

CV of Arnab Das

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Current Position

Assistant Professor at Swami Vivekananda University, Barrackpore, Kolkata (Date of joining: 01/03/2024). I have completed my Ph.D. in Mechanical Engineering at Indian Institute of Technology (ISM) Dhanbad under the guidance of Prof. Vivek Bajpai.

Education

Ph.D.	Mechanical Engineering Indian Institute of Technology (ISM) Dhanbad Supervisor: Prof. Vivek Bajpai Thesis title: Development of high-speed micromachining center and its performance evaluation in micro and diamond turning.	<i>Status: Completed in 2023</i>
M.Tech	Mechanical Engineering (Spl. Manufacturing Engineering) Indian Institute of Technology (ISM) Dhanbad Supervisor: Prof. Vivek Bajpai Thesis title: Development of vibration-free machine structure for high-speed micro milling center. Result: First class with distinction (CGPA 9.13)	<i>June, 2018</i>
B.Tech	Mechanical Engineering Govt. College of Engineering & Textile Technology, Berhampore, West Bengal Project title: Refrigeration with the help of Peltier effect Result: First class (CGPA 8.95)	<i>July, 2016</i>
12th	Sree Ramkrishna Sikshalaya, Howrah, West Bengal Result: First division (Percentage 87.2%)	<i>June, 2012</i>
10th	Sree Ramkrishna Sikshalaya, Howrah, West Bengal Result: First division (Percentage 84.75%)	<i>May, 2010</i>

Research Experience

1. Development of dynamically stable high speed micromachining centers (semi and ultra) those are able to machine complex micro components even of difficult-to-machine materials.
2. Introducing high speed micro turning to improve the productivity of cylindrical micro components.
3. Cutting force reduction using micro-structured cutting tools and MQL in turning operation
4. Development of a cost-effective diamond turning technology using ceramic bearing spindle able to generate nano finished surfaces.

Teaching Experience

1. **Assistant Professor at Swami Vivekananda University, Barrackpore, Kolkata** (March 2024 – Present)
2. **Assistant Professor at Camellia Institute of Technology, Madhyamgram** (July 2023 – February 2024)
3. **Teaching Assistantship during M.Tech.** in Mechanical Department, IIT(ISM) Dhanbad (July 2017 – April 2018).
Subject: Manufacturing Process Lab
4. **Teaching assistantship during Ph.D.** in IIT (ISM) Dhanbad (July 2019 – February 2023)
Subjects:

Theory	Practical
Theory of Metal Forming (MCC 52108)	Manufacturing Process Lab
Micromanufacturing (MED558),	CNC Programming Lab
Advances in Machining (MEC514)	Production Technology Lab

Research Interests:

Current Research areas:

1. Micro turning
2. Ultraprecision diamond turning
3. High speed micromachining
4. Metal cutting
5. Machine tool dynamics
6. Finite element modeling (FEM)

Additional Interests:

1. Unconventional machining
2. Additive manufacturing

Article Publications:

1. **Arnab Das**, Vivek Bajpai, “Turning insert with lubricating passage along the normal plane for minimization of friction, cutting force and tool wear”, **Journal of Manufacturing Processes** (2023) vol 101, pp 141-155, 2023. <https://doi.org/10.1016/j.jmapro.2023.05.066> (Impact factor: 5.684, **SCI Indexed**)
2. **Arnab Das**, Vivek Bajpai, “Machinability analysis of lead free brass in high speed micro turning using minimum quantity lubrication”, **CIRP Journal of Manufacturing Science and Technology** (2023) vol 41, pp 180-195, 2023. <https://doi.org/10.1016/j.cirpj.2022.11.023> (Impact factor: 3.56, **SCI Indexed**)
3. **Arnab Das**, Abisoor Rishi Sharan Mundu, Vivek Bajpai, “Enhancing tribological performance of lead free brass in high speed micro turning via hybrid cryogenic cooling technique”, **Tribology International** (2022) vol 179, 108090, 2022. <https://doi.org/10.1016/j.triboint.2022.108090> (Impact factor: 5.62, **SCI Indexed**)
4. **Arnab Das**, Shashank Shukla, Mohan Kumar, Chitransh Singh, Madan Lal Chandravanshi, Vivek Bajpai, “Development of a vibration free machine structure for high-speed micro-milling center”, **The International Journal of Advanced Manufacturing Technology**, vol 116, 2021, pp 3489-3506. <https://doi.org/10.1007/s00170-021-07533-1> (Impact factor: 3.563, **SCI Indexed**)
5. Chitransh Singh, **Arnab Das**, Vivek Bajpai, and Madan Lal Chandravanshi, “Effects of process parameters on tool vibration and force transmissibility in high-speed micro-milling machine”,

