



Apurbba Kumar Sharma, Ph.D., DAAD Fellow

Full Professor, Mechanical and Industrial Engineering

Joint Faculty and Head, Department of Design

Ajit Singhvi Institute Chair Professor

Indian Institute of Technology Roorkee

Roorkee – 247 667 | India.

... about



Apurbba Kumar Sharma is a Full Professor (HAG) in the Mechanical and Industrial Engineering Department, and currently a Joint faculty and Head of the Department of Design in Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand, India. He is also the '**Ajit Singhvi Institute Chair Professor**'. Currently, he is the Chairman of Institute Academic Ethics Committee and Member of the CII National Committee on Design Innovation 2025-26, India. He led the academics at IIT Roorkee as the Dean of Academic Affairs (DoAA) during April 2021 – March 2024. Professor Sharma can be reached at +91-1332-28-5421/5479/5099, (e-mail: aks@me.iitr.ac.in, akshafme@gmail.com). Till recently, he was leading the Design Innovation Center at the Institute as its first Coordinator.

Born to **Smt. Bidhu Bala Devi** and **Late Rajat Chandra Sharma** in Nalbari district of Assam, India, Shri Sharma possesses a simple personality and has deep interest in teaching and research. Trained in the Laboratory of **Professor R. Krishnamurthy** of IIT Madras, Shri Sharma adores nature and is a firm believer of human values. Apurbba Kumar Sharma resides in the B-3, Hill View Apartment, IIT Roorkee campus with lovely daughters– **Ruchira, Natasha** and wife **Dr. Himadri Phukan**.

Education

Degree/ Dip.	Discipline / Specialization	Division / Grade	Year	University / Institute
B.E.	Mechanical Engineering	First	1988	Dibrugarh University
P.G.DIP.	Instrumentation	First	1989	Gauhati University
M. Tech.	Computer Integrated Manufacturing (CIM)	8.27 (CGPA)	1996	IIT Madras
Ph. D.	Manufacturing (Surface Engg.)	--	2003	IIT Madras

BRIEF RESUME

Dr. Apurbba Kumar Sharma is a Full Professor (HAG) in the Department of Mechanical and Industrial Engineering and currently the Head of the Department of Design at IIT Roorkee, India. He is also "**Ajit Singhvi Institute Chair Professor**". He led the academics at IIT Roorkee as the Dean of Academic Affairs (DoAA) during April 2021 to March 2024. He was responsible for overhauling the UG as well as PG curricula in IIT Roorkee aligning with the NEP 2020 during the period. Currently, he is also the Chairman, Institute Academic Ethics Committee. Dr. Sharma is a Member of the CII National Committee on Design Innovation 2025–26, India. He was the coordinator of 'नवोन्मेष' Design Innovation Center at IIT Roorkee during August 2018 to March 2021. Earlier, he was holding the positions of Associate Dean, Academic Studies and Chairman, Institute Academic Performance Evaluation Committee in this Institute during July 2013 to April, 2017.

He has obtained his bachelor's degree from Dibrugarh University, Assam. He has subsequently obtained his Master and PhD degrees from IIT Madras, Chennai. Research interests of Dr Sharma include:

1. Advance Manufacturing Methods, Hybrid Processes
2. Microwave Material Processing (Microwave Drilling, Microwave Casting, Microwave joining, Microwave Cladding)
3. Surface Engineering

Dr. Sharma has filed **ELEVEN Indian Patents**; TEN of them have already been **Granted**.

He has published more than **145 research papers** in International Journals. He has also presented/published more than 145 research papers in various International and National Conferences. Dr. Sharma is also a reviewer of several reputed international journals including – Journal of Microwave Power and Electromagnetic Energy, Composites Part A: Applied Science and Manufacturing, International Journal of Mechanical Sciences, Materials Science and Technology, International Journal of Metalcasting, Journal of Manufacturing Processes, Journal of Advanced Manufacturing Technology, Physica Scripta, Proc. of the IMechE Part B: Journal of Engineering Manufacture. He has also edited one International Conference Proceedings and was **Guest Co-Editor** of the International Journal of Advanced Manufacturing Technology (2008) 38.

Dr. Sharma contributed one Chapter "Electrochemical Discharge Machining" **on Invitation in the Handbook** Titled: 'Design for Advance Manufacturing – Technologies and Processes' published by McGraw-Hill Education. He has also contributed chapters in books published by John Wiley & Sons, Inc. and Taylor and Francis Group.

Dr. Apurbba Kumar Sharma achieved **First Rank** among the Indian researchers with **9.40** Citations per paper and **65th Rank** in Top 100 Authors of IITs based on Number of Articles as reported on 'Indian Citation Index 2016', Published by Confederation of Indian Industries (CII).

Dr. Sharma has been **ranked** within 0.04% in the Microwave, 0.12% in Manufacturing, 0.39% in Mechanical Engg., 0.89% in Surface Engineering and 0.42% in Overall (All Fields) categories of **top scientists globally** (2024) by ScholarGPS.

He has developed a Full Web-based Video Course on "**Advanced Manufacturing Processes**" under the NPTEL Programme of the Government of India. He has also developed a course as the Principal Developer on "Principles of Industrial Engineering" for undergraduate students under the Pilot Phase of the National Mission Project on Pedagogic Development, Sponsored by the Ministry of Human Resources Development (MHRD), Govt. of India.

Dr. Sharma has supervised **TWENTY-TWO** PhD programs and **THREE** others are in-progress. He has also supervised Fifty-Six Master's Dissertations and Forty-Eight Bachelor's Dissertations.

He was working as a **DAAD (Germany) Fellow** in the Institute of Pulsed Power and Microwave Technique (IHM), Karlsruhe Institute of Technology (KIT), Germany.

He has completed five funded research projects; three other projects funded by MHRD and DST, Government of India are in progress. He has also completed a few consultancies. He has organized NINE AICTE (QIP) sponsored Short Term Courses, Four AICTE Sponsored Workshops, THREE MHRD courses and Two self-sponsored Courses.

Dr. Sharma has coordinated one programme on "**Nurturing Future Leadership Programme (NFLP)**" under the aegis of Madan Mohan Malviya Teachers' Training Programme (MMTTP) of the Ministry of Education, Govt. of India.

Dr. Sharma is associated with several professional bodies which include- Fellow of the Institution of Engineers (India), Member of American Society of Mechanical Engineers, USA, Member of Society of Manufacturing Engineers (SME), USA, Member of Global Science and Technology Forum (GSTF), Singapore, Member of Materials Research Society of India, Member of the Indian Institute of Industrial Engineers and a member of ISTE, New Delhi.

Dr. Sharma is also representing IIT Roorkee as the Principal Member in the Pneumatic Tools Sectional Committee, PGD08 of Production and General Engineering Department at the Bureau of Indian Standards, New Delhi.

Dr. Sharma was instrumental in formulating and implementing the new Program Structures for UG and PG Programs in the year 2013 at IIT Roorkee as Associate Dean (Academic Studies). He is also a member of Board of Studies of other universities. He has been external examiner of several PhD Theses of different Universities/Institutes.

Dr. Sharma has chaired several Technical Sessions in prestigious International Conferences including in ASME sponsored Manufacturing Science and Engineering Conference (MSEC) in the USA.

Dr. Sharma is a member of the Editorial Board of the *ISME Journal of Manufacturing Sciences* published by the Indian Society of Mechanical Engineers, India.

Dr. Sharma has delivered several Expert / Invited Lectures in several Institutions/Industries of repute.

