CURRICULUM VITAE

TANMOY MEDHI

HOUSE NO.12, TETELIA HILLSIDE,
P.O: GOTANAGAR, MALIGAON,
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Area of Research Interest:
Welding, Solid state additive manufacturing, Hybrid Additive Manufacturing, 3-D modelling/ Finite element modelling, Friction Stir Welding/ Processing, Microstructural and Mechanical Characterization, Machining, Bio-lubrication, Residual stress in manufacturing processes.

Software Proficiency:

- Comsol Multiphysics
- LS-Dyna
- CATIA
- NX-CAD
- Solidworks
- MS-Office

Academic Record:

Ph.D, Mechanical Engineering, NIT Agartala (2015-2019)
Concentrations: Friction stir welding, Dissimilar Materials, Microstructure, Mechanical Characterization, Material Science
Dissertation: Study of Material Flow, Microstructure and Mechanical Properties of Friction Stir Welded Dissimilar Al-Cu Joints
Supervisor: Dr. Subhash Chandra Saha (Professor) & Dr. Barnik Saha Roy (Assistant Professor); Mechanical Engineering Department, NIT Agartala

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M.Tech, Mechanical Engineering, NIT Agartala (2012-2014)
Percentage: 86.2%
Concentration: Friction Stir Welding, Thermo-mechanical modelling
Thesis: Thermo-mechanical modelling of friction stir welding process and study the effect of process parameters
Supervisor: Dr. Subhash Chandra Saha (Professor) & Dr. Barnik Saha Roy (Assistant Professor); Mechanical Engineering Department, NIT Agartala

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B.E (Mechanical Engineering), Visvesvaraya Technological University, Belgaum, Karnataka (2008-2012)
Percentage: 72.43%

HSSLC (+2), Science (Physics, Chemistry, Maths, Biology, English), K.V. Maligaon (CBSE), 2007

Percentage: 68.6%

HSLC, K.V. Maligaon (CBSE), 2005
Percentage: 81.8%

Experience:

Institution	Year (from-to)	Designation
Indian Institute of Technology, Guwahati	01/09/2020 -31/08/2022	Institute Post-Doctoral Fellow
Indian Institute of Technology, Guwahati	17/11/2022 – 16/11/2024	National Post-Doctoral Fellow
Indian Institute of Technology, Guwahati	06/12/2024- 10/07/2025	Post-Doctoral Fellow
Tezpur University	11/07/2025- till date	Assistant Professor, Mechanical Engineering

Publications:

1. Medhi, T., Hussain, S. A. I., Roy, B. S., & Saha, S. C. (2021). An intelligent multi-objective framework for optimizing friction-stir welding process parameters. Applied Soft Computing, 107190.
2. Medhi, T., Hussain, S. A. I., Roy, B. S., & Saha, S. C. (2020). Selection of best process parameters for friction stir welded dissimilar Al-Cu alloy: a novel MCDM amalgamated MORSM approach. Journal of the Brazilian Society of Mechanical Sciences and Engineering, 42(10), 1-22.
3. Medhi, T., Roy, B. S., & Saha, S. C. (2020). An experimental investigation on the influence of rotational speed on microstructure and mechanical properties of friction stir welded dissimilar Al-Cu joints. International Journal of Materials and Product Technology, 60(2-4), 236-259.
4. Kumar, S., Acharya, U., Sethi, D., Medhi, T., Roy, B. S., & Saha, S. C. (2020). Effect of traverse speed on microstructure and mechanical properties of friction-stir-welded third-generation Al–Li alloy. Journal of the Brazilian Society of Mechanical Sciences and Engineering, 42(8), 1-13.
5. Medhi, T., Yadava, M. K., Roy, B. S., & Saha, S. C. (2019). An experimental investigation on implications of traverse speed in joining of dissimilar Al–Cu by friction stir welding. The International Journal of Advanced Manufacturing Technology, 104(1-4), 1461-1471.
6. Medhi, T., Roy, B. S., & Saha, S. C. (2018). A comprehensive review of microstructure evolution during friction stir welding of aluminium to copper. International Journal of Materials and Product Technology, 57(1-3), 1-19.
7. Acharya, U., Medhi, T., Sethi, D., Choudhury, S., Banik, A., Saha, S. C., & Roy, B. S. (2021). A Study on the Implication of Modified Joint Configuration in Friction Stir Welding. Soldagem & Inspeção, 26.
8. Raut, N., Yakkundi, V., Sunnapwar, V., Medhi, T., & Jain, V. K. S. (2022). A specific analytical study of friction stir welded Ti-6Al-4V grade 5 alloy: Stir

zone microstructure and mechanical properties. Journal of Manufacturing Processes, 76, 611-623

9. Medhi, T., Das, A., Pankaj, P., Kapil, S., Biswas, P. (2022). Multi-pass friction stir lap welding of AA 6061-T6: implication of tool pin overlapping on microstructure and mechanical properties of joints. Soldagem & Inspeção. 27:e2708.
10. Pankaj, P., Tiwari, A., Dhara, L.N., Medhi, T., Biswas, P. (2022). Dissimilar Friction Stir Joining of Aluminum Alloy and Stainless Steel: A Study on the Intermetallic Compound Formation, Microstructure and Mechanical Properties of the Joints. Journal of Testing and Evolution- ASTM International (Accepted).
11. Das, A., Medhi, T., Kapil, S., & Biswas, P. (2023). Multi-track multi-layer friction stir additive manufacturing of AA6061-T6 alloy. Progress in Additive Manufacturing, 1-21.
12. Das, A., Medhi, T., Kapil, S., & Biswas, P. (2023). Different build strategies and computer-aided process planning for fabricating a functional component through hybrid-friction stir additive manufacturing. International Journal of Computer Integrated Manufacturing, 1-22.
13. Srivyas, Pranav Dev, M. S. Charoo, M. F. Wani, Rakesh Sehgal, Ankush Raina, Mir Irfan Ul Haq, Chandra Shekhar, Tanmoy Medhi, and Soundhar Arumugam (2022). Impact of surface texturing on the tribological behaviour of aluminium-silicon (Al-Si/Al2O3) advanced composite under dry and lubricating conditions. Surface Topography: Metrology and Properties, 10(3), 035043.
14. Pankaj, P., Tiwari, A., Medhi, T., Biswas, P. (2022). Multi-Species Transport CFD Simulation and Experimental Verification for Material Flow Properties in Dissimilar Friction Stir Welding, Materials Today Communications, 33, 104959
15. Srivyas, P. D., Gupta, A., Medhi, T., Arumugam, S., Kumar, D., & Mohan, S. (2023). Corrosion and Tribo-Investigations on Alumina–Graphene-Doped Hybrid Aluminium Composites. Transactions of the Indian Institute of Metals, 1-11.
16. Srivyas, P. D., Medhi, T., Bhat, S., & Charoo, M. S. (2023). Tribological behavior of rice bran and sesame greases using h-BN and CuO nanoparticles. Biomass Conversion and Biorefinery, 1-19.
17. Verma, P., Charoo, M. S., Dev Srivyas, P., & Medhi, T. (2023). Enhanced extreme pressure and tribological performance of hybrid nano lubricant. Tribology-Materials, Surfaces & Interfaces, 1-14.
18. Bhattacharjee, R., Medhi, T., & Biswas, P. (2023). Numerical Modeling for Prediction of Surface Morphology and Volumetric Defect Using Coupled Eulerian–Lagrangian Approach during Friction Stir Welding of Marine Grade Aluminum Alloy. Journal of Materials Engineering and Performance, 1-18.
19. Pankaj, P., Medhi, T., Dhara, L. N., Tiwari, A., & Biswas, P. (2023). A route for properties enhancement by utilizing external auxiliary energy systems for FSW of aluminum-steel. CIRP Journal of Manufacturing Science and Technology, 46, 204-229.
20. Medhi, T., Acharya, U., Choudhury, S., Das, P. K., Akinlabi, E., & Roy, B. S. (2025). Prediction of coefficient of friction in friction stir welding and its

implementation in a thermo-mechanical model. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, 09544089251338944.

21. Bhattacharjee, R., Yadav, P. C., Medhi, T., & Biswas, P. (2025). Microstructural, Mechanical and Residual Stress Behaviour of Dissimilar Induction-Assisted Friction Stir Welded Inconel 718-AISI SS321 Joints. Metals and Materials International, 1-22.
22. Das, R., Choudhury, S., Sethi, D., Medhi, T., & Roy, B. S. (2024). Enhanced corrosion resistance and mechanical behavior in AA2024-T3 alloy composite via friction stir processing with Zn incorporation. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, 09544089241276351.
23. Bhattacharjee, R., Yadav, P. C., Hammad, A., Karmakar, N., Medhi, T., & Biswas, P. (2025). Thermomechanical analysis of induction-assisted friction stir welded Inconel 718 and SS321 by 3D-CEL approach. International Journal of Modelling and Simulation, 1-43.
24. Choudhury, S., Thirugnanasambandam, A., Payak, V., Medhi, T., & Roy, B. S. (2025). Fabrication of three-layered aluminium-copper laminated composites using friction stir additive manufacturing. Physica Scripta, 100(2), 025011.

Conference publications:

1. Choudhury, S., Medhi, T., Sethi, D., Kumar, S., Roy, B. S., & Saha, S. C. (2020). Temperature distribution and residual stress in Friction Stir Welding process. Materials Today: Proceedings, 26, 2296-2301.
2. Sethi, D., Acharya, U., Medhi, T., Shekhar, S., & Roy, B. S. (2020). Microstructural and mechanical property of friction stir welded Al7075/TiB2 aluminium matrix composite. Materials Today: Proceedings.
3. Kumar, D., Ottarackal, D. J., Acharya, U., Medhi, T., Roy, B. S., & Saha, S. C. (2020). A parametric study of friction stir welded AA6061/SiC AMC and its effect on microstructure and mechanical properties. Materials Today: Proceedings.
4. Choudhury, T., Ghorai, A., Medhi, T., Acharya, U., Roy, B. S., & Saha, S. C. (2020). Study of microstructure and mechanical properties in friction stir welded aluminum copper lap joint. Materials Today: Proceedings.
5. Kumar, U., Prajapati, A., Acharya, U., Medhi, T., Roy, B. S., & Saha, S. C. (2020). Welding condition & microstructure of friction stir welded AA 6061-T6 and AZ31B. Materials Today: Proceedings.
6. Medhi, T., Roy, B. S., Debbarma, S., & Saha, S. C. (2015). Thermal modelling and effect of process parameters in friction stir welding. Materials Today: Proceedings, 2(4-5), 3178-3187.

7. Roy, B. S., Medhi, T., & Saha, S. C. (2015). Material flow modeling in friction stir welding of AA6061-T6 alloy and study of the effect of process parameters. World Academy of Science, Engineering and Technology, International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering, 9(6), 658-666.

Conference papers:

1. Sinha. K., Medhi. T., Saha Roy.B., Saha.S.C., "Experimental study of surface strain during friction stir welding", "10th International Conference on Trends in Welding Research & 9th International Welding Symposium of Japan Welding Society (JWS)", 2016, Tokyo, Japan.
2. Tanmoy Medhi, Patel Ashwin R, Barnik Saha Roy and S. C. Saha, "Experimental Evaluation and Numerical Analysis of Temperature Distribution during Friction Stir Welding'. National Conference on Advances in Research and Innovations in Mechanical Engineering, Material Science, Industrial Engineering and Management, NIT Manipur, 2016, pp-63-67. ISBN 978-93-86176-46-2.
3. Krishnapada Sinha, Tanmoy Medhi, Barnik Saha Roy, Subhash Chandra Saha. On the Issues of Surface Strain in Friction Stir Welding of AA6061-T6. Proceedings of International Conference on Recent Innovations in Production Engineering (RIPE) MIT, Anna University, Chennai, 24-25 March 2017. ISBN: 978-93-86256-65-2.
4. Rituraj Bhattacharjee, Susmita Datta, Tanmoy Medhi, Pankaj Biswas. 'Defect Prediction, Surface Morphology and Residual Stress Analysis of Friction Stir Welded Marine Grade AA5083'. 4th International Conference on 'Smart & Green Technology for Shipping including Offshore Decommissioning' 24-25 APRIL 2023, Surrey, UK.
5. Tanmoy Medhi, Pranav Dev Srivyas, Pankaj Biswas. 'Consequences of addition of nanoparticles on tribological behaviour of coconut oil grease'. 9th International & 30th All India Manufacturing Technology, Design and Research Conference (AIMTDR), IIT BHU, December 8-10, 2023.

Books:

1. Pankaj Biswas, Tanmoy Medhi 'Weld Induced Residual Stresses and Distortions: Principles, and Practice' (Reference Book) CRC Press. (Under preparation).
2. Zulfiqar Khan, M. S. Charoo, Pranav Dev Srivyas, Tanmoy Medhi. 'Bio Lubrication for Sustainable Tribology' (Edited book) CRC Press (Under Review).

Book chapters:

1. Tanmoy Medhi, Barnik Saha Roy and S. C. Saha "Thermomechanical Modelling of Friction Stir Welding" Scholar's Press (2017), ISBN-978-620-2-30303-3.
2. Kumar, S., Medhi, T., & Roy, B. S. (2019). Friction Stir Welding of Thermoplastic Composites. In Advances in Industrial and Production Engineering. Springer.
3. Srivyas, P. D., Charoo, M. S., Arumugam, S., & Medhi, T. (2023). Synergism of the hybrid lubricants to enhanced tribological performance. In Nanomaterials for Sustainable Tribology (pp. 75-85). CRC Press.
4. Srivyas, P. D., Charoo, M. S., Arumugam, S., & Medhi, T. (2023). Tribological performance of RGO and Al_2O_3 nanodispersions in synthetic lubricant. In Nanomaterials for Sustainable Tribology (pp. 65-74). CRC Press.
5. **R**ituraj Bhattacharjee, Susmita Datta, Tanmoy Medhi And Pankaj Biswas (2023). 'Friction Stir Welding and its Advancement'. Sustainable Smart Manufacturing Processes in Industry 4.0 (9781003436072). (Accepted)

Sponsored/Consultancy Projects:

#	Project title	Sponsoring agency	Period	Amount (INR)	Status	Role
1	Development of a hybrid biolubricant using novel MXene/GO nanocomposite as additive, for industrial applications in food processing and healthcare sectors	SERB, India	11/2022 to 10/2024	21.31 Lakhs	Completed	Principal Investigator
2	Design and development of friction stir-based sheet lamination additive manufacturing setup for utilization in defense and aerospace sectors	DST	_	57 Lakh	Under review	Co-Principal Investigator
3	Technical Evaluation of the Queries on Cement	Shree Cement Limited	08/2024 to 09/2024	1.40 Lakh	Completed	Co-Principal Investigator

	and Clinker Manufacturing Units (Consultancy)					

Course Coordinator:

- Short term course on Welding Induced Residual Stresses & Distortion Prediction and its Mitigation for participants from Naval Materials Research Laboratory.
- Convenor of One day Workshop on "Developments in Cross Country Pipelines and Underwater Welding", 19th April 2025, IIT Guwahati

Patent:

- 202331038238A, 06.06.2023, Compressed Air Tool Cooling and Induction Heating-Assisted FSW of High Melting-Point Alloys using Low-Cost WC-tool (Filed).

Academic Editor of Journal:

- Journal of Engineering, Hindawi (Scopus)
- Scientific Reports, Nature Portfolio (Scopus)

Reviewer of Journal:

- Engineering Research Express, IOP Science
- Journal of Adhesion Science and Technology, Taylor and Francis
- Transactions of Nonferrous Metals Society of China, Elsevier
- Journal of Optimization, Hindawi
- Advances in Materials Science and Engineering, Hindawi
- Materials Today Communications, Elsevier
- Journal of the Chinese Institute of Engineers, Taylor and Francis
- Materials Research Express, IOP Science
- Advances in Materials and Processing Technologies, Taylor and Francis
- Reviews on Advanced Materials Science, De Gruyter
- International Journal of Modelling and Simulation, Taylor and Francis
- Part B: Journal of Engineering Manufacture, SAGE
- Materials Science and Technology, Taylor and Francis
- Journal of Cleaner Production, Elsevier

Professional Membership:

- Institute of Engineers India (IEI)
- Indian Welding Society (IWS)

Workshops/Training attended:

- Undergoing PG course on Hybrid Electric Vehicle Design and Analysis.
- FDP on "Additive Manufacturing: From 3D Printing to the Factory Floor" under AICTE Training and Learning (ATAL) Academy, NIT Srinagar, 2021.
- Workshop on Scanning Electron Microscopy: Technique and its Applications, Organized by North East Centre for Biological Sciences and Healthcare Engineering (NECBH) Indian Institute of Technology Guwahati, Assam, 2021
- GIAN course on Microstructural Evolution during Friction Stir Processing in IIT Gandhinagar.
- Workshop on "Value Analysis- An Ethical Vision on Engineering Prospects", NIT Agartala.
- Workshop on "Computational Techniques in Heating and Cooling Systems", NIT Agartala.
- Short term training program on "Recent Advances in Material Science and Engineering", NIT Agartala.
- Workshop on Contemporary and Future perspective of Physics applicable to Science and Technology: Challenges and opportunities, NIT Agartala.
- Workshop on Product Design and Development, NIT Agartala.
- Short term course on Electron Microscopy and microanalysis of materials (EMMM-2016), IIT Kanpur.
- Workshop on Recent Advances in Welding Process, NIT Agartala.
- 30^{th} Indian Engineering Congress, Institute of Engineers (Assam State Centre).
- 30^{th} National Convention of Production engineers and National Seminar on Sustainable Manufacturing, NIT Agartala.
- Training in the area of Robotics and Machine Interface by Evobi Creations Simplified.

Achievements:

- Gold medalist in M.Tech.
- National Post-Doctoral Fellowship, ANRF

Skills:

- Good leadership skill
- Adaptive and Social
- Good managing skill
- Problem solving ability
- Computational proficiency
- Research skill
- Writing and editing
- Product design
- Project management

Date of Birth: 22 April, 1989

Marital status: Married

Religion: Hinduism

Nationality: Indian

Caste: General

Father's Name: Mukul Chandra Medhi

Mother's Name: Barnali Medhi

Spouse's Name: Meenakshi Medhi

Languages known: English, Hindi, Assamese, Bengali

I hereby declare that above information is true to my knowledge. 

(TANMOY MEDHI)