Journal of the Brazilian Society of Mechanical Sciences and Engineering (2023) vol 45: 343, pp 1-14, 2023. <https://doi.org/10.1007/s40430-023-04266-y> (Impact factor: 2.361, **SCI Indexed**)

6. **Arnab Das**, Shri Narayan Agnihotri, Vivek Bajpai, “Compensation for Merchant’s Circle Diagram to predict cutting force in orthogonal micro turning”, **Journal of Micromanufacturing**, (Special issue on WCMNM 2021) vol 6(2), pp 101-111, 2023. <https://doi.org/10.1177/25165984231171896> (**SCOPUS Indexed**)
7. **Arnab Das**, Abisoor Rishi Sharan Mundu, and Vivek Bajpai, “Prediction of friction angle and cutting force considering sticking friction in machining process”, **Sadhana**, vol 48, 261, 2023. <https://doi.org/10.1007/s12046-023-02312-y> (Impact factor: 1.6, **SCI Indexed**)

Communicated Articles:

1. **Arnab Das**, Chitransh Singh, Vivek Bajpai, and Madan Lal Chandravanshi, “Feasibility of cost-effective ultra-precision diamond turning using ceramic bearing spindle”, **The International Journal of Advanced Manufacturing Technology** (2023) (Impact factor: 3.563, **SCI Indexed**) (**Status: Under Review**)
2. **Arnab Das**, and Vivek Bajpai, “Improvement in tool wear behavior and tool life in high-speed micro turning using hybrid cryogenic cooling technique”, **Materials Today: Proceedings** (2023) (**SCOPUS Indexed**) (**Status: Under Review**)

Patent Publications:

1. **Arnab Das**, Vivek Bajpai, “A laser welding set up with dual focal lens for laser welding of dissimilar materials”, **Indian Patent**, Application no **202331006063 A**, The Patent Office Journal No. 06/2023 Dated 10/02/2023, pp 9969. (Published)
2. Vivek Bajpai, **Arnab Das**, Ravi Shankar Rai, Shashank Shukla, Ankit Jain, “A structure of EDM head for a portable type maglev EDM”, **Indian Patent**, Application no **202231044867 A**, The Patent Office Journal No. 32/2022 Dated 12/08/2022, pp 50706. (**Granted on 29/02/2024, Patent No. 517111**)
3. Vivek Bajpai, **Arnab Das**, “Turning insert with lubricating passage along the normal plane for minimization of friction and cutting force”, **Indian Patent**, Application no. **202231032536 A**, The Patent office journal no. 27/2022 Dated 08/07/2022., pp 43175. (**Granted on 15/03/2024, Patent No. 527740**)
4. Vivek Bajpai, **Arnab Das**, Shashank Shukla, Chitransh Singh, Mohan Kumar, Madan Lal Chandravanshi, “A machine structure to reduce vibration of micro-milling machine”, **Indian Patent**, Application no **201931049978 A**, The Patent Office Journal No. 30/2020 Dated 24/07/2020, pp 27773. (**Granted on 28/12/2023, Patent No. 491196**)

International Conferences:

1. **Arnab Das**, Chitransh Singh, Kunal Dey, Amit Rakshit, Tool wear monitoring by acoustic signals and its influence on cutting forces, in the Proceedings of **2nd International Conference on Mechanical Engineering (INCOM 2024)**, Jadavpur University, Kolkata, India, 5-6 January 2024.
2. **Arnab Das**, Ravi Shankar Rai, Vivek Bajpai, Surface topographical characterization of ZnO nanostructured CFRP composite in high speed micro drilling, in the Proceedings of **9th International & 30th All India Manufacturing Technology, Design & Research Conference (AIMTDR 2023)**, Indian Institute of Technology (BHU) Varanasi, India, 8-10 December 2023.