Patent Obtained/Filed

Sl No	Title of the Patent	Investigators	Patent Number and Year	Brief Description
1.	Articles of Glazed Ceramic Composites on Metal Substrates and Method of Manufacture Thereof.	Apurbba Kumar Sharma R. Krishnamurthy	Indian Patent No. 199106 Date: 09.7.2001	A technique for glazing of plasma sprayed ceramic composite surfaces by controlled exposure of microwave radiation. Glazed surfaces reveal annihilation of spraying defects and improvement in functional properties.
2.	A method of joining of bulk metallic materials by microwave hybrid heating.	Dr A K Sharma M S Srinath Dr Pradeep Kumar	Indian Patent No. 309058 Date: 12.03.2019	A new technique for joining of bulk metallic materials by controlled exposure of microwave radiation.
3.	A method of cladding/coating of metallic and non-metallic powders on metallic substrate by microwave irradiation	Dr A K Sharma Dheeraj Gupta	Indian Patent No. 306568 Date: 30.01.2019	A new technique for developing cladding / coating of metallic / non-metallic materials on metallic surfaces by controlled exposure of microwave radiation.
4.	A natural polymer abrasive media for the abrasive flow machining and a process for preparation thereof	Dr. A K Sharma Rajesh S G Venkatesh Dr Pradeep Kumar	Indian Patent No. 283675 Date: 29.05.2017	A new product in the form of semi-solid natural polymer, which will be used as an abrasive carrier for Abrasive Flow Machining Process. It acts as a deformable stone and has good thermal stability.
5.	An improved ultrasonic abrasive flow machining and a device therefor	Dr. A. K. Sharma Dr Pradeep Kumar Rajesh S	Indian Patent No. 358173 Date: 10.02.2021	The hybrid process has far enhanced performance while compared with traditional AFM process; capable of finishing advance materials efficiently.
6.	A method of micro-drilling with microwaves through metallic concentrator	Apurbba Kumar Sharma , Shantanu Das, Nitin Kumar Lautre, Titto John George, Rajesh Kumar and Pradeep Kumar	Indian Patent No. 426457 , Date: 23.03.2023 (IIT Roorkee and DAE, Govt. of India) Application No.: 201621004759, Feb. 10, 2016.	A new technology for micro-hole drilling with microwave energy. A metallic concentrator is used as the tool. The process is fast (a 02 mm thick glass plate can be drilled within 4 seconds, suitable for micro-fabrication.
7.	A device for in-situ microwave casting of metals and alloys	Dr. A. K. Sharma Radha Raman Mishra Mohit Choudhury Saurabh Puri	Indian Patent No.521301 , Date: 07.03.2024 Application No.: 201611037834, Nov. 05, 2016.	A new technology for casting process inside the Microwave applicator that has higher yield per unit processing time and less defects.
8.	A flexible device for multiple ultrasonic machining operations	Akshay Dvivedi, Manjot Singh Cheema and Apurbba Kumar Sharma	Indian Patent No. 483135 , Date: 15.12.2023. Application No.: 201611041640, Dec. 06, 2016.	A novel device that enables multiple operations like Turning, Drilling, Thread cutting in a conventional Ultrasonic Machine.
9.	Mechanical safety apparatus for thread failure in power screw based lifts	Apurbba Kumar Sharma Nitesh Arora Prabh Pal Singh Seerha	Indian Patent No. 540147 . Date: 30.05.2024. Application No.: 201811028210, July 26, 2018	A novel device that prevents free-falling of the load in case thread and nut failure in any heavy lifting machine thereby ensure safety to the worker as well as other systems.
10.	A four-way valve for directional control	Shah Faizan Apurbba Kumar Sharma Radha Raman Mishra Thanga Raj Chelliah	Indian Patent No. 459108 , Date: 16/10/2023. Application No.: 202011009048, date:03.03.2020	An unique device that can control flow in 15 different output combinations.
11.	An apparatus and method for directional solidification in casting of metallic Materials using microwave energy	Apurbba Kumar Sharma Pavej	Application No.: 202311041299, June 16, 2023.	A novel apparatus to fabricate directionally solidified metallic casts using microwave energy.
12.	An improved method for synthesis of graphene oxide from agricultural waste using microwave energy	Apurbba Kumar Sharma Garima Raghav	Application No.: 202511078988, August 20, 2025.	A novel method for synthesis of graphene oxide (GO) from almond shell (agri-waste). Microwave energy was used at different stages of synthesis which resulted in better yield at a significantly less time.

Award/Fellowship/Scholarship

- A.** Institute Chair Professor
Ajit Singhvi Institute Chair Professor at IIT Roorkee (2025).
- B.** International
DAAD Research Fellowship under Faculty Exchange Programme 2011, Federal Republic of Germany.
- B.** National
National Merit Scholarship, Govt. of India (1981).

Outline of the Self Ph. D. Work

Dr. Apurbba Kumar Sharma was involved in a Full-Time Research Program in the Mechanical Engineering Department of Indian Institute of Technology Madras, Chennai, leading to the Ph.D. Thesis on '**Microwave Glazing of Plasma Sprayed Ceramic Composite Coatings and Their Characterisation**'. The research is concerned with application of Microwave Energy for processing of ceramics/ ceramic composites. Two major aspects were addressed- characterisation of plasma spray deposited alumina-titania ceramic composites including defects characterisation, and microwave glazing of plasma sprayed ceramic composites for defect annihilation and performance enhancement. A new approach, called MICROWAVE GLAZING was introduced for post processing of plasma sprayed coatings which was later granted an **Indian Patent**. Multidisciplinary characterisation techniques were used to characterize the coatings. Both Materials and Mechanical aspects were explored during characterization through Structural, Chemical, Mechanical, Physical and Functional evaluation techniques. Structure-property correlation was highlighted. The research work yielded the following:

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|----|---|---|-----------|
| a. | Indian Patent | : | One |
| b. | Paper published in Journals | : | Eight |
| c. | Papers presented/published in Conferences | : | Eighteen. |

Research Interest

- Advanced Manufacturing Methods, Hybrid Finishing Processes
- Microwave Material Processing (Microwave Casting, Microwave Drilling, Microwave Joining of Similar/Dissimilar Materials, Microwave Cladding/ Coating)
- Surface Engineering
- Micromachining.

Summary of Research Publications

(Details on page 27)

SI No	Patent	Total	Present Status	
			Granted	Registered
1.	Indian Patent	12	10	02

SI No	Journal / Conference	Total	Present Status
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			Published	In-press / Accepted
2.	Journal Papers	148	147	01
3.	International Conferences	118	--	--
4.	National Conferences	35	--	--

Publication Metrics

1.	Citations (Google Scholar, as on October 10, 2025)	7,577
2.	h-index (Google Scholar, as on October 10, 2025)	48
3.	i10-index (Google Scholar, as on October 10, 2025)	112
4.	Reads Score (Research Gate, as on July 26, 2025)	86,768
5.	Citation (Research Gate, as on July 26, 2025)	6,764
6.	h-index (Research Gate, as on July 26, 2025)	42
7.	Research Interest Score (Research Gate, as on July 26, 2025)	4,095

McGraw-Hill Education HB (International Ed.)

Contributed a Chapter (Chapter 3.10) Titled “**Electrochemical Discharge Machining**” (pp. 277–290) **on Invitation** in the McGraw-Hill Education Handbook with following details:

Handbook Title: Design for Advance Manufacturing – Technologies and Processes.

Editor: LaRoux Gillespie *Dr. Eng., FSME, PE, CMfgE, Former President SME*

Publisher: McGraw Hill Education; 1 edition (March 13, 2017)

Language: English

ISBN10: 1259587452

ISBN13: 9781259587450

Hardcover: 624 pages

Book/Book Chapters

S.N.	Title of publication	Title of book/ book series	Authors	Publisher, Year
1.	Investigation on Microstructural Characterization of Microwave Cladding	Processing and Properties of Advanced Ceramics and Composites IV (Ceramic Transactions, Volume 234)	D Gupta, Apurbba Kumar Sharma, G Link, M Thumm	John Wiley & Sons, Inc, 2012
2.	Multicriteria Optimization of Rotary Tool Electric Discharge Machining on Metal Matrix Composite	Materials Processing Fundamentals	M S Cheema, A Dvivedi, Apurbba Kumar Sharma, S Biswas	John Wiley & Sons, Inc, 2013
3.	Microwave Processing of Polymer Matrix Composites	Primary and Secondary Manufacturing of Polymer Matrix Composites	Apurbba Kumar Sharma, S Zafar	Taylor and Francis Group, 2017
4.	Microwave Processing of Polymer Matrix Composites: Review of the	Recent Advances in Mechanical Engineering (pp.517-529)	Naik, T.P., Rana, R.S., Singh, I. and Apurbba	Springer, 2021. (https://doi.org/10.1007/978-981-15-

