grant project sponsored by TEQIP-III on Utilization of Poultry Litter in Soil Amendments, 2019-2020
2. External project on “Centre for Skill Development in Appropriate Technologies”, sponsored by NECTAR, 2020-2025

Expert Lecture Delivered:

- Delivered a talk on “Fundamentals of Engine Combustion & Emissions” on 9th October 2020 at 05 days Webinar on **Engine Combustion and Emission Diagnostics** 05 – 09 October 2020 held at NIT Agartala.
- Key-note speaker for 5 days webinar on Biomass and Bioenergy from 15th March 2021 to 19th March 2021 at NIT Agartala

Reviewer of INSPIRE Awards 2020-MANAK by DST GoI with NIF.

'Innovation in Science Pursuit for Inspired Research' (INSPIRE) scheme is one of the flagship programmes of Department of Science & Technology (DST), Government of India. The INSPIRE Awards - MANAK (Million Minds Augmenting National Aspirations and Knowledge), being executed by DST with National Innovation Foundation – India (NIF), an autonomous body of DST, aims to motivate students in the age group of 10-15 years and studying in classes 6 to 10.

Publications:

Books:

1. **Dr. Manjula Das Ghatak** and Ms. Nibedita Das, 2022, Biodiesel: An Experimental Approach, ISBN: 978-3-659-63102-3, published by LAP Lambert Academic Publishing
2. **Dr. Manjula Das Ghatak** and Mr. Suraj Toppo, 2022, Hot fluidized bed: An experimental study with sub-bituminous Indian coal and sawdust, ISBN: 978-3-659-93959-4, LAP Lambert Academic Publishing
3. **Dr. Manjula Das Ghatak**, Dr. Saikat Jana and Mr. Animesh Borah, 2022, Biomass Gasification: A comparative study with different binders on charcoal-biomass pellets, ISBN: 978-3-330-32093-2, LAP Lambert Academic Publishing
4. **Manjula Das**, 2022, Mesua Ferrea: A potential Plant for Biofuel Production, ISBN: 9798887726953, Notion Press Publisher
5. **Manjula Das**, Investigating the Production and Characterization of Graphene Based Biofuel, 2022, Walnut Publication

International Journals:

- A. Das and **M. Das. Ghatak** (2022), An investigative study on engine performance and combustion products of a manual diesel engine fueled with an oil produced from locally available nahar seeds, Journal: Pollution Research, 40(4), ISSN 0257-8050
- A. Das and **M. Das. Ghatak** (2022), An experimental investigation on performances and emission characteristics in a multi-cylinder diesel engine using Nahar oil biodiesel blended with CNT, Under review, Journal: Journal of King Saud University - Engineering Sciences
- **M. Das. Ghatak** and A. Ghatak (2018), Artificial neural network model to predict behaviour of biogas production curve from mixed lignocellulosic co-substrates, Fuel, Vol. 232, pp. 178–189.
- Manjula Das Ghatak and P. Mahanta, Kinetic model development for biogas production from lignocellulosic biomass, Journal: International Journal of Technology (IJTech), ISSN:2086-9614, Vol: 4 (2017), Pp: 673-680
- A. Das and **M. Das. Ghatak** (2018), An experimental study on Performance of CI engine fuelled with waste cooking oil, IOP Conf. Series: Materials Science and Engineering 377 (2018) 012199. DOI:10.1088/1757-899X/377/1/012199.
- **M. Das Ghatak** and P. Mahanta (2016), “Biogas Purification using Chemical Absorption”. *International Journal of Engineering and Technology (IJET)*, vol. 8 (3), pp. 1600-1605.
- **M. Das Ghatak** and P. Mahanta (2014), “Kinetic Assessment of Biogas Production from Lignocellulosic Biomasses”. *International Journal of Engineering and Advanced Technology (IJEAT)*, vol. 3(5), pp. 244-249.