3. Prince Anand, **Arnab Das**, Vivek Bajpai, Machinability of Ti6Al4V in High Speed Micro Turning Under Dry Condition, in the Proceedings of **29th International Conference on Processing and Fabrication of Advanced Materials (PFAM 2023)**, Indian Institute of Technology Tirupati, India, 6-8 September 2023.
4. **Arnab Das**, Vivek Bajpai, Improvement in tool wear behavior and tool life in high speed micro turning using hybrid cryogenic cooling technique, in the Proceedings of **International Conference on Frontiers in Materials Engineering (ICFME-2022)**, Indian Institute of Technology Indore, India, 14-16 December 2022.
5. Abisoor Rishi Sharan Mundu, **Arnab Das**, Vivek Bajpai, Prediction of exit burr formation in orthogonal micromachining via FE-modeling, in the Proceedings of **2nd International & 14th National conference "Industrial Problems on Machines and Mechanisms" (IPRoMM 2022)**, Indian Institute of Technology (ISM), Dhanbad, India, 22-23 December 2022. (SCOPUS Indexed)
6. Manish Murlidhar Sawlani, Sourav Choudhury, Manish Kant, **Arnab Das***, Chitransh Singh, Vivek Bajpai, Madan Lal Chandravanshi, The tool wear monitoring technology using acoustic signal, in the Proceedings of **International Conference on Precision, Micro, Meso and Nano Engineering (COPEN 12)**, Indian Institute of Technology Kanpur, India, 8-10 December 2022.
7. **Arnab Das**, Vivek Bajpai, Feasibility of orthogonal micro turning incorporating high speed machining using minimum quantity lubrication, in the Proceedings of **World Congress on Micro and Nano Manufacturing (WCMNM 2022)**, Campus Gasthuisberg, KU Leuven, Belgium, 19-22 September 2022. Doi: [10.3850/978-981-18-5180-3_RP18-0018](https://doi.org/10.3850/978-981-18-5180-3_RP18-0018)
8. **Arnab Das**, Vivek Bajpai, Development of an ultra-high speed micro-milling center: An FEM approach, in the Proceedings of **2nd International Conference on Industry 4.0 and Advanced Manufacturing (I-4AM 2022)**, Indian Institute of Science (IISc), Bengaluru, India, 10-11 January 2022. Doi: http://dx.doi.org/10.1007/978-981-19-0561-2_24 (SCOPUS Indexed)
9. **Arnab Das**, Shri Narayan Agnihotri, Vivek Bajpai, Compensation for Merchant's Circle Diagram to predict cutting force in orthogonal micro turning, in the Proceedings of **World Congress On Micro & Nano Manufacturing 2021 (WCMNM 2021)**, IIT Bombay, Mumbai, India, 20-23 September 2021.
10. **Arnab Das**, Vivek Bajpai, Analysis and prediction of surface roughness on lead free brass in high speed micro turning, in the Proceedings of **World Congress On Micro & Nano Manufacturing 2021 (WCMNM 2021)**, IIT Bombay, Mumbai, India, 20-23 September 2021.
11. **Arnab Das**, Deepak Kumar, Mohan Kumar, Vivek Bajpai, Experimental Investigation of Electrochemical Micro Turning of Ti6Al4V With NaOH Solution, in the Proceedings of the **ASME 2020 15th International Manufacturing Science and Engineering Conference (MSEC 2020)**. Volume 2: Manufacturing Processes; Manufacturing Systems; Nano/Micro/Meso Manufacturing; Quality and Reliability. Virtual, Online. September 3, 2020. V002T08A007. ASME. (SCOPUS Indexed) <https://doi.org/10.1115/MSEC2020-8275>
12. **Arnab Das**, Vivek Bajpai, Fabrication of super-finished surfaces in high-speed turning and micro turning: A review, in the Proceedings of **International Conference on Precision, Meso, Micro and Nano Engineering (COPEN 2019)**, IIT Indore, India, 12-14 December 2019.