	Understanding and Future Opportunities		Kumar Sharma	7711-6_52)
5.	Parametric Optimization of FDM Process for Fabricating High-Strength PLA Parts.	Advances in Engineering Design (pp. 15-22).	Naik, T.P., Rana, R.S., Mishra, R.R., Singh, I. and Apurbba Kumar Sharma	Springer, Singapore, 2021. (https://doi.org/10.1007/978-981-33-4018-3_2)
6.	Edited Book	Advances in Engineering Design: Select Proceedings of ICOIED 2020	Pawan Kumar Rakesh, Apurbba Kumar Sharma, Inderdeep Singh	Springer Singapore, Imprint: Springer Publication date: 2021/2/4
7.	Investigation on Microwave Joining of Mild Steel Plates at 2.45 GHz and Joint Characterization	Advances in Engineering Design: Select Proceedings of ICOIED 2020 (pp.127-136)	G Kumar, D Sreehari, RR Mishra, V Yadav, AK Sharma	Springer Singapore, Imprint: Springer Publication date: 2021/2/4
8.	Characterization of SiC-Reinforced AZ91 Magnesium Alloy Composites Produced Using In situ Microwave Casting	Advances in Engineering Design: Select Proceedings of ICOIED 2020 (pp. 23-30)	RR Mishra, P Alam, J Yadav, G Kumar, A K Sharma	Springer Singapore, Imprint: Springer Publication date: 2021/2/4
9.	Process optimization of WEDM for machining of aluminum (6063)/graphite metal matrix composites	Advances in Engineering Design: Select Proceedings of ICOIED 2020 (pp. 85-95)	TP Naik, PK Patowari, KG Melese, RS Rana, I Singh, A K Sharma	Springer Singapore, Imprint: Springer Publication date: 2021/2/4
10.	Parametric Optimization of FDM Process for Fabricating High-Strength PLA Parts	Advances in Engineering Design: Select Proceedings of ICOIED 2020. (pp.15-25)	TP Naik, RS Rana, RR Mishra, I Singh, AK Sharma	Springer Singapore, Imprint: Springer Publication date: 2021/2/4
11.	Microwave Processing of Polymer Matrix Composites: Review of the Understanding and Future Opportunities	Recent Advances in Mechanical Engineering: Select Proceedings of ICRAME 2020 (pp. 517-529)	Tejas Pramod Naik, Ram Singh Rana, Inderdeep Singh, Apurbba Kumar Sharma	Springer Singapore, 2021
12.	Processing Biomaterials Using Microwave Energy and Its Futuristic Scopes	Advances in Microwave Processing for Engineering Materials (pp. 191-211)	Shivani Gupta, Apurbba Kumar Sharma, and Dinesh Agrawal	CRC Press, Boca Raton, 2022 (https://doi.org/10.1201/9781003248743)
13.	Microwave Drilling : Methods, Applications and Challenges	Advances in Microwave Processing for Engineering Materials (pp. 19-34)	Anurag Singh, Gaurav Kumar, Pranjal Gupta, Apurbba Kumar Sharma	CRC Press, Boca Raton, 2022, (https://doi.org/10.1201/9781003248743)
14.	Recycling of Thermoset Composites Waste: End of Life Solution	Composite Materials Processing Using Microwave Heating Technology (pp. 83-114) / Composites Science and Technology series	Tejas Pramod Naik, Inderdeep Singh, Apurbba Kumar Sharma, and Ha Na Yu	Springer Nature, Singapore, 2024 (https://doi.org/10.1007/978-981-97-2772-8_4)
15.	Application of Microwave-Metal Discharge for Metallic Material Removal	Application of Microwave-Metal Discharge for Metallic Material Removal (pp. 138-	Pranjal Gupta, Apurbba Kumar Sharma, and	Springer Nature, Singapore, 2024 (https://doi.org/10.1

		153) / Composites Science and Technology series	Inderdeep Singh	007/978-981-97-2772-8_7)
16.	Recent Advancements in Mechanical Engineering	Recent Advancements in Mechanical Engineering Select Proceedings of ICRAE 2022	T. S. Sudarshan, Apurbba Kumar Sharma, R. D. Misra, P. K. Patowari	Springer Singapore (https://doi.org/10.1007/978-981-97-0900-7) Pages: XIII, 480

Academic Administration / Reform / Institute Responsibility

1. Head, Department of Design, IIT Roorkee: July 01, 2024 – date.
2. Dean, Academic Affairs, IIT Roorkee: April 01, 2021 to March 31, 2024.
3. Member, CII National Committee on Design Innovation 2025-26 in Confederation of Indian Industries (CII), India.
4. Member, Governing Body, TIDES (Technology Innovation and Development of Entrepreneurship Society), IIT Roorkee: July 01, 2024 – date.
5. Chairman, Institute Academic Program Committee, IIT Roorkee: April 01, 2021 to March 31, 2024.
6. Chairman, Institute Research Committee, IIT Roorkee: April 01, 2021 to March 31, 2024.
7. Chairman, Postgraduate Curriculum Review Committee (PCRC), IIT Roorkee: June, 2023 to January, 2024.
8. Chairman, Undergraduate Curriculum Review Committee (UCRC), IIT Roorkee: April, 2021 – March, 2023.
9. Chairman, Institute Academic Ethics Committee, 28 June, 2025 – .
10. Chairman, Institute Research Day Committee: January 2022 to March 2024.
11. Coordinator, Design Innovation Center, IIT Roorkee: August, 2018 to March 31, 2021.
12. Member, Advisory Committee, TIDES, Business Incubator, IIT Roorkee: March, 2017 onwards.
13. Member, Academic Council, Noida Institute of Engineering and Technology, Greater Noida, UP, India.
14. Associate Dean, Academic Studies: July 19, 2013 – April 26, 2017.
15. Member, Senate, IIT Roorkee: July 19, 2013 – April 26, 2017 and December 22, 2018 onwards.
16. Member, Executive Committee on Senate (ECS), IIT Roorkee: April 2021 – March 2024 and July, 2013 – April, 2017.
17. Member, Institute Research Committee (IRC): July, 2020 – April, 2021; April, 2024 – date.
18. Member, Institute Academic Program Committee (IAPC): Jul, 2013 – April, 2017; April, 2024 – date.
19. Member, Academic Restructuring Committee, IIT Roorkee, 2013.
20. Member Secretary, Post Graduate Programme Review Committee, 2013.
21. Chairman, Institute Academic Performance Evaluation Committee, IIT Roorkee : February, 2013 – April 26, 2017.
22. Chairman, Departmental Research Committee (DRC), May, 2020 – April, 2021.
23. Member, Intellectual Property Right Cell, IIT Roorkee, 2012 onwards.
24. Member, Department Faculty Assessment Committee (DFAC), MIED, January 2019 – December 2020.
25. Member (External), Department Faculty Assessment Committee (DFAC), Polymer & Process Engineering, July 2019 – June, 2021.

26. Member (External), Department Faculty Search Committee (DFSC), MMED & DOMS, July 2019 – June, 2021.
27. Member, Department Administrative Committee (DAC), MIED, July 2014 – February, 2016. August, 2019 – June, 2021.
28. Member, Departmental Academic Studies Committee (DASC), MIED, July 2012 – June 2014.
29. External Member, Board of Studies for Mechanical Engineering, Graphic Era Hill University, Dehradun, Uttarakhand.
30. Member, Departmental Research Committee (DRC), July 2010-June 2012.

Sponsored Project Handled/Proposed

Title of the Project	Name of the Funding Agency	Amounts (Rs.)	Status
A Resource Efficient Method for Producing Orthopedic Bone Plate Using Microwave Energy	Scheme for Promotion of Academic and Research Collaboration (SPARC), MHRD, Government of India	67,22,000.00	Completed
R&D of nanostructured microwave composites with enhanced wear resistance	DST, India and Ministry of Education and Science (MOES), Ukraine	13,34,800.00	Completed
Investigations of formation of microwave plasma during drilling of metallic materials through in-situ monitoring	SERB, DST, New Delhi	41,20,436.00	Completed
IITR-Penn State Research Initiative in Advanced Material Processing	U.S. Department of State, Bureau of Educational and Cultural Affairs, USA, <i>Under</i> : Fulbright Specialist Program (FSP)	USD 3,100.00+ INR 1,25,000.00	Completed
Materials Joining and Drilling with Microwaves	BRNS, Mumbai (DAE, Govt. of India).	31,73,025.00	Completed
Development and Parametric Study of Grinding Assisted Electro Chemical Discharge Machining	DST, New Delhi	35,000,00.00	Completed (Co-PI)
Parametric studies during machining of Glass and Metal Matrix Composite (AI-7075) using Electrochemical Discharge Machining (ECDM)	Council of Scientific and Industrial Research, New Delhi, India.	6,50,000.00	Completed (Co-PI)
Development and Parametric Study of Ultrasonically Assisted Abrasive Flow Machining (UAAFMM) for Precision Finishing	DST, New Delhi	20,40,000.00	Completed
Parametric studies during machining of microchannels on	Council of Scientific and Industrial Research (CSIR),	13,00,000.00	Completed

silicon wafer using micro ultrasonic machining.	New Delhi, India.		
Microwave joining of Metals	IIT Roorkee, Roorkee – 247 667.	1,00,000.00	Completed
Solar Electric Hybrid Mushroom Dryer	Assam Science Technology and Environment Council (ASTEC), Silpukhuri, Guwahati–781 003.	6000.00	Completed

Representation in International Committee

1. Member, Scientific Committee, IXth International Samsonov Conference “Materials Science of Refractory Compounds” (MSRC-2024), May 27-30, 2024, Kyiv, Ukraine.
2. Member, Technical Program Committee, 7th International Conference on Materials Science and Manufacturing Engineering, MSME 2026, Buenos Aires, Argentina, January 4-7, 2026.

