

Rakesh Bhadra

Assistant Professor

Department of Mechanical Engineering

Tezpur University, Assam, India

+91-9508350248

✉ r.bhadra@tezu.ernet.in & rakeshbhadra20@gmail.com

Vidwan: <https://vidwan.inflibnet.ac.in/profile/116557>

Google Scholar: [znt3YHkAAAAJ](https://scholar.google.com/citations?user=znt3YHkAAAAJ) | Scopus: 57205595995 | ORCID: 0000-0002-4661-8151



PROFILE SUMMARY

Dedicated Mechanical Engineering faculty with strong expertise in numerical modeling, experimental mechanics, welding processes, and contact mechanics. 11+ years of academic and research experience with proven track record in publishing SCI/Scopus indexed Journals, securing funded projects, and fostering innovation in materials science, marine applications, and manufacturing technologies.

EDUCATION

Ph.D. (Submitted), Mechanical Engineering – Jadavpur University, India (2025)

M.E., Mechanical Engineering (Production Engineering) – IEST Shibpur, 2010

B.E., Mechanical Engineering – IEST Shibpur, 2008

RESEARCH INTERESTS

- Contact Mechanics & Surface Engineering
- Welding (Friction Stir, Laser, TIG) in Different Environments
- Functionally Graded & CNT-Reinforced Composites
- Marine Structural Materials & Corrosion Resistance
- Finite Element Modeling (ANSYS APDL, ABAQUS)

▪ Academic achievements:

GATE scholarship during M.E. (from July 2008- July 2010)

SPONSORED RESEARCH PROJECTS

Project Title: Experimental Characteristics and thermo-mechanical analysis of Underwater Friction Stir Welded Al alloys for submerged Marine Application

Amount: 13 Lakhs, **Duration:** 2024-26 (*Ongoing*)

Role: Co-P.I.

Sponsor: IIT Guwahati Technology Innovation and Development Foundation

Project Title: Development and Characterization of Thermo-Mechanically Treated Microalloyed 6061Al alloys to Enhance Performance of Underwater Ship Hull

Amount: 20 Lakhs, **Duration:** 2024-26 (*Ongoing*)

Role: P.I.

Sponsor: IIT Guwahati Technology Innovation and Development Foundation

Project Title: Design and Fabrication of Cost Effective Novel Vermicomposting Reactor: A Smart and Sustainable Approach to Facilitate Urban Development

- **Role:** P.I.
- **Duration:** 2018-19 (Completed)
- **Sponsor:** Research and Innovation Grant, Tezpur University

