



# Jorhat Institute of Science and Technology

যোৰহাট বিজ্ঞান আৰু প্ৰযুক্তি বিদ্যা প্ৰতিষ্ঠান  
जोरहाट विज्ञान और प्रौद्योगिकी संस्थान

Department of Mechanical Engineering



## Dr. Borad M Barkachary Associate Professor

### Contact Details:

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### Educational Qualifications

- **Ph. D.** (Manufacturing), Indian Institute of Technology Guwahati (2019)
- **M. Tech.** (Computer Integrated Manufacturing), National Institute of Technology Warangal (2010)
- **B.E.** (Mechanical Engineering), Jorhat Engineering College (2008)

### Other Qualifications/Awards

- Qualified Graduate Aptitude Test in Engineering (GATE-2008).
- **Best Paper Award** in 2020 for the paper entitled "Surface Defects Incorporated Diamond Machining of Silicon" in the Journal International Journal of Extreme Manufacturing, IOP Publishing
- Recognition for serving as **Outstanding Reviewer** 2023 by Nanotechnology and Precision Engineering, AIP Publishing
- **Best Paper Award** in 2025 for the paper entitled "Deciphering the Ductile-to-Brittle Transition in Silicon via Cutting Force Analysis" in Best Paper at the 2nd International Conference on Data Driven AI (ICDDA 2025) organized by The Assam Kaziranga University, Assam

### Research Interests

- Manufacturing
- Ultra-Precision machining
- Ductile regime machining
- Finite element Method
- Optimization of machining processes
- Additive Manufacturing

### Member of Professional Bodies

- The Indian Society for Technical Education, Life Member (LM 131864), 2021.
- The Institution of Engineers (India), Life Member (M-1712076), 2021.
- International Society for Nanaomanufacturig, Regular Member (R202208), 2022.
- AI-ML Innovative Entrepreneurs, and Engineers Association (AMIEE Association), Lifetime Member (AMI/25/02675), 2026.

### Teaching Experience

(1) Associate Professor, (December 2024 - continuing), Department of Mechanical Engineering, Jorhat Institute of Science & Technology, Jorhat, Assam, India.

(2) Assistant Professor, (January 2014 - December 2024), Department of Mechanical Engineering, Jorhat Institute of Science & Technology, Jorhat, Assam, India.

(3) Assistant Professor (on deputation), (August 2014 - June, 2017), Department of Mechanical Engineering, Jorhat Engineering College, Jorhat, Assam, India.

(4) Teaching Assistant, (January. 2011 - December 2013), Indian Institute of Technology Guwahati, India.

## Courses Taught

- Engineering Mechanics
- Thermal Science
- Engineering Graphics,
- Mechanical Drawing/ Machine and Assembly Drawing
- Manufacturing Science/Primary Manufacturing
- Mechanics of Materials
- Advanced Manufacturing-I and II
- Engineering Inspection and Metrology
- Mechanical Measurements and Instrumentation
- Finite Element Method (Elective)
- Mechatronics (Program Elective)
- Robotics and Application (Program Elective)
- Machining and Machine Tools (Open Elective)

## List of Publications (Books/Book Chapters)

- (2) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Ultra-Precise Single-Point Diamond Turning Process and Its Low-Cost Alternative Methods". In: Joshi, S.N., Dixit, U.S., Mittal, R.K., Bag, S. (eds) Low Cost Manufacturing Technologies. NERC 2022. Springer, Singapore. pp 93–116, (2023) [https://doi.org/10.1007/978-981-19-8452-5\\_8](https://doi.org/10.1007/978-981-19-8452-5_8)
- (1) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Numerical Simulation and Experimental Validation of Nanoindentation of Silicon Using Finite Element Method". In: Narayanan R., Joshi S., Dixit U. (eds) Advances in Computational Methods in Manufacturing. Lecture Notes on Multidisciplinary Industrial Engineering. Springer, Singapore, pp. 861-875.(2019). [https://doi.org/10.1007/978-981-32-9072-3\\_72](https://doi.org/10.1007/978-981-32-9072-3_72) [Cited by 4]

## List of Publications (Research Papers in refereed journals)

- (4) Neha Khatri, **Borad M. Barkachary**, Sachin Singh, K Manjunath, Nitish Chandra, Joe Armstrong, Anupam Agrawal, Saurav Goel, "Diamond machining of additively manufactured Ti6Al4V ELI: Newer mode of material removal challenging the current simulation tools", Journal of Manufacturing Processes 120, pp. 378–390, (2024) [Cited by 5]
- (3) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Numerical computation and analysis of cutting forces during nanometric scratching of silicon carbide", Journal of Institution of Engineers (India) Series C, pp. 1-10, (2021) [Cited by 2]
- (2) Neha Khatri, **Borad M Barkachary**, B Muneeswaran, Rajab Al-Sayegh, Xichun Luo and Saurav Goel, "Surface defects incorporated diamond machining of silicon", *International Journal of Extreme Manufacturing*, Vol. 2 (4), pp. 045102 (1-17). (2020) [Best Paper Award 2020] [Cited by 30]
- (1) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Integrated finite element method (FEM) and response surface methodology (RSM) based modeling and simulation of single point diamond turning (SPDT) of silicon", *International Journal of Machining and Machinability of Materials*, 17 (3/4). pp. 330-354. 2015. [Cited by 2]