Representation in National Committee

1. Principal Member in the Pneumatic Tools Sectional Committee, PGD08 of Production and General Engineering Department at the Bureau of Indian Standards, New Delhi.

International Reviewer of Project Proposals

Invited to act as a proposal reviewer by number of scientific and research agencies nationally and globally - including:

- FNRS, Belgium
- Isreal Science Foundation
- Research Council of Norway
- National Research Foundation, SOUTH AFRICA.

Ph. D. Examiner

Evaluated more than **65 Ph.D. Theses** of IITs, NITs and other reputed universities.

Research Guidance

[A] Ph. D. Thesis Supervision (21 + 04)

Sl.	Title/Area of research	Name of scholar	Co supervisor	Status
1.	Microwave processing of waste	Maninder Kumar (Jul, 2025 –)	--	In-progress
2.	Synthesis of Graphene Oxide (GO) from agricultural waste materials using microwave energy	Garima Raghav (Jul, 2023 –)	--	In-progress
3.	Design and development of biodegradable medical test kit	Raj Kumar (Jul, 2022 –)	Prof. Inderdeep Singh	In-progress

4.	Microwave-metal discharge-based machining of metallic materials	Pranjal Gupta (Jul, 2019 – Jul 2025)	Prof. Inderdeep Singh	Defended (Jul 01, 2025)
5.	Fusion Welding of Natural Fiber based Thermoplastic Composites	Ram Singh (Jan, 2019 – Jun, 2023)	Prof. Inderdeep Singh	Defended (Jul 17, 2023)
6.	Microwave sintering of nanostructured tribo-materials	Chintam Suresh Kumar (Jan, 2019 –)	--	Thesis submitted (Jul 24, 2025)
7.	Microwave Processing of Sustainable Natural Fiber Reinforced Thermoplastic Composites	Tejas P. Naik (Jan, 2019 – Dec, 2023)	Prof. Inderdeep Singh	Defended (May 06, 2024)
8.	Investigations on solidification during in-situ microwave casting of metallic materials	Parvej (Jul, 2018 – Nov, 2024)	--	Defended (Nov 26, 2024)
9.	Development of Biodegradable Composites through Microwave Sintering for Orthopedic Applications	Shivani Gupta (Jul, 2017 – May, 2024)	--	Defended (Jul 08, 2024)
10.	Microwave Drilling of Stainless Steel Sheet at 2.45 GHz	Anurag Singh (Jan, 2017 – Jan, 2025)	--	Defended (Jan 31, 2025)
11.	Microwave drilling of metal-based materials	Gaurav Kumar (July, 2015 – Sep, 2020)	--	Defended (Oct 15, 2020)
12.	Development of microchannels by micro-USM on silicon wafer for heat transfer applications	Dungali Sreehari (Jan, 2015 – April, 2019)	--	Defended (Jun 28, 2019)
13.	Modeling of carbon compliant supply chain network for tyre remanufacturing industry	Lokesh Saxena (Mar, 2015 – Nov, 2018)	Dr. P K Jain	Defended (Dec 12, 2018)
14.	Investigations on in-situ microwave casting of metallic materials	Radha Raman Mishra (July, 2014 – Aug., 2018)	--	Defended (Aug 16, 2018)
15.	Performance analysis of ECDM process while machining glass and alumina	Mudimallana Goud (July, 2013 - Dec, 2016)	--	Defended (Dec 12, 2016)
16.	Development of nano structured wear resistant surfaces through microwave cladding	Sunny Zafar (July, 2013 – Aug, 2016)	--	Defended (Aug 12, 2016)
17.	Investigations on Microwave drilling of Characteristically different materials	Nitin Kumar Lautre (July, 2012 – Sept, 2015)	Dr. Pradeep Kumar	Defended (Sept 20, 2016)
18.	Performance Analysis of Ultrasonic Assisted Abrasive Flow Machining Process	Gudipadu Venkatesh (Jan, 2012 – May, 2015)	Dr. Pradeep Kumar	Defended (Sept 11, 2015)
19.	An Ultrasonic Micro Machining Approach to Fabricate Microchannels on Glass	Manjot Singh Cheema (July, 2011 – June, 2015)	Dr. Akshay Dvivedi	Defended (Sept 08, 2015)
20.	Fusion Joining of Advanced Materials using Microwave Hybrid Heating	Amit Bansal (July, 2011 – Dec, 2014)	Dr. Pradeep Kumar	Defended (May 04, 2015)
21.	Investigations on performance enhancement of ECDM process while machining glass	C. S. Jawalkar (July, 2010 – July, 2013)	Dr. Pradeep Kumar	Defended (Jan 31, 2014)
22.	Some Studies on Development of Microchannels Using Micro Ultrasonic Machining	Vivek Jain (July, 2010 – April, 2012)	Dr. Pradeep Kumar	Defended (June 09, 2012)
23.	Microwave Cladding of Metal-based Materials and their Characterisation	Dheeraj Gupta (Jan, 2009 – Jan, 2012)	--	Defended (May 22, 2012)
24.	Joining and Characterisation of Metallic	M S Srinath	Dr. Pradeep Kumar	Defended

	Materials through Microwave Hybrid Heating	(July, 2008 – May, 2011)		(Oct. 17, 2011)
25.	Some Studies to Enhance the Capabilities of Abrasive Flow Machining Process	Rajesh S (July, 2008 – Feb, 2011)	Dr. Pradeep Kumar	Defended (May 27, 2011)

[B] Masters Thesis Supervision (Total : 58 + 02)

Sl.	Title /Area of research	Name of scholar	Co supervisor	Status
1.	Cold Spraying	Rahul Jaiswal	Prof. Varun Sharma	In-progress
2.	4D Printing for Space Applications	Manisha Sarkar	Prof. Varun Sharma	In-progress
3.	Digital Twinning of Computer Numerical Controlled Machines	Nakul Tiwari	--	Defended (2024-25)
4.	Concept design of a single occupant autonomous vehicle and mobility as a service (MaaS) for campus commuters	Sthitapragna Kollepara (M.Des.)	Prof. Sonal Atreya	Defended (2024-25)
5.	Play, Learn, Explore: Designing and Developing Interactive Games to Preserve Indian Lore	Manasi Milind Borade (M.Des.)	Prof. Sonal Atreya	Defended (2024-25)
6.	A Digital Twin Approach for Factory Optimization Using Discrete Event Simulation (Des) Tools and Industry 4.0 Techniques	Chaudhari Mohammad Tarique Mohammad Arif	--	Awarded (2023-24)
7.	Exploring Operations Optimisation techniques using Digital Twin	Anant Om (Integrated M.Tech.)	--	Awarded (2023-24)
8.	Studies on Microwave Cladding	Nikita Rai	--	Awarded (2022-23)
9.	Fabrication of High Aspect Ratio Microchannels on Borosilicate Glass using Micro-USM Process	Sebin Xavier	--	Awarded (2021–22)
10.	Microwave curing of green composites	Zorawar Rana	Dr. Inderdeep Singh	Awarded (2019–20)
11.	Experimental Studies on directional solidification in microwave casting	Vishal Manav	--	Awarded (2018–19)
12.	Microwave joining of nitronic steel	Shivani	Dr. Navneet Arora	Awarded (2018–19)
13.	Microwave casting of Mg-based alloy	Jitendra Yadav	--	Awarded (2017–18)
14.	Sintering of magnesium metal matrix composite by microwave energy	Sakshi Jaiswal	--	Awarded (2017–19)
15.	A Novel design of musical flute with continuous output frequency	Dhruv Narayan	Dr. Akshay Divedi	Awarded (2016–17)
16.	An ultrasonic micromachining approach for fabrication of micromoulds	Rohit Kumar	Dr. Akshay Divedi	Awarded (2016–17)
17.	Joining of pipes by Microwave Energy	Dheerendra Gamit	--	Awarded (2015–16)
18.	Studies on Machining of Composite Material using ECDM Process	Debabrata Naskar	Dr. Akshay Divedi	Awarded (2015–16)
19.	Study of Concentrator in Microwave Machining of Materials	Parvej	--	Awarded (2015–16)
20.	Machining of Silicon Wafers using Ultrasonic Machining	Shailesh Kumar Gupta	--	Awarded (2015–16)
21.	Microwave curing of Natural fiber reinforced PMCs	Gaurav Kumar	Dr. Inderdeep Singh	Awarded (2015–16)

