

Suman Saha

Assistant Professor

Department of Mechanical Engineering

IIT (ISM) Dhanbad, Jharkhand, India, PIN – 826004

sumansaha@iitism.ac.in / sumansaha.me@gmail.com / +91 8582870452

Institute [webpage link](#), G Scholar [h417EsYAAAAJ](#); ORCID [0000-0002-2119-7602](#); Scopus [57217050963](#)

Summary Statement

Dr. Suman Saha is an Assistant Professor of the Mechanical Engineering department of Indian Institute of Technology (Indian School of Mines) Dhanbad. He completed his PhD at IIT Kharagpur in December 2022, specializing in sustainable minimum quantity lubrication in high-speed micro-milling. He subsequently pursued postdoctoral research at IIT Bombay on dynamics of self-actuated intermittent cutting during micro-milling before joining IIT (ISM) Dhanbad as a faculty member in October 2023. His current research focuses on subtractive manufacturing, with an emphasis on micro-precision machining. His research works are published in leading manufacturing and tribology journals, including JMPT, IJMS, JMP, and Wear. In addition to research, he teaches UG and PG courses, supervises students and scholars, and contributes to departmental and institutional activities.

Professional Positions

Assistant Professor (L11)	Since Mar 2024	Mechanical Engineering	IIT (ISM) Dhanbad
Assistant Professor (L10)	Oct 2023 - Mar 2024	Mechanical Engineering	IIT (ISM) Dhanbad

Educational Qualifications

Post-Doc	Jan-Oct 2023	Mechanical Engineering	IIT Bombay	-
PhD	2016 – 2022	Mechanical Engineering	IIT Kharagpur	8.00/10
M.Tech 	2014 – 2016	Production Engineering	Kalyani Govt. Engineering College	9.53/10
B.Tech	2010 – 2014	Mechanical Engineering	Kalyani Govt. Engineering College	8.45/10

Scholastic Achievements

2016	Gold Medalist (University Topper) in MTech Production Engineering
2021	Student Award in WCMNM 2021 International Conference

R&D Projects

1.	Project title	A novel process for sustainable finishing and cleaning of micro-textures using controlled fluid vortex (Institute project number – SRDP/1343/G)
	Role	Sole PI
	Funding agency	ANRF PMECRG (Grant No. - ANRF/ECRG/2025/002344/ENS)
	Duration	2026 – 2029 (3-years)
	Budget outlay	INR 71,93,962
	Outcome	Research work initiated.

Outreach activities		
1.	Activity type	Hands-on workshop on <i>Data-driven quality control in smart manufacturing systems</i> (Institute workshop number – OCEP/0096/O)
	Funding	Registration-fee from participants
	Duration	Two batches; each 7-days; conducted during summer break in May and July 2026
	Budget outlay	INR 2,87,194 (after GST deduction)
	Outcome	Trained 74 participants from various institutes on advanced manufacturing

Teaching Experiences				
Manufacturing Process (NMES 101)	BTech 1 st year (SEC)	140+ Students	2-0-3	6 Semesters
Machining and Machine Tools (MEC 302)	BTech 3 rd year (DC)	100+ Students	3-0-0	1 Semester
Micro and Precision Manufacturing (NMED 541)	MTech 1 st year (DE)	~ 20 Students	3-0-0	2 Semesters
Production Technology Lab (NMEC 210)	BTech 2 nd year (Lab)	120+ Students	2-0-0	1 Semester
Machining Lab (NMEC 506)	MTech 1 st year (Lab)	~ 35 Students	0-0-3	3 Semesters
Unconventional Manufacturing Lab (NMEC 529)	MTech 1 st year (Lab)	~ 35 Students	0-0-3	2 Semesters

Course Curriculum Design		
Machining and Machine Tools	NMEC 305	Designed the core subject syllabus for BTech students
Machine Tools Lab	NMEC 307	Updated the lab syllabus for BTech students
Machining Science	NMEC 501	Revamped the theory syllabus for MTech students
Machining Lab	NMEC 506	Freshly designed the lab syllabus for MTech students
Micro and Precision Manufacturing	NMED 541	Introduced new MTech elective theory course