Awards and Recognitions:

1. **'One of the Most Distinguished Papers'** at the 2nd International Conference on Industry 4.0 and Advanced Manufacturing (I-4AM 2022) for the paper entitled “Development of an ultra-high speed micro-milling center: An FEM approach”
2. **'Student award'** at the World Congress on Micro & Nano Manufacturing 2021 (WCMNM 2021)
3. **ASME student membership** for the year 2022
4. **MHRD Fellowship** during Ph.D at IIT (ISM) Dhanbad
5. **GATE Scholarship** during M.Tech at IIT (ISM) Dhanbad
6. **Central Sector Scheme of Scholarship** during B.Tech for 651 rank in state level at 12th standard

Skills and Expertise

Technical skills	Experimental skill FE modeling Characterization of Machined surface and Microstructure Technical writing
Machinery competency	Workshop machine tools CNC turning and milling center High speed micro milling center Electro chemical machine (ECM) Optical profilometer (Zygo make, Model Newview 9000) Optical microscope (Olympus make, Model BX51M) Portable surface roughness tester (Mitutoyo make, Model SJ210) Kistler dynamometer (With DynoWare software) 3D printer (Material extrusion)
Software Proficiency	CAD/CAM: AutoCAD (Competent with all versions) Finite element modeling: ANSYS (Workbench), ABAQUS (Version 2012-2021) Statistical application: Minitab, Design Expert, Origin Vibration analysis: ME'ScopeVES Technical writing: MS Office, Latex

Seminars and Workshops

1. Successfully participated in One Day's Hands on Online Training Workshop on Nanomaterial and Nanodevice Modeling Simulation using Rescu Software from Nanoacademic Technologies on August 10, 2023 organized by Impulse Technology.
2. Successfully participated in IP Awareness/Training program under National Intellectual Property Awareness Mission on April 01, 2022 Intellectual Property Office, India.
3. Participated in the International Conference on Frontiers in Materials Processing Applications, Research and Technology, held in Ahmedabad, India, 15 – 18 December, 2019.
4. Under the aegis of TEQIP-III International workshop on “Water Jet Processes and Related 4.0 Applications”, at Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines) Dhanbad Jharkhand, India, 7-8 December 2019.

5. Under the aegis of TEQIP-III Two Day Workshop On “Introduction to the Finite Element Analysis and its Applications on Commercial FE Software ABAQUS” at Department of Mining Machinery Engineering and Mechanical Engineering, Indian Institute of Technology (Indian School of Mines) Dhanbad Jharkhand, India, 3-4 November 2018.
6. Two-day workshop under “Start-up India Programme” by Center for Innovation Incubation & Entrepreneurship, Indian Institute of Technology (Indian School of Mines) Dhanbad Jharkhand, India, 29-30 September 2018.
7. Three days TEQIP-II sponsored National Conference on “Recent Advances in Mechanical Engineering (RAME 2013)” organized by Govt. college of Engineering & Textile Technology, Berhampore, West Bengal, 2013.

Vocational experiences/training

1. Mejia Thermal Power Station, DVC, Bankura, West Bengal — Vocational Training
Date: 13 July 2015 – 31 July 2015
2. Software training on structural and modal analysis in ANSYS Workbench, IIT (ISM) Dhanbad — Summer Training
Date: May 2017 - July 2017

Other Activities

- Organized One Day Workshop on “**Role of nanotechnology in high performance composite materials for industrial applications**” on 2nd September 2023 at Camellia Institute of Technology (Online Mode).
- Reviewer of Proceedings of the **IMEchE, Part C: Journal of Mechanical Engineering Science** (SCI, Sage Publication)
- Reviewer of **Journal of Advanced Research in Applied Sciences and Engineering Technology** (Scopus Indexed)
- Reviewer of **Journal of Advanced Research in Applied Mechanics** (Scopus Indexed).
- Reviewer of **Plos One** (SCI)
- Holding the position of **Lab in-charge in CNC programming lab** in the Department of Mechanical Engineering, Camellia Institute of Technology, Kolkata since 17th July 2023.

Extra-Curricular Activities

- Formatting the manuscripts accepted in IPRoMM 2022 (Held in IIT (ISM) Dhanbad) and maintaining the database for the publication in the springer proceeding.
- Several administrative works

Personal Details

Father’s Name: Mr. Jyotirmay Das

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References

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