22.	Machining of hard to cut materials using ECDM	Sachin Baghel	Dr. Inderdeep Singh	Awarded (2014–15)
23.	Comparative Analysis of Polymer Matrix Composites Processed by Microwaves and Compression Molding	Prag Sharma	Dr. Inderdeep Singh	Awarded (2014–15)
24.	Parametric Investigations on Electrochemical Discharge Form Machining	Khandelwal Gaurav Prakash	Dr. Akshay Dvivedi	Awarded (2014–15)
25.	Some Studies on Weldability Aspects of Nitronic Steels	Naveen Kumar	Dr. Navneet Arora	Awarded (2014–15)
26.	Fabrication of closed microchannel using USM	Saurav Acharya	--	Awarded (2013–14)
27.	Processing of industrial wastes using microwaves	Vaibhav Bist	Dr. Pradeep Kumar	Awarded (2013–14)
28.	Machining of Al-alloy using USM	Dungali Sreehari	Dr. Akshay Dvivedi	Awarded (2013–14)
29.	Microwave joining of MMCs	Jeevan Bist	Dr. Akshay Dvivedi	Awarded (2013–14)
30.	Some studies in Rotary ECDM	Faraz Ansari	Dr. D B Karunakar	Awarded (2013–14)
31.	Investigation on effect of process parameters for enhancing capabilities of micro USM	Sunil Kumar Maddeshia	Dr. Pradeep Kumar	Awarded (2012–13)
32.	Investigation on Finishing of External surfaces using abrasive Flow Machining	Tarlochan Singh	Dr. Akshay Dvivedi	Awarded (2012–13)
33.	Characterisation of MMCs developed using different moulding materials	Ramesh Babu Ningala	Dr. P K Jha	Awarded (2012–13)
34.	Investigations on dry-sliding and erosion wear of microwave induced wear resistant surfaces	Sunny Zafar	Dr. Navneet Arora	Awarded (2012–13)
35.	Development and characterisation of sustainable polymeric composites using microwaves	Mali Akshay Atul	Dr. Inderdeep Singh	Awarded (2012–13)
36.	Studies on Fabrication of Microchannels	Saurabh Swain	Dr. Pradeep Kumar	Awarded (2011–12)
37.	Modeling and simulation of Ultrasonic Assisted AFM process	Gaurav Arora	Dr. Pradeep Kumar	Awarded (2011–12)
38.	Modeling and simulation of Microwave Joining process	John George Tito	Dr. Pradeep Kumar	Awarded (2011–12)
39.	Development of Green Composites using Microwave energy	Sabir Ali	Dr. Inderdeep Singh	Awarded (2011–12)
40.	Characterisation of sustainable composites	Anil Sharma	Dr. Inderdeep Singh	Awarded (2011–12)
41.	Finishing of EDMed Inconel 718 Surface through Abrasive Flow Machining	Pramod Kumar Patnaik	Dr. Pradeep Kumar	Awarded (2010–11)
42.	Experimental Investigation of Various Process Parameters While Machining Glass Through Micro- USM	Vineet Chak	Dr. Pradeep Kumar	Awarded (2010–11)
43.	Modeling and Simulation of Microwave Metal Interaction and its Validation	P. Suryanarayana Murthy	Dr. Pradeep Kumar	Awarded (2010–11)
44.	Development and Characterization of Jet Slurry Erosion Resistant Metallic Cladding on Austenitic Stainless Steel	Prabhakar M. Bhovi	Dr. Sushanta Dutta	Awarded (2010–11)
45.	Development of New Polymer Media for Abrasive Flow Machining	G Venkatesh	Dr. Pradeep Kumar	Awarded (2009–10)
46.	Optimization of Process Parameters in Microwave Joining of Metallic Materials in a Multimode Microwave Applicator	Chintam Suresh Kumar	Dr. Pradeep Kumar	Awarded (2009–10)

47.	Theoretical Studies on the Material Grain Development during Severe Plastic Deformation (SPD) Process	Venkata Subbarayudu Pesala	--	Awarded (2009–10)
48.	Behaviour of Closed-Cell Aluminium Foam under Impact Loading as Energy Absorber	Vaidya Sudarshan Vishnurao	Dr. Inderdeep Singh	Awarded (2009–10)
49.	Investigation on Influence of Process Parameters of Electro Discharge Machining of Al 7075 SiC Composite	Kunal Nawasagare	Dr. D B Karunakar	Awarded (2009–11)
50.	Numerical Simulation of ballistic impact on polymer matrix composite material	Sunil Kumar	Dr. Inderdeep Singh	Awarded (2008-09)
51.	Maintenance prevention Design and equipment planning for OEE implementation	Sanjit Singh	Dr. Dinesh Kumar	Awarded (2008-09)
52.	Electrochemical honing of helical gears	Joy Prakash Mishra	Dr. N. K. Jain	Awarded (2008-09)
53.	FE analysis of honeycomb structures	Milind Gharage	Dr. Inderdeep Singh	Awarded (2008-09)
54.	Numerical simulation of low velocity and Ballistic impact on polymer composite Laminated structures	Durga Shankar Gupta	Dr. Inderdeep Singh	Awarded (2007-08)
55.	Design and analysis of Insertion mechanism and trajectory control for in-vivo robot for stomach biopsy	Sreenath Reddy	Dr. P. M. Pathak	Awarded (2007-08)
56.	Development of Electrochemical Honing for finish machining of spur gears	Ramlal Naik	Dr. N. K. Jain	Awarded (2007-08)
57.	Maintenance strategy selection	Uday Devekar	Dr. Dinesh Kumar	Awarded (2007-08)
58.	Modeling and dynamic analysis of biocompatible robotic arm	Chandekar Bhupendra Gopal	Dr. P. M. Pathak	Awarded (2006-07)
59.	Diamond grinding of Thermal spray deposits	L. Deshpandulal	--	Awarded (2006-07)
60.	Some studies on effect of process parameters on process performance in hybrid abrasive flow machining	K. Malla Reddy	Dr. Pradeep Kumar	Awarded (2006-07)

[C] Undergraduate (B. Tech.) Dissertation Supervision (Total: 39 + 02)

Sl.	Degree	Title of Dissertation	Name of student	Co supervisor	Year
1.	B.Tech. (Indl. & Prod. Engg.)	Computational analysis of heat affected zone in microwave drilling	Amratansh Shrivastava Bhawna Sarika	--	2024-25
2.	-do-	Production line performance to reduce manufacturing failures	Raman Bansal Shreyansh Singh Tanishq Agarwal	--	2024-25
3.	-do-	A model for locating EV charging station in India	Manshi Madhushree Mitali Borkar Parag Garg	--	2022-23
4.	B.Tech. (Mech. Engg.)	Development of a proctoring tool using machine learning	Samarth Koolwal Sankalp Choudhary Shukshi Raj	--	2021-22
5.	-do-	Development of an assisting device for differently able person	Keshvam Nikhil Mittal Piyush Jadiya	--	2020-21