INTERNATIONAL JOURNAL PUBLICATIONS

1. **Bhadra, R.**, Pankaj, P., Biswas, P., & Dixit, U. S. (2019). Thermo-mechanical analysis of CO₂ laser butt welding on AISI 304 steel thin plates. *International Journal of Steel Structures*, 19, 14-27. (IF-1.4)
2. Pankaj, P., Tiwari, A., **Bhadra, R.**, & Biswas, P. (2019). Experimental investigation on CO₂ laser butt welding of AISI 304 stainless steel and mild steel thin sheets. *Optics & Laser Technology*, 119, 105633. (IF-4.6)
3. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. (2022). Flattening Cylindrical Contact Analysis of Single Walled Carbon Nanotube (SWCNT) Nanocomposite. *International Journal of Surface Engineering and Interdisciplinary Materials Science (IJSEIMS)*, 10(1), 1-22. (SCOPUS)
4. Gogoi, S., Banerjee, S., Kirtania, S., Kashyap, S., & **Bhadra, R.** (2022). Computational modelling of tensile flow parameters for 2219Al alloys microalloyed with Cd. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 1-10. (IF-2.1)
5. Banerjee, S., Gogoi, S., Rashid Siddiqui, H., Kirtania, S., Kashyap, S., & **Bhadra, R.** (2023). Development of Hall-Petch and Hollomon models for thermo-mechanically treated Al-Cu-Mg alloys with trace additions of Sn. *Advances in Materials and Processing Technologies*, 1-23. (IF-2.0)
6. Gogoi, S., Rashid Siddiqui, H., Banerjee, S., Kashyap, S., Kirtania, S., & **Bhadra, R.** (2023). Correlating fractography with mechanical properties of microalloyed 2219Al alloys under different thermo-mechanical conditions. *Advances in Materials and Processing Technologies*, 1-24. (IF-2.0)
7. Gogoi, S., Siddiqui, H. R., Banerjee, S., Kashyap, S., Kirtania, S., & **Bhadra, R.** (2023). Hall-Petch and Hollomon modeling for microalloyed 2219Al alloys under different thermo-mechanical treatments. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 1-15. (IF- 2.1)
8. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. (2023). Effect of CNT radius on flattening contact behaviour of CNT-Al nanocomposite: A numerical approach. *Reports in Mechanical Engineering*, 4(1), 121-130. (SCOPUS)
9. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. (2024). Finite element based indentation contact analysis of SWCNT nano-composite. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 238(4), 1125-1141.(IF-1.8)
10. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. (2024). Contact Analysis of CNT-FGM Nanocomposite Using Indentation Contact Model. *Procedia Structural Integrity*, 60, 149-164. (SCOPUS)

11. **Bhadra, R.**, Banerjee, S., Mondal, A. K., Kirtania, S., Kashyap, S., Gogoi, S., Mushahary & Roy, P. (2024). Numerical modeling of dynamic heat flow behaviour during friction stir welding of Al- Cu alloy. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 1-16. (IF-2.1)
12. **Bhadra, R.**, Banerjee, S., Mondal, A. K., Gogoi, S., Mushahary, S., & Roy, P. (2024). Processing, experimental characterization and thermal analysis for friction stir welded joint of 2219Al alloy. *Advances in Materials and Processing Technologies*, 1-26. (IF-2.0)
13. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. (2024). Loading-unloading contact analysis of functionally graded carbon nanotube reinforced composite (FG-CNTRC). *Physica Scripta*, 99(10), 105050.(IF-2.6)
14. Gogoi, S., Banerjee, S., **Bhadra, R.**, Mondal, A. K., & Roy, P. (2025). Structure-property correlation for friction stir welded joints of 2219Al alloys microalloyed with Cd. *Materials Chemistry and Physics*, 329, 130051..(IF-4.2)

INTERNATIONAL BOOK CHAPTERS

1. **Bhadra, R.**, Biswas, P., & Ravi Sankar, M. (2015). A literature review on CO 2 laser welding. In *Lasers Based Manufacturing: Springer, 2014*, pp. 381-398.
2. Banerjee, S., **Bhadra, R.**, Gogoi, S., and Dutta, R. S. Investigating Weldability in Microalloyed Al Alloys. In: **Advances in Mechanical Engineering, Lecture Notes in Mechanical Engineering (LNME)**. Editors: Biswal, B. B. et al. Springer, 2020, pp. 271.
3. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. Contact Analysis of Functionally Graded Carbon Nanotubes Reinforced Composite (FG-CNT). In: **Advances in Materials, Manufacturing and Design**. Editors: P.Sahoo et al. Springer, (Accepted)