- **M. Das Ghatak** and P. Mahanta (July 2014), “Comparison of Kinetic Models for Biogas Production Rate from Saw Dust”, *International Journal of Research in Engineering and Technology*, vol. 3(7), pp. 248-254.
- **M. Das Ghatak** and P. Mahanta (2014), “The Effect of Temperature and Total Solid on Biomethanation of Sugarcane Bagasse”, *The IUP Journal of Mechanical Engineering*, vol. 7 (3), pp. 68-75.
- **M. Das Ghatak** and P. Mahanta (2014), “Effect of Temperature on Co-Digestion of Cattle Dung with Lignocellulosic Biomasses”, *Journal of Advanced Engineering Research*, vol. 1(1), pp. 1-7 (2014). Received the Best Article Award of 2014.

International Conferences:

- A. Das and **M. Das Ghatak** (2020), Experimental investigation of feasibility of using biodiesel produced from nahar, castor and rice bran seeds in CI engine (paper Id: TFRE20/83), accepted for presentation and publication in International conference TFRE2020 to be held in 26-28 November, 2020 at NIT Arunachal Pradesh.
- A. Das and **M. D. Ghatak** (2018), An experimental study on Performance of CI engine fuelled with waste cooking oil, International Conference on Mechanical, Materials and Renewable Energy (ICMMRE 2017), organized by the Department of Mechanical Engineering, Sikkim Manipal Institute of Technology, Majitar, Sikkim, India on 8-10th December 2017, IOP Conf. Series: Materials Science and Engineering 377 (2018) 012199 doi:10.1088/1757-899X/377/1/012199.
- **M. Das Ghatak** and P. Mahanta (2018), Effect of Temperature on Biogas Production from Rice Straw and Rice Husk, International Conference on Mechanical, Materials and Renewable Energy (ICMMRE 2017), organized by the Department of Mechanical Engineering, Sikkim Manipal Institute of Technology, Majitar, Sikkim, India on 8-10th December 2017, IOP Conf. Series: Materials Science and Engineering 377 (2018) 012146
- **M. Das Ghatak** and P. Mahanta (2017), Kinetic model development for biogas production from cattle dung, Proceedings of International Conference on Functional Materials, Characterization, Solid State Physics, Power, Thermal and Combustion Energy (FCSPTE)-2017, organized by Ramachandra College of engineering, Eluru, Andhra Pradesh, India during 7th & 8th April 2017.
- M. Das Ghatak and P. Mahanta (2018), Effect of Temperature on Biogas Production from Rice Straw and Rice Husk, IOP Conf. Series: Materials Science and Engineering 377 (2018) 012146. DOI:10.1088/1757-899X/377/1/012146
- M. Das Ghatak and P. Mahanta (2017), Kinetic model development for biogas production from cattle dung. AIP Conference Proceedings 1859, 020010 (2017); doi: 10.1063/1.4990163.
- **M. Das Ghatak** and P. Mahanta (2014), “Effect of Temperature on Biogas Production from Lignocellulosic Biomasses”, Proceedings of 2014 1st International Conference on Non-Conventional Energy (ICONCE 2014), pp:164-168, organized by JIS College of Engineering, Kalyani, India, 16-17th Jan’2014, Published in IEEE xplore digital library (2014), pp. 117-121. doi:10.1109/ICONCE.2014.6808702.