6.	-do-	Development of AR-based virtual laboratory	Ayush Dixit Vibhanshu Sharma Vivek Chand	--	2020-21
7.	-do-	Joining of composite materials using various techniques	Yagya Narayan Satya Prakash	Prof. Inderdeep Singh	2019-20
8.	-do-	Development of data-driven heuristic/ metaheuristic for real-life multi-product production network planning	Anant Vashisth	--	2018-19
9.	-do-	Development of Data-Driven Productivity Enhancement Pipeline.	Raut Ankush Chandrakant Saurabh Shubham Hitendra Pal Singh Rao	--	2018-19
10.	B.Tech. (Mech.E ngg.)	Quality analysis of food grains using image processing	Praful Anand Anand Kumar Roopkishor Singh	--	2017-18
11.	B.Tech. (Indl. & Prod. Engg.)	Study of food & grocery supply chain in Indian context	Hingar Rahul Brajesh Palash Choudhary Patel Rushi B. Kumar	--	2017-18
12.	-do-	Experimental studies for determining feasibility of microwave drilling in metals	D. Roshan Ujjwal Gahlot Siddhant Sharma Manish Kumar Jangir	--	2017-18
13.	-do-	Development of a customer-bid based model for pricing cab fare.	Apurv Maheshwari Utkarsh Narayan Yash Gupta	--	2016-17
14.	-do-	Analysis of Manufacturing Systems using Predictive Decision Model	Tanmay Jain Nikhil Guria Diksha Meena	--	2015-16
15.	-do-	Analysis of Facilities in the MIED, IIT Roorkee	Varun Pallav Jain	--	2015-16
16.	-do-	DSS for Site Selection	Ashish Taneja Mohit Hemrajani Rohit Pathak	--	2014-15
17.	-do-	Processing of Materials with Microwaves for Joining Applications	Akash Chaudhury Mahipat Shahi Rahul Jain	--	2014-15
18.	- Do -	Characterisation of microwave cast.	Revti Raman Suman Kumar Suman Manu Mrinal	--	2013-14
19.	- Do -	Development of microwave casting.	Mohit Chaudhary Sourabh Puri	--	2012-13
20.	- Do -	Characterisation of microwave sintered mechanical elements.	Abhay Jain Anuj Gang Bhartendu Sirohi	--	2012-13
21.	- Do -	Microwave processing of green composites	Aniket Modi Himanshu Sharma	Dr. Inderdeep Singh	2012-13
22.	- Do -	Development and characterisation of Microwave cladding of Inconel on stainless steel.	Archana Singh Manisha Rana	--	2011-12
23.	- Do -	Modeling and Simulation of Hybrid Abrasive Flow Machining (AFM)	Prateek Rai	--	2010-11
24.	- Do -	Automation of motion control system for Micro USM	Anant Saxena Lalit Mohan Singh Meena Lokesh Gulati	--	2010-11

			Manoj Meena		
25.	- Do -	Design and Fabrication of Abrasive Jet Machine with emphasis on Nozzle Design	Rohit Srivastava Sharwan Ram Kumhar Shashank Shekhar	--	2009–10
26.	- Do -	Development of Copper Coating on Graphite using Microwave Field	Anshul Meshram Sameer Kumar Mandal Satya Pal Singh	--	2009–10
27.	- Do -	Assessment of HAZ in EDMed surface	Samrat Maji Tuhin Harit Rohitash Kumar (M.E.)	--	2008-09
28.	- Do -	Index of Agility in Indian Two-Wheeler Manufacturing Industry	V. Chabra, V. Jain	--	2006-07
29.	- Do -	Fabrication and Testing of thin CFRP	Kumar Pritom S. Sharma A. Agarwal	Dr. I. Singh	2006-07
30.	B. E. (Mech. Engg.)	Adaptive Slicing for Effective Rapid Prototyping	S. Mohan N. Chakravarthy B. Das	--	2005
31.	- Do -	PC-Based Automatic Check Gate Operation System	D. Nath P.P. Bora P.P. Dutta	--	2005
32.	- Do -	Design of a Bamboo Shoot Peeling Cutter	Indra Mohan Das Ekbal Hussain Prodhani Saurabh Bikas Borah Pallab Kumar Kalita	Dr. Plabon Kakoti	2005
33.	- Do -	A Study on Rapid Prototyping Processes With Special Emphasis on Three-Dimensional Deposition Method	B. Goswami B. Sharma P. P. Maut	--	2004
34.	- Do -	Study of CNC Systems and development of a CNC Integrated Software	K. Churanjit B. Gogoi A. Chakraborty	--	2004
35.	- Do -	Design and Fabrication of a Low Cost Solar Electric Hybrid Dryer for Mushroom	Rajib Kr. Singh	--	1999
36.	- Do -	Design and Fabrication of a Mechanised Device for Surface Finishing	A. K. Sharma M. K. Agarwal	--	1998
37.	- Do -	Design and Fabrication of a Walking Robot	Rana Saikia	--	1998
38.	- Do -	Development of a Computerised Parts coding System : A Group Technology Approach	I. Haque D. Singh T. Deka Agha J. Khan	--	1997
39.	- Do -	Microstructure Study of a few Common Mechanical Elements Subjected to Dynamic Thermal Load	J. Devi L. Rajkhowa	--	1997
40.	- Do -	Robotic Engineering : An Overview with Solution of Direct Kinematics Problem involved in Robot Manipulator	Mohan K. Taye B. Deka P. Deori	Dr S M Hazarika	1994
41.	- Do -	Design Considerations of an Orifice Meter	D. Chetri	--	1993

International Journal Reviewer / Editorial Board Member

A. Reviewer (Journal)

1. Journal of Microwave Power and Electromagnetic Energy (Taylor & Francis)
2. Materials Science and Technology (Taylor & Francis)
3. Materials Characterization (Elsevier)
4. International Journal of Mechanical Sciences (Elsevier)
5. Composites Part A: Applied Science and Manufacturing
6. Fibers and Polymers (Springer)
7. Journal of Alloys and Compounds (Elsevier)
8. Journal of Magnesium and Alloys (KeAi)
9. Applied Surface Science (Elsevier)
10. Journal of Manufacturing Processes (SME)
11. Journal of Tribology (ASME)
12. International Journal of Metalcasting (Springer, American Foundrymen Society, USA)
13. International Journal of Polymer Analysis and Characterization (Taylor & Francis)
14. Ceramics International (Elsevier)
15. Tribology International (Elsevier)
16. Tribology Transactions (Taylor & Francis)
17. Tribology Letters (Springer)
18. Precision Engineering (Elsevier)
19. Physica Scripta (IOP Publishing)
20. Advanced Engineering Materials (Wiley)
21. Journal of Testing and Evaluation (ASTM)
22. Kovové Materiály – Metallic Materials
23. Surface Engineering (Taylor & Francis)
24. Proceedings of the IMechE Part B: Journal of Engineering Manufacture (Sage)
25. Proceedings of the IMechE Part E: Journal of Process Mechanical Engg. (Sage)
26. Journal of Composite Materials (Sage)
27. Journal of Thermoplastic Composite Materials (Sage)
28. International Journal of Advanced Manufacturing Technology (Springer)
29. Surface & Coatings Technology (Elsevier)
30. Indian Journal of Engineering & Material Sciences (NISCAIR)
31. Sadhna (Springer)
32. Transaction of the Indian Institute of Metals

B. Guest Co-Editor of International Journal

1. International Journal of Advanced Manufacturing Technology (2008) 38.

C. Editorial Board Member

ISME Journal of Manufacturing Sciences, published by the Indian Soc. of Mech. Engineers, New Delhi.

D. Editorial Board Member (International Conference Proceedings)

1. Jointly Edited the Proceedings of the First International and 22nd AIMTDR Conference held at IIT Roorkee, 2006

Other International Recognition

A. Member, International Scientific Committee

1. IXth INTERNATIONAL SAMSONOV CONFERENCE "MATERIALS SCIENCE OF REFRACTORY COMPOUNDS" (MSRC-2024), Kyiv, Ukraine (May 27-30, 2024).
2. Member, Technical Program Committee, 7th International Conference on Materials Science and Manufacturing Engineering, MSME 2026, Buenos Aires, Argentina, January 4-7, 2026.