INTERNATIONAL/NATIONAL CONFERENCES

1. **Bhadra, R.**, Biswas, P., & Sankar, M. R. . Effect of process parameters on thermal history of laser welding of AISI-304 stainless steel. In *5th International and 26th All India Manufacturing Technology, Design and Research Conference AIMTDR (2014)*. IIT Guwhati-2014
2. Samanta, S. Chakraborty, A. Das, S. **Bhadra, R.** Singh, S. & Mondal. A. Thermal and Structural Analyses of Pulse TIG Welded Butt, Tee and Lap Joints on Mild Steel Plates In: **International Conference on Advancements in Mechanical Engineering (ICAME-2020)**, Kolkata. 2020.
3. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P. Indentation Based Contact Simulation of CNT Based Nano-composite. In: **National Conference on Sustainable Development and Circular Economy in Civil Engineering (SDCE 2021)**, Kolkata 2021.
4. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P.. Effect of CNT radius on flattening contact behaviour of CNT-Al nanocomposite. In **1st International Conference On Mechanical Design and Manufacturing (ICMDM 2023)**, Howrah-2023.
5. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P.. Indentation-based Contact Analysis of CNT-FGM Nanocomposite. In: **The 3rd International Conference on Structural Integrity (ICONS 2023)**, Kalpakkam (Anupuram)-2023.
6. **Bhadra, R.**, Jana, T., Mitra, A., & Sahoo, P.. Unloading Analysis of Functionally Graded Carbon Nanotubes Reinforced Composite (FG-CNT), In: **2nd International Conference on Mechanical Engineering (ICOM-2024)**, Jadavpur-2024

SEMINARS/WORKSHOPS ATTENDED

1. Two days short term course on “**Advanced Machining and Finishing Process**” organized by Center for Education Technology and conducted by Mech. Engg. Dept., IIT Guwahati, during 15- 16 Dec., 2014.
2. Two days Induction Cum Orientations Programm on “**Professional Quality Education**” organized by International Quality Assurance Cell and conducted by IQAC, Tezpur University, during 20-21 April 2015.
3. One week short term course on “**Advances in Mechanical Engineering and Industries Application**” sponsored by AICTE-NEQIP and conducted by Dept. of Mech. Engg., Tezpur University, during 20-24 July 2015.
4. Two weeks ISTE STTP on “**Environmental Studies**” funded by MHRD and conducted by IIT Bomby, during 2-12 Jun 2015.
5. One week short term course on “**Modern Scenario in Welding technology**” sponsored by AICTE and conducted by Dept. of Mech. Engg., IIT Guwahati, during 16-20 March 2015.
6. One week short term course on “**Outcome Based Assessment**” conducted by NITTTR Kolkata, during 19-23 December 2016.
7. One week short term course on “**Recent Trends in Computational and Experimental Mechanics**” sponsored by AICTE-NEQIP and conducted by Dept. of Mech. Engg., Tezpur University, during 11-15 December 2017.
8. Two weeks FDP course on “**Foundation Program in ICT for Education**” funded by MHRD and conducted by IIT Bomby, during March 8-April 12, 2018.
9. Participation in one day seminar on “**Aeronautical System**” organized by ARP, AR&DB, DRDO HQ, New Delhi held at School of Engg., Tezpur University on 8th October 2018.
10. One week Short Term Training Programme through ICT Mode on “**Introduction to Welding Processes**” organised by this by NITTTR Kolkata from 21 to 25-September2020
11. Two weeks Short Term Training Programme through ICT Mode on “**ICT Tools for Teaching and Learning**” organised by NITTTR Kolkata from 05 to 16-October 2020.
12. Two Weeks Faculty Development Programme on “**Advanced Pedagogy**” organised by this NITTTR Kolkata from 3rd April to 14th April, 2023.
13. Two weeks Short Term Course on “**NEP orientation and Sensitization Programme**” under Malaviya Mission Teacher Training Programme (MM-TTP) of the University Grants Commission (UGC) organized by MMTTC, Tezpur University from 04to 13 December 2023.
14. One month “**Faculty Induction Program (FIP)**” under the aegis of PMMMNMTT Scheme of Ministry of Education, Government of India and organized by MMTTC, Tezpur University (Formerly TLC, Tezpur University) from 15 February to 15 March 2024.
15. Two Weeks Faculty Development Programme / Short Term Training Programme on *Refresher Course in “Advanced Manufacturing Technology”* organized by NITTTR Kolkata from 20th January to 31st January, 2025.