- **M. Das Ghatak** and P. Mahanta (2013), “Biogas production from lignocellulosic biomasses” Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference 2013, organized by IIT Kharagpur, India, 28th to 31st Dec’2013.
- **M. Das Ghatak**, S.K. Mukherjea and B.K. Mandal (2009), “Numerical Prediction of Velocity and Temperature Distributions in a diffusion Flame under Reduced Gravity Conditions”, Proceedings of the International Conference on Advances in Mechanical Engineering, pp: 247-251, organized by S.V. National Institute of Technology, Surat, India, August 3-5, 2009.
- Bijan Kumar Mandal, Sujoy Kumar Mukherjea, **Manjula Das Ghatak**, Simulation of Confined Co-Flow Methane-Air Diffusion Flame Under Microgravity Condition With Variable Property Formulation, ASME Turbo Expo 2011, June 6-10, 2011, Vancouver, Canada (Accepted for presentation and publication in the proceedings).
- Radu, Tanja Blanchard, Richard E. Wheatley, Andrew D. Yadav, D. Bora, D. Purkayastha, R. **Ghatak**, M. Barbora, L. Mahanta, P. Collins, F. Diamond, D (2014), “Providing energy for rural Indian communities: anaerobic digestion at Loughborough University”, poster was displayed at: UK AD and Biogas 2014 conference, Birmingham, Great Britain, 2-3 July.
- A. Das and **M. Das Ghatak**, (2017), Performance study of bio-diesel using waste cooking oil, poster presented in “International Workshop on Energy, Propulsion and Environment” 2017 held during March 8-11’2017 at IIT Kanpur.

Conference/seminar/workshop organized:

- Coordinated an AICTE sponsored short term training program (STTP) on Recent Development in Biomass to Energy from 1st March – 5th March 2021 at NIT Arunachal Pradesh.
- Coordinated an ATAL FDP on Design thinking and product development from 23rd to 27th August 2021 at NIT Arunachal Pradesh sponsored by AICTE, GoI.
- Conducted one-week Entrepreneurship Development Training Program on Vermicomposting during 3rd to 7th February, 2021 at NIT Arunachal Pradesh sponsored by NECTAR, an autonomous body of DST, GoI.
- Conducted one-week Entrepreneurship Development Training Program on Vermicomposting (Phase-II) during 13th to 17th December, 2021 at NIT Arunachal Pradesh sponsored by NECTAR, an autonomous body of DST, GoI.
- Conducted One Week Entrepreneurship Development Training Program on Vermicomposting (Phase-III) during 20th to 24th December, 2021 at NIT Arunachal Pradesh sponsored by NECTAR, an autonomous body of DST, GoI.
- Conducted training program on Maosn training on biogas digesters at NIT Arunachal Pradesh from 4th March 2022 to 19th March 2022, sponsored by NECTAR, an autonomous body of DST, GoI.

- Coordinated a Two-Day National Conference as co-convenor on Relevance of Mahatma Gandhi today (RMGT-2019), sponsored by TEQIP-III during September 28-29 at NIT Yupia.
- Conducted an TEQIP-III sponsored 5 days faculty development program (FDP) on “Recent Trends in Thermo-fluids Engineering”, during 5th to 9th March 2018 in the Department of Mechanical Engineering at NIT Arunachal Pradesh, Yupia.
- Coordinated a health check-up cum awareness camp on behalf of the Medical Unit, NIT Arunachal Pradesh during 4th to 5th November 2019.
- Coordinated an one day Research Summit on Application of Computational Fluid Dynamics in the Department of Mechanical Engineering, NIT Arunachal Pradesh on 26th September 2015.

Students Supervised/Supervising

PhD

- Animesh Das, Experimental investigation on performance testing of four stroke CI engine fuelled with biofuels, 2016-till date
- Arnab Deb, Theoretical and experimental investigation on cardamom drying using solar assisted convection dryer, 2019-till date
- Debashish Gogoi, Experimental analysis on biomass Gasification, 2020-till date

M.Tech

- Animesh Borah, Comparative Study of Charcoal-Biomass Pellets using Different Binders, 2020-2021
- Madan Mohan Thakur, Design and Development of Biomass Dryer for Domestic Purpose, 2019-2020
- Manasi Dewang, Production and characterization of transesterified nahar oil mixed with grapheme, 2019-2020
- Beenam Bengia, Thermophilic anaerobic digestion of food waste, 2018-2019
- Tamo Takung, Emulsion of biodiesel and its characterization, 2018-2019
- Suraj Toppo, Study of the hot fluidized bed with sub-bituminous Indian coal and saw dust, 2017-2019
- Nibedita Das, Experimental investigation of feasibility of using biodiesel produced from nahar, castor and rice bran in CI engine, 2017-2018
- Ankit Kumar, Co-gasification performance study of different biomass and high ash Indian coal in fluidized bed gasifier, 2017-2018

B.Tech

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- Badireddi S, Kumar Sajan Kumar and Tobom Lego, Usage of Poultry litter biochar on plants, 2019-2020

- Abhijit Das, Debapriya Nath, Md. Waquar Zaidee, Rishesh Mishra, Investigation and comparison of chemical and mechanical properties of nahar oil and linseed oil biodiesel mixed with double walled CNTs (carbon nano tubes) as additive, 2018-2019
- Akuthota Chakradhar, Avinash Kumar Gupta, Chandan Kumar, Prabhat Kumar, Performance testing of CI engine fuelled with nahar oil methyl ester and its blends, 2017-2018
- Karba Loi, Sajin P Koshy, Prakash Kr. Singh, Preparation of biodiesel from nahar seeds and its characterization, 2016-2017
- Akash Kumar Rajak, Kunal Biswas, Experimental study on performance of an indirect type natural convection grain dryer, 2016-2017

Courses Taught

- Steam Power Generation & Performance analysis
- Energy Conversion and Waste Heat Recovery
- Fuels and Combustion
- Basic Elements of Mechanical Engineering
- Applied Thermodynamics
- Workshop Practice-I (Lab)
- Basic Thermodynamics (Theory & Lab)
- Internal Combustion Engine (Theory & Lab)
- Engineering Mechanics
- Workshop Practice-II (Lab)
- Basic Elements of Mechanical Engineering
- Green Car Technology

Administrative Responsibility

- Hostel Warden, Hornbill hall of Residence, 2019-2021
- Faculty in charge, Medical Unit, NIT Arunachal Pradesh, 2019- till date
- Faculty in charge, IC Engine Lab, 2017- till date
- Faculty in charge, Fuel lab, 2019- till date
- Coordinator, QIP Centre (Minor), NIT Arunachal Pradesh
- CPIO, NIT Arunachal Pradesh
- Assistant Dean, Academics, 2017-2018

Committee Member:

- Convener of committee for Physical health and mental well-being of students of NIT Arunachal Pradesh since 26/4/2020.
- Member of Ancillary committee, NIT Arunachal Pradesh.
- Coordinator of committee for waste management in campus under Social Entrepreneurship, Swachhta & Rural Engagement Cell (SES REC)

Conference/Workshop/Seminar Attended

- **Participated** in 5 Day's Online Webinar organized by SC/ST/OBC Cell, NIT Arunachal Pradesh on "**Implementation of reservation policy in service for SC/ST/OBC & PWD in Government institutes**" sponsored by Technical Education

Quality Improvement Programme (TEQIP-III) from **31st August to 4th September-2020**

- Participated in ten episodes of webinar on “**Arunachal Pradesh and her Rich Indigenous Culture and Custom**” conducted by EBSB Cell, National Institute of Technology, Arunachal Pradesh from **06.08.2020 to 15.08.2020** through online mode.
- Attended and participated in 1st International Conference on Non-Conventional Energy (ICONCE 2014) in JIS College of Engineering, Kalyani, India from 28th to 31st Dec’2013
- Attended and participated in 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference in IIT Kharagpur, India from 28th to 31st Dec’2013.
- Attended Summer school on Efficient fossil energy technologies in IIT Guwahati, Assam from July 4-10,2011
- Attended Short term course on Hydroelectric Power Development in IIT Guwahati, Assam from 5.12.2011 to 9.12.2011
- Attended Faculty Development Programme in Entrepreneurship in Sikkim Manipal Institute of Technology, Sikkim from 1-14 December 2006.
- Attended Short term course on Design and Manufacturing of Composite Materials in IIT Guwahati, Assam from 6.12.2004 to 10.12.2004.

Awards/Recognition

- Scholarship for doctoral studies at IIT Guwahati from Ministry of Human Resource and Development (MHRD), Govt. of India for period of December, 2009–December, 2013