B. Who's Who

1. Selected as one of the Biographees of The Marquis **Who's Who in the World** in the 27th Edition (2010).

Session Chair

1. Chaired a Technical Session on Non-Traditional Processing of Advanced Material Processing Track in the **ASME 2013 International Manufacturing Science and Engineering Conference (MSEC2013)**, June 10-14, 2013, Madison, Wisconsin, USA.
2. Chaired a Technical Session on November 09 in the **International Conference on Design, and Manufacturing Technology (ICDMT 2024)**, November 08 – 10, 2024, PEC university (deemed-to-be-University), Chandigarh.
3. Chaired a Technical Session on June 20, 2024 in the **International Conference on Composites Design, Processing, Manufacturing and Health Monitoring**, June 20-21, 2024, IIT Mandi, India.
4. Chaired a Technical Session on May 30, 2020 in the **International Conference on Aspects of Materials Science and Engineering**, Panjab University, Chandigarh, India.
5. Chaired a Plenary Session and a Technical Session in the **International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN: 3I-2017)** rganized by the Department of Mechanical and Industrial Engineering, IIT Roorkee, Roorkee, India on December 06, 2017.
6. Chaired a Parallel Technical Session in the **International Conference on Processing and Fabrication of Advanced Materials (PFAM-2014)** rganized by the Department of Mechanical and Industrial Engineering, IIT Roorkee, Roorkee, India on December 05, 2015.
7. Co-chaired a Plenary session in the **International Conference on Advanced Materials and Processing (ICAMP – 2011)** held at the R M K Engineering College, Chennai (TN) with Professor L. Vijayaraghavan, Mechanical Engineering Department, IIT Madras, Chennai, India on December 19, 2011.
8. Chaired a Parallel Session in the **National Conference on Emerging Challenges for Sustainable Business – 2012** organised by the Department of Management Studies, IIT Roorkee, Roorkee, India on June 01, 2012.

Research Papers Presented Outside India

SI No.	Title of the Research Paper	Programme	Date (Duration)	Venue
1.	Structure-property correlation in aa 2024 cylindrical cast produced using alumina and graphite mould through microwave irradiation	XX International Conference on Microwave and High Frequency Applications (AMPERE 2025),	September 15–18, 2025	Villa Romanazzi Carducci Conference Centre, Bari, Italy.
2.	Investigation on microwave machining of difficult-to-machine alloys	XX International Conference on Microwave and High Frequency Applications (AMPERE 2025),	September 15–18, 2025	Villa Romanazzi Carducci Conference Centre, Bari, Italy.
3.	Study of Mechanical Properties of Microwave Processed	MS&T20, Materials Science & Technology	November 2-6, 2020	Pittsburgh, USA (Virtual).

	Biodegradable Metal Composites.	Conference		
4.	Resource-Efficient Melting of Bulk Magnesium Alloy AZ91 using Microwave Energy at 2.45 GHz	International Conference on Innovative Applied Energy (IAPE 2019) (Keynote Talk)	March 14 – 15, 2019	King's Centre, Oxford, UK
5.	Experimental investigation on in-situ microwave casting of copper	Intl. Conference on Recent Advances in Materials & Manuf. Technologies (IMMT 2017) (Invited Talk)	Nov. 28-29, 2017	BITS Pilani, Dubai Campus, UAE
6.	An ANN Approach for Prediction of Wear Behaviour of WC-12Co Nanostructured Microwave Clad	International Tribology Conference (ITC 2015)	Sept. 16 – 20, 2015	Tokyo University of Science, Tokyo, Japan
7.	Experimental investigations on micro channeling through ECDM using different electrolytes	ASME 2013 International Manufacturing Science and Engineering Conference (MSEC2013)	June 10-14, 2013	Madison Convention Centre, Wisconsin, organized by University of Wisconsin at Madison, USA.
8.	Investigations on microstructural characterization of microwave composite clads on austenitic stainless steel	2 nd Annual International Conference on Materials Science, Metal & Manufacturing (M3 2012)	November 19-20, 2012	Hotel Fort Canning, Singapore
9.	Micromachining with ECDM: Research potentials and experimental investigations	International Conference on Mechanical, Industrial, and Manufacturing Engineering (ICMIME 2012)	January 15-17, 2012	Geroldswil Swiss Hotel, Geroldswil, Zurich, Switzerland.
10.	Investigation on Sliding Wear Performance of WC10Co2Ni Cladding Developed Through Microwave Irradiation	International Conference on Wear of Materials (WOM 2011)	05.04.2011 (April 03 – 07, 2011)	Sheraton Society Hill, One Dock St, Philadelphia, PA 19106, United States of America (USA).
11.	Some Aspects of Surface Integrity Study of Electro Discharge Machined Inconel 718	International Conference (MATADOR 2010)	14.07.2010 (July 14 –16, 2010)	The University of Manchester, Barnes Wallis Building Sackville Street Manchester M60 1QD, UK.

Courses Organized

Sl	Title of the Course	Sponsored By	Duration	Date
1.	Nurturing Future Leadership Program (NFLP)	Ministry of Education under the MMTTP	One Weeks	March 26 – March 31, 2024
2.	Innovative Products: Conceptualisation to Commercialisation	QIP, IIT Roorkee	One Weeks	Jun 15 -19, 2018
3.	Make in India: Dreams to Reality	QIP, IIT Roorkee	Two Weeks	Jan 04 -14, 2017
4.	Ishan Vikas	MHRD, Govt. of India	11 Days	Dec 5-Dec 15, 2016
5.	Ishan Vikas	MHRD, Govt. of India	12 Days	June 22-Jul 03, 2016
6.	Ishan Vikas	MHRD, Govt. of India	09 Days	June 11-19, 2015
7.	Applied Research: Design and Execution	QIP, IIT Roorkee	One Week	June 15-19, 2015

8.	Microwaves in Material Processing (One-Day Workshop)	QIP, IIT Roorkee	One Day	June 20, 2014
9.	Finish Machining: A State-of-the-Art	QIP, IIT Roorkee	One Week	September 02-09, 2013
10.	Ultrasonic machining approach to fabrication of microchannels (One-Day Workshop)	QIP, IIT Roorkee	One Day	March 13, 2013
11.	A Novel Approach to Processing of Green Composites	QIP, IIT Roorkee	One Day	March 09, 2013
12.	Manufacturing Excellence through Quality Assurance	QIP, IIT Roorkee	One Week	July 09 – 13, 2012
13.	Advances in Surface Finishing Technologies with Special reference to Abrasive Flow Machining	QIP, IIT Roorkee	One Day	February 19, 2012
14.	Processing Challenges and Newer Manufacturing Methods	QIP, IIT Roorkee	One Week	June 25 – 29, 2011
15.	Advanced Materials and Manufacturing	AICTE, New Delhi	One Week	June 14– 18, 2010
16.	Composites: Design and Manufacturing	AICTE, New Delhi	One Week	July 7 – 11, 2008
17.	Controlling Abrasion and Erosion in Cement Plants	Self-sponsored under CEC, IIT Roorkee	Four days	May 7 – 11, 2008
18.	Combating Wear	Self-sponsored under CEC, IIT Roorkee	One week	May 29 – June 02, 2007
19.	Advanced Processing of Composite Materials	AICTE, New Delhi	One Week	July 24 – 28, 2006

Invited Talk

Sl	Title of the Lecture	Programme	Year	Institution
1.	Microwave Material Processing: A green Approach	Keynote Talk (International Conference on Greener Technology in Mechanical Engineering, ICGTME 2025)	Feb 03, 2025	BITS Pilani
2.	Manufacturing, Economy, Collaboration and Beyond: Some Thoughts	Chief Guest Talk in the 2 nd International Conference on Emerging Materials, Smart Manufacturing & Computational Intelligence, July 18-19, 2024	July 18, 2024	Chitkara University, Chandigarh, India
3.	Microwave assisted treatment of natural fibers for fabrication of sustainable Sisal/HDPE composites: A resource efficient approach	Invited Talk in the International Conference on Composites Design, Processing, Manufacturing and Health Monitoring, June 20-21, 2024	June 20, 2024	IIT Mandi, India
4.	Microwave cladding: a novel technique for development of nanostructured wear resistant surfaces	Keynote Talk (Symposium: Films and Coatings) in the IX th INTERNATIONAL SAMSONOV CONFERENCE "MATERIALS SCIENCE OF REFRACTORY COMPOUNDS" (MSRC-2024), May 27-30, 2024	May 30, 2024	MSRC-2024 Kyiv, Ukraine
5.	Microwaves in Manuf.: Fundamentals, Resource Efficiency, Potential Applications and Challenges	Chief Guest Talk in the KARYASHALA (High-End Research Training Programme)	March 18, 2024	NIT Warangal, Telangana, India