Institutional and Departmental Responsibilities		
Wardenship	AY 2026 – 2028	Warden of the Jasper Hostel
	AY 2025 – 2026	Warden of the Jasper Hostel
Flying Squad	AY 2025 – 2026	Member of the Anti-Ragging Squad/Flying Squad of the Institute
DPGC	AY 2026 – 2028	Member of the Departmental Post Graduate Committee (DPGC)
	AY 2024 – 2026	Member of the Departmental Post Graduate Committee (DPGC)
Time-table	AY 2024 – 2026	Departmental representative to academic time-table committee
Library	AY 2026 – 2027	Departmental representative to the Library Advisory Committee (LAC)
	AY 2025 – 2026	Departmental representative to the Library Advisory Committee (LAC)
	AY 2024 – 2025	Departmental representative to the Library Advisory Committee (LAC)
Conference	Jan – Oct 2026	Core committee member of ICVAM 2026 organized by the department
	Feb – Oct 2025	Core committee member of INCOTHERM 2025 organized by the dept
DGRC	Since Feb 2024	Member of the Departmental Grievance Redressal Committee (DGRC)
I-STEM portal	Since Sept 2024	Departmental faculty coordinator for I-STEM portal

Invited Lectures/Talks and Session Chairs		
IndiaTrib 2025 Conference	IIT Bhilai	Delivered an invited lecture on machining energy
CFRTM 2025 Conference	IIT Bhubaneswar	Chaired a technical session on micro-manufacturing
FSEAM 2026 Conference	IIT Kharagpur	Delivered an invited talk on micro-texture defects
RAMEA 2026 Conference	NERIST, Arunachal	Delivered a plenary talk on micro-texturing

Other Academic and Institute Activities	
13-14 Jan 2024	Visited Delhi to take weekend class for three-year MTech at IIIF Delhi
20-21 Jan 2024	Visited Delhi to take weekend class for three-year MTech at IIIF Delhi
03-04 Feb 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
25-29 Feb 2024	On duty leave to take MBA admission interview as panel member at Delhi
02-03 Mar 2024	Supervised weekend lab for three-year MTech students at Institute campus
07-10 Mar 2024	On duty leave to take MBA admission interview as panel member at Kolkata
16 Mar 2024	Field visit with UG students at Durgapur steel thermal power station
17 Mar 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
06-07 Apr 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
13-14 Apr 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
20-21 Apr 2024	Supervised weekend lab for three-year MTech students at Institute campus
15 Jul 2024	Departmental representative for verification of documents for PhD admission
23 Jul 2024	Departmental representative for verification of documents for MTech admission
26-27 Oct 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
09-10 Nov 2024	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
26 Dec 2024	Delivered an EDP lecture on Materials Handling for Refresher Training Program
18-19 Jan 2025	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
22 Jan 2025	Delivered an EDP lecture on Materials Handling for Refresher Training Program
09-11 Feb 2025	Attended International Foundry Exhibition IFEX 2025 as visitor at Kolkata
15 Feb 2025	Delivered an EDP lecture on Materials Handling for Refresher Training Program
19-24 Feb 2025	On duty leave to take MBA admission interview as panel member at Delhi
01-02 Mar 2025	Machining lab instructor during visit of external students under Margdarshan Scheme
07-12 Mar 2025	Presented a work on the machining energy at the ICSEE 2025 conference at BITS Goa
22-23 Mar 2025	Visited Kolkata to take weekend class for three-year MTech at IIIF Kolkata
10-20 Apr 2025	Faculty representative for scrutiny of departmental MTech 2025-26 applications
08 May 2025	Delivered an EDP lecture on Materials Handling for Refresher Training Program
18 July 2025	Delivered a lecture on Residual Stress in the AM for MMTTP Refresher Course
23 July 2025	Delivered an EDP lecture on Materials Handling for Refresher Training Program
04 Aug 2025	Invited expert for analysis of welding failure of the railway wagons
01 Sept 2025	Visited MSME Tool Room Kolkata to explore collaboration in product development
24 Sept 2025	Delivered an EDP lecture on subsurface deformation in micro-machining
28 Nov 2025	Organized interaction session for executive-regular students for internship opportunity