## List of Publications (Research Papers in non-refereed Journals / Conferences)

- (12) Deepak Kumar Yaduvanshi, Ganesh Chouhan, Irfan Khan, Rupesh Chalisgaonkar, Swati Mishra and **Borad M Barkachary**, "Impact of Plasma Arc Preheating on Forces and Torque Reduction in Friction Stir Welding of Dissimilar Cu-Al Joint", *10th International & 31st All India Manufacturing Technology, Design, and Research Conference (AIMTDR 2025)*, IIT Indore, INDIA, 11th-13th December 2025.
- (11) Utpal Sen, Mandeep Pathak and **Borad M Barkachary**, "Optimization of 3D printed parts using different infill patterns and densities by FDM method", *International Conference on Mechanical and Industrial Technologies (ICMIT 2025)*, Muzaffarpur Institute of Technology, Muzaffarpur, Bihar, INDIA, 24th-25th May 2025.
- (10) Jigyasa Sharma, Mayuri Rajkonwar, Nabadeep Gogoi and **Borad M Barkachary**, "Design and Simulation of Additively Manufactured Implants: Preliminary Study on Hip Prosthesis", *2nd International Conference on Data Driven AI (ICDDA 2025)*, The Assam Kaziranga University, Jorhat, Assam, INDIA, 07th-09th May 2025.
- (9) **Borad M Barkachary**, "Deciphering the Ductile-to-Brittle Transition in Silicon Via Cutting Force Analysis", *2nd International Conference on Data Driven AI (ICDDA 2025)*, The Assam Kaziranga University, Jorhat, Assam, INDIA, 07th-09th May 2025.
- (8) Advith K Sridhar, Gururaj Bolar and **Borad M Barkachary**, "Hole making in CARALL Fibre Metal Laminates: A Study", *International Conference on Experimental and Computational Methods in Manufacturing (ICECMM-2021)*, North Eastern Regional Institute of Science and Technology, Arunachal Pradesh, INDIA, 28th-29th September 2021.
- (7) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Ultra-precision mechanical processing of biomaterials using single point diamond turning", *International Conference on Advancements and Futuristic Trends in Mechanical and Materials Engineering (AFTMME-2019)*, IIT Ropar, INDIA, 5th-7th December 2019.
- (6) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Numerical Simulation and Experimental Validation of Nanoindentation of Silicon using Finite Element Method", *2nd International Conference on Computational Methods in Manufacturing (ICMCM 2019)*, IIT Guwahati, Assam, INDIA, 8th-9th March 2019.
- (5) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Numerical modeling and simulation of plunge cutting of silicon using finite element method", *International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME)*, NIT Meghalaya, Shillong, INDIA, 8th-10th Nov, 2018.
- (4) **Borad M Barkachary**, Saurav Goel and Srikrishna Nandkishor Joshi, "Finite element modeling and simulation of spherical tip nano-indentation of nanocrystalline silicon carbide", *MATADOR*, Manchester, UK, 5th-7th July 2017.
- (3) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Comparison of Johnson-Cook and Drucker-Prager material models during finite element simulation of single point diamond turning (SPDT) of silicon carbide", *9th International conference on micro-manufacturing (ICoMM)* held at Nanyang Technological Institute, Singapore, March 25-28, 2014.
- (2) **Borad M Barkachary** and Srikrishna Nandkishor Joshi, "Finite element simulation of single point diamond turning (SPDT) of silicon", *In: Proceedings of the 8th International Conference COPEIN*, 2013, NIT Calicut, December 13-15, 2013, pp. 1022-1026.
- (1) Arun Tom Mathew, **Borad M Barkachary**, Chinta Swamy Prakash Rao and N Selvaraj, "Application of Data Mining in Assembly Planning", *3rd International & 24th All India Manufacturing Technology, Design and Research (AIMTDR)*, A.U College of Engineering, Andhra University, Visakhapatnam, India, December, 2010.

## List of Publications: National conference

- (2) **Borad M Barkachary**, and Srikrishna N. Joshi, "Ultra-Precise Single Point Diamond Turning Process and Its Low-Cost Alternative Method", *North-Est Research Conclave (NERC) 2022*, IIT Guwahati, Assam, May 2022.

- (1) Arun Tom Mathew, **Borad M Barkachary**, N. Selvaraj, Chinta Swamy Prakash Rao, Integrating Part and Assembly Modeling to Generate Assembly Sequence, *National Conference on Recent Advances in Manufacturing Technologies (RAMT)*, Orissa, January 2010.

### List of Presentations (Invited Talks/Lectures)

- (3) **Borad M Barkachary**, "Robotics: Application, Future and Consequences to Human Society", one Day Seminar organized by the Department of Mechanical Engineering, North Tripura District Polytechnic Dharmanagar, Tripura on 14th June, 2022.
- (2) **Borad M Barkachary**, "Robotics and its role in the Agricultural Sector" at the Talk on "Robotics and Automation" organized by College of Agriculture, CAU, Imphal under IDP-NAHEP, on 17th August, 2020.
- (1) **Borad M Barkachary**, "Numerical and Experimental Study of Single Point Diamond Turning Process" in 5th DTM Workshop on "Diamond Turn Machining and related technologies" held at Indian Institute of Technology Madras, Madras during 10th-11th November, 2017.

### Research Projects

- (2) PI: Dr. Deva Kanta Rabha, Associate Professor, JEC, CO-PI: **Borad M Barkachary**, *Development and testing of a passive dryer with Biomass Burner* (2019-2022) INR 2.80 Lacs, Funded by Assam Science and Technology University (ASTU) under TEQIP-III Programme of MHRD, New Delhi.
- (1) PI: **Borad M Barkachary**, Co-PI: Dr. Shrikrishna N. Joshi, Professor, IIT Guwahati, *Numerical modelling and Experimental study of nanoindentation of silicon and silicon carbide* (2019-2022) INR 2.55 Lacs, Funded by Assam Science and Technology University (ASTU) under TEQIP-III Programme of MHRD, New Delhi.

### Students Guided

- **PhD Students:**
  - NIL
- **M-Tech Students:**
  - NIL
- **B. E. Students:**
  - 85 Students (20 UG Groups)