		for Current Trends and Future Aspects on Microwave Processing of Metallic Materials, 18-20 March, 2024		
6.	Workshop on National Education Policy 2020	Keynote Talk on “NEP 2020 implementation and Takeaways at IIT Roorkee”, July 21 – 22, 2023.	July 21, 2023	Inderprastha Engineering College, Ghaziabad
7.	UAAFM: A novel finishing process for difficult to machine objects	TEQIP-III sponsored STC on “Recent Advancements in Micromanufacturing”	Nov. 24, 2020	NIT Uttarakhand, Srinagar
8.	Fabrication of microchannel on silicon wafer for heat transfer applications	TEQIP-III sponsored STC on “Recent Advancements in Micromanufacturing”	Nov. 27, 2020	NIT Uttarakhand, Srinagar
9.	Microwave joining of materials	Short Term Training Programme (STTP) under AICTE-AQIS on Eclectic Research Trends in Manuf.	Oct. 06, 2020	Poornima College of Engineering, Jaipur
10.	Design Thinking Approach to Development of Medical Devices	ATAL FDP on Design Thinking for Innovative Medical Devices	Sept. 23, 2020	Malaviya NIT, Jaipur
11.	Microwave Energy – Applications in Manufacturing	STC on “Green Technologies for Sustainable Growth”	Sept. 15, 2020	NIT Meghalaya, Shillong
12.	Drilling of Materials using Microwave Energy	STC on “Green Technologies for Sustainable Growth”	Sept. 15, 2020	NIT Meghalaya, Shillong
13.	Applying Design Thinking: Bad Design to Good Design	ATAL FDP on Design Thinking	Sept. 11, 2020	Oriental Institute of Engg. & Tech., Bhopal
14.	Material Genomics: some thoughts from processing perspectives	TEQIP-III sponsored STC on “Contemporary Material Technologies”	Sept. 09, 2020	NIT Jalandhar
15.	Green Tribology – some thoughts	TEQIP-III sponsored FDP on Advances in Green Tribology	May 06, 2019	Moradabad Institute of Technology, Moradabad.
16.	Green Tribology – towards solutions	TEQIP-III sponsored FDP on Advances in Green Tribology	May 06, 2019	Moradabad Institute of Technology, Moradabad.
17.	Tools for Advance Mfg. with emphasis on Concurrent Engineering	TEQIP-III sponsored FDP on Advances in Computer Aided Manufacturing	April 04, 2019	University Institute of Engg. & Technology (UIET), Kurukshetra
18.	Resource-Efficient Melting of Bulk Magnesium Alloy AZ91 using Microwave Energy at 2.45 GHz	International Conference on Innovative Applied Energy (IAPE 2019) (Keynote Talk)	March 14 – 15, 2019	King's Centre, Oxford, UK
19.	Protecting Innovation : Realigning our thoughts on IPR	Key Note Address, National Conference on Trends & Innovations in Mechanical Engineering (TIME 2018)	October 05, 2018	Quantum University, Roorkee
20.	Microwave joining of metallic pipes: challenges and achievements	Keynote Address, 1 st National Conf. on Advances in Welding Technology– NAWT 2018	September 18, 2018	NIET, Greater Noida
21.	Intellectual Property Right: Importance and Steps	Expert Lecture	July 20, 2018	Uttaranchal University, Dehradun
22.	Micromachining – challenges and achievements: some results from IIT Roorkee	Expert Lecture	July 03, 2018	ABES College of Engineering, Noida
23.	Nanometric WC-based	TEQIP-III sponsored FDP on	May 02, 2018	Delhi Technical

	Microwave Clad for Wear Applications	Advances in Surface Engineering		University, Delhi
24.	IPR and Entrepreneurship: Realigning our thoughts	Expert Lecture in the National Conference on Intellectual Property and Entrepreneurship (NCIPE-2018), Organized by IPR Chair, IIT Roorkee	March 19, 2018	Indian Institute of Tech. (IIT) Roorkee
25.	Quality in Research Publications	Expert Lecture in the TEQIP Program	February 17, 2018	Malnad College of Engg. (MCE), Hasan
26.	Hybrid Machining - Implementations and Results	Expert Lecture in the TEQIP Program	February 16, 2018	Malnad College of Engg. (MCE), Hasan
27.	What is advance in Advance Manufacturing ?	Expert Lecture	February 10, 2018	NIT Uttarakhand, Srinagar
28.	Microwave Cladding : An Irradiation based Technique to deposit Composites	Expert Lecture in the Workshop on "Composite Materials in Engineering Applications: Design and Manufacturing Perspective"	January 19, 2018	Indian Institute of Tech. (IIT) Mandi
29.	Experimental investigation on in-situ microwave casting of copper	Invited Talk in Intl. Conference on Recent Advances in Materials & Manuf. Technologies (IMMT 2017)	Nov. 28-29, 2017	BITS Pilani, Dubai Campus, UAE
30.	What is Advanced in Advance Manufacturing? A case of Finish Machining through Ultrasonically Assisted Abrasive Flow Machining (UAAFAM)	Expert Lecture in the TEQIP Program	October 18, 2016	NIT, Kurukshetra
31.	Microwave Drilling : A Novel Micro-drilling Technique using Domestic Microwave Applicator	Key-Note Lecture in the National Seminar on- Advance Materials and Manufacturing Technologies	March 30, 2016	Graphic Era Hill University, Dehradun
32.	Advanced Manufacturing with Special Reference to Hybrid Manufacturing	Key-Note Lecture in the National Workshop on : Recent Trends in Quality, Design and Production"	February 26, 2016.	Future Institute of Engineering and Technology, Bareilly, Uttar Pradesh.
33.	Intellectual Property Right and a few Patents of IIT Roorkee	Faculty Development Program	June 01, 2015	College of Engineering, Pune (CoEP)
34.	Applications of 2.45 GHz Microwaves in Micro-Drilling	Faculty Development Program	June 01, 2015	College of Engg., Pune (CoEP)
35.	Processing Challenges of Ceramic Composites and a Newer Processing Route	Quality Improvement Program for Faculty	2015 (28.2.2015)	ITS Engineering College, Greater Noida
36.	Processing of metal-based materials using 2.45 GHz microwaves with applications in joining and cladding	Invited Talk, 5th International and 26th AIMTDR -2014	2014 (13.12.2014)	IIT Guwahati, Guwahati
37.	Advanced Manufacturing with Special Reference to Hybrid Manufacturing	Expert Lecture	2014 (29.11.2014)	Graphic Era Hill University, Dehradun
38.	Microwaves in Material Processing	Quality Improvement Program for Faculty	2014 (31.07.2014)	GNDEC, Ludhiana
39.	Some aspects of Ultrasonic based Micromachining	Invited lecture under TEQIP	2014 (05.06.2014)	PEC University, Chandigarh.
40.	A Green approach to Processing of Green Composites	Quality Improvement Programme for Faculty	2014 (14.05.2014)	Noida Institute of Engineering and Technology (NIET), Greater Noida, India.

41.	Processing of metal-based materials using 2.45 GHz microwaves	International Colloquium Veda-Kolleg 2013	2013 (20.10.2013)	IIT Roorkee, Roorkee
42.	Processing of metal-based materials using 2.45 GHz microwaves with applications in joining and cladding	Quality Improvement Programme for Faculty	2013 (18.09.2013)	Indian Institute of Technology Kanpur (IITK), Kanpur.
43.	Micromachining: Fundamentals and developments in USM and ECDM based Techniques	Invited lecture under TEQIP	2013 (14.09.2013)	PEC University, Chandigarh.
44.	Micromachining : Concepts and Enabling Technologies with cases in Fabrication of Microchannels	Expert Lecture in the Faculty development Programme under TEQIP	2013 (06.06.2013)	PEC University, Chandigarh.
45.	Microwave Cladding: Challenges, Developments and Possibilities	Quality Improvement Programme for Faculty	2013 (08.01.2013)	Noida Institute of Engineering and Technology (NIET), Greater Noida, India.
46.	Micromachining: Developments and Possibilities	Faculty Development Programme sponsored by Punjab Technical University (PTU)	2013 (04.01.2013)	Amritsar College of Technology and Engineering, Amritsar.
47.	Advanced Manufacturing: Need, Growth and Applications	Expert Lecture Series in the Mechanical Engineering Department	2011 (11.03.2011)	Seth Jai Parkash Mukand Lal