03 Dec 2025	Participated in the Karmayogi training as part of the Capacity Building initiative
14 Dec 2025	Delivered an invited lecture on machining energy at IndiaTrib conference at IIT Bhilai
19 Dec 2025	Presented a research work at the CFRTM conference at IIT Bhubaneswar
20 Dec 2025	Chaired a technical session at the CFRTM conference at IIT Bhubaneswar
09-11 Jan 2026	Official duty as nominated faculty to attend Pan IIT Wellbeing Summit at IIT Guwahati
12-17 Jan 2026	Attended a short-term program on Indian Knowledge System (IKS)
21-23 Jan 2026	Delivered an invited talk on micro-texture at FSEAM 2026 conference at IIT Kharagpur
02-03 Mar 2026	Mentored a student group from India-Europe Heritage Network Winter Workshop
22-24 Mar 2026	On duty leave to take MBA admission interview as panel member at Kolkata
06-07 Apr 2026	Presented a paper and delivered an invited talk at the RAMEA conference at NERIST
15-20 Apr 2026	Faculty representative for scrutiny of departmental MTech 2026-27 applications
29 Apr 2026	Member of physical stock verification committee for central workshop for FY2025-26
03 May 2026	Invigilation duty in the institute for NEET (UG) examination conducted by NTA
26 May 2026	Coordinated an industrial visit to New Akashkinare Colliery with 40+ students
28 May 2026	Coordinated an industrial visit to Maithon Power Limited (MPL) with 50+ students
25-30 May 2026	Organized a one-week workshop with 30+ participants on manufacturing quality control
11 June 2026	Invited top-level Maithon Power executives for industry-academia R&D interaction
06-12 July 2026	Organized a one-week workshop with 40+ participants on manufacturing quality control
10 July 2026	Coordinated another industrial visit to New Akashkinare Colliery with 40+ students
21 July 2026	Departmental representative for verification of documents for MTech admission

Volunteering Experiences

IIT (ISM) Dhanbad	Organized INCOTHERM 2025 conference in department as core committee member
IIT Kharagpur	Volunteered for audience management at the convocation ceremony four times
IIT Kharagpur	Volunteered for five-day-night-long Smart India Hackathon national-level program

Post-Doc Supervision

Dr. Mohan Kumar 24PF0114	Duration	Sept 2024 – Ongoing (Institute post-doc)
	Role	Sole-supervisor
	Research area	Simultaneous machining, deburring, and lubrication
	Current status	Research works ongoing (2 patents & 1 paper published)

PhD Supervision

Arindam Mukherjee 24DR0316	Duration	Jan 2025 – Ongoing (Full time scholar)
	Role	Sole-supervisor
	Research area	Fluid-assisted cleaning of micro-textures
	Current status	Experimentations and modelling initiated
Krishnaveni Nalluri 25DR0349	Duration	Jan 2026 – Ongoing (Full time scholar)
	Role	Sole-supervisor
	Research area	Resource valorization for circular manufacturing
	Current status	Coursework ongoing

Akbar Azam 25DR0336	Duration	Jan 2026 – Ongoing (Full time scholar)
	Role	Joint-supervisor (Supervisor – Prof. Amitava Mandal)
	Research area	Tribology of bi-metallic WAAM components
	Current status	Coursework ongoing
Rajib Kumar Mandal 25DP0178	Duration	Jan 2026 – Ongoing (Part time scholar)
	Role	Sole-supervisor
	Research area	Hole quality monitoring during micro-drilling
	Current status	Coursework ongoing
Avi Chakraborty 26DR0071	Duration	July 2026 – Ongoing (Full time scholar)
	Role	Sole-supervisor
	Research area	Controlled exfoliation to rejuvenate metal surface
	Current status	Coursework ongoing

MTech (PG) Supervision		
2026-2027	Sougata Soo	Tool wear stage detection using vibration signals during end-milling
	Subham Pashi	Energy and quality assessment during turning using circular inserts
	Dinesh K Kushwah	Tool condition detection using vibration signals during micro-milling
	Tushar Kumar	Hot grinding under inert gas for high-quality powder production
2025-2026	Neeraj Kumar	Improving energy efficiency through optimum MQL supply
	Hemant Vanmore	Virtual regeneration of the precision machined burr
	Vivek Kumar	Assessing the turning tool re-sharpening period
	Om Prakash Kumar	Reducing subsurface deformation through lubrication in end-milling
2024-2025	Rajpal Mahich	Virtual re-generation of the worn-out cutting tool
	Piyush Sharma	Table-top knurling system design for flat surface texturing

BTech (UG) Supervision		
2025-2026	Pragya Saloni, Anjali Singh, Petla Geervan Raja, Rahul Rajumon	Quantification of subsurface crack during machining by lubrication
2024-2025	Sakshi Vaswani, Vislavath Sai Kiran, Jumbidi Saiteja	Waste metal re-purposing through powder production

Patent Publication	
1.	M Kumar, S Saha ; Abrasive slurry assisted in-process deburring during sustainable end-milling with simultaneous cooling; <i>Indian Patent Filed</i> Application No. 202531050615 dated 27.05.2025.
2.	M Kumar, P Sharma, S Saha ; A bench-top knurling machine for micro-texturing on flat surface; <i>Indian Patent Filed</i> Application No. 202531128225 dated 17.12.2025.

Journal Paper Publication			
13.	M Kumar, S Saha *; Simultaneous machining, deburring, and lubrication for sustainable end-milling through self-actuated slurry erosion; <i>Journal of Manufacturing Processes</i> 164 (2026) 299-319. https://doi.org/10.1016/j.jmapro.2026.02.070	Q1	7.8
12.	R Raj, A Kumar, S Saha , G Singh*; Tungsten carbide-cobalt based hardmetals via additive manufacturing: insights into processing-structure-property relationships; <i>Ceramics International</i> 52 (2026) 4097-4121. https://doi.org/10.1016/j.ceramint.2025.12.284	Q1	6.0

11.	S Saha , PP Bandyopadhyay*; Non-destructive measurement of MUCT in micro-milling using surface topography generated by bi-planer Size Effects; <i>International Journal of Mechanical Sciences</i> 275 (2024) 109332. https://doi.org/10.1016/j.ijmecsci.2024.109332	Q1	11.4
10.	S Saha , SI Ansary, S Deb, PP Bandyopadhyay*; Influence of tool wear on chip-like burr formation during micro-milling, and image processing based measurement of inwardly-deflected burrs; <i>Wear</i> 530-531 (2023) 205024. https://doi.org/10.1016/j.wear.2023.205024	Q1	7.2
9.	S Saha , AS Kumar, G Malayath, S Deb, PP Bandyopadhyay*; Energy balance model to predict the critical edge radius for adhesion formation with tool wear during micro-milling; <i>Journal of Manufacturing Processes</i> 93 (2023) 219-238. https://doi.org/10.1016/j.jmapro.2023.03.034	Q1	7.8
8.	S Saha , S Deb, PP Bandyopadhyay*; Tool wear induced burr formation and concomitant reduction, in MQL wetting capability in micro-milling; <i>International Journal of Mechanical Sciences</i> 245 (2023) 108095. https://doi.org/10.1016/j.ijmecsci.2022.108095	Q1	11.4
7.	S Saha , S Deb, PP Bandyopadhyay*; Shadow zone in MQL application and its influence on lubricant deficiency and machinability during micro-milling; <i>International Journal of Mechanical Sciences</i> 220 (2022) 107181. https://doi.org/10.1016/j.ijmecsci.2022.107181	Q1	11.4
6.	S Saha , S Deb, PP Bandyopadhyay*; Precise measurement of worn-out tool diameter using cutting edge features during progressive wear analysis in micro-milling; <i>Wear</i> . 488-489 (2022) 204169. https://doi.org/10.1016/j.wear.2021.204169	Q1	7.2
5.	S Saha , S Deb, PP Bandyopadhyay*; Progressive wear based tool failure analysis during dry and MQL assisted sustainable micro-milling; <i>International Journal of Mechanical Sciences</i> 212 (2021) 106844. https://doi.org/10.1016/j.ijmecsci.2021.106844	Q1	11.4
4.	S Saha , S Deb, PP Bandyopadhyay*; An analytical approach to assess the variation of lubricant supply to the cutting tool during MQL assisted high speed micromilling; <i>Journal of Materials Processing Technology</i> 285 (2020) 116783. https://doi.org/10.1016/j.jmatprotec.2020.116783	Q1	7.9
3.	S Saha , BC Paul, S Das*; Productivity improvement in butt joining of thick SS plates through the usage of activated TIG welding; <i>SN Applied Sciences</i> 3 (2021) 416. https://doi.org/10.1007/s42452-021-04409-7	Q2	3.8
2.	S Saha , S Das*; Effect of polarity and oxide fluxes on weld-bead geometry in activated tungsten inert gas (A-TIG) welding; <i>Journal of Welding and Joining</i> 38(4) (2020) 380-388. https://doi.org/10.5781/JWJ.2020.38.4.7	-	-
1.	S Saha , S Das*; Investigation on the effect of activating flux on tungsten inert gas welding of austenitic stainless steel using AC polarity; <i>Indian Welding Journal</i> 51(2) (2018) 84-92.	-	-

Book Chapter

1.	A. Kumar, S. Saha ; Data-driven cost estimation by Machine Learning; Machine Learning for Powder-Based Metal Additive Manufacturing; 2024, <i>Elsevier</i> , ISBN 9780443221460.
2.	G. C. Behera, S. Saha , S. Deb; Artificial intelligence-driven modeling and optimization for machining of engineering composites; Forming and machining of polymers, ceramics, and composites; 2024, <i>CRC Press</i> , ISBN 9781032665375. 10.1201/9781032665375-13
3.	S. Saha , S. Das; Application of activated tungsten inert gas (A-TIG) welding towards improved weld bead morphology in stainless steel specimens; Applications of new tools and techniques in manufacturing and processing; 2019, <i>The Institution of Engineers (India)</i> .

Important Conference Presentation

10.	M Kumar, S Saha , Reduction of built-up edge adhesion using sustainable MQL during micro-milling, <i>RAMEA Conference</i> 2026, NERIST, India.
-----	---

9.	M Kumar, S Saha , Reduction of frictional energy wastage through MQL for enhanced sustainability during micro-milling, <i>CFRTM Conference</i> 2025, IIT Bhubaneswar, India.
8.	A Mukherjee, M Kumar, S Saha ; Reducing frictional loss through multi-nozzle optimum Minimum Quantity Lubrication (MQL) for energy-efficient and sustainable end-milling; <i>IndiaTrib Conference</i> 2025, IIT Bhilai, India.
7.	S. Saha , Scopes of controlling interfacial friction for reducing energy wastage during machining, <i>ICSEE Conference</i> 2025, BITS Goa, India.
6.	S. Saha , S. Deb, P. P. Bandyopadhyay, Feasibility of improving productivity through the usage of higher axial depth during MQL based sustainable micro-milling, <i>MATADOR Conference</i> 2021, The University of Manchester, UK.
5.	S. Saha , S. Deb, P. P. Bandyopadhyay, Influence of deficient cutting oil supply on machining performance during minimum quantity lubrication assisted micro-milling, <i>WCMNM Conference</i> 2021, IIT Bombay.
4.	S. Saha , S. Deb, P. P. Bandyopadhyay, Destructive and non-destructive approaches for precise measurement of kerf width of the micro-milling slots, <i>ISME Conference</i> 2021, IIT Ropar, India.
3.	S. Saha , S. Sikdar, S. Kumar, S. Deb, P. P. Bandyopadhyay, Dependency of machining forces on process parameters during sustainable MQL based micro-milling of D2 Steel, <i>AIMTDR Conference</i> 2021, PSG College of Technology, India.
2.	S. Saha , A. S. Kumar, S. Deb, P. P. Bandyopadhyay, An investigation on the top burr formation during minimum quantity lubrication (MQL) assisted micromilling of copper, <i>ICMPC Conference</i> 2020, GLA University, India.
1.	A. Kumar, S. Saha , C. S. Kumar, A. K. Nath, Laser surface re-melting of additive manufactured samples with a line focused beam, <i>ICMPC Conference</i> 2020, GLA University, India.

Reviewer for Journals and Conferences	
Elsevier	Journal of Manufacturing Processes, Tribology International
Springer Nature	Int. J. on Interactive Design and Manufacturing, Sādhanā
MDPI	Processes, Lubricants

List of Referees		
Prof. P. P. Bandyopadhyay Professor Machine Tools & Machining Lab Mechanical Engineering dept. IIT Kharagpur Kharagpur, West Bengal India, PIN – 721302 Contact: +91 3222-282950 ppb@mech.iitkgp.ac.in	Dr. Sankha Deb Associate Professor FMS & CIM Lab Mechanical Engineering dept. IIT Kharagpur Kharagpur, West Bengal India, PIN – 721302 Contact: +91 3222-281599 sankha.deb@mech.iitkgp.ac.in	Prof. Soumitra Paul Professor and Head Machine Tools & Machining Lab Mechanical Engineering dept. IIT Kharagpur Kharagpur, West Bengal India, PIN – 721302 Contact: +91-3222-282954 spaul@mech.iitkgp.ac.in

Declaration: I hereby declare that the information provided in this curriculum vitae is true and correct to the best of my knowledge and belief.

Suman Saha

Dr. Suman Saha
 Department of Mechanical Engineering
 IIT (ISM) Dhanbad
 Jharkhand, India, PIN – 846004
 Dated: 30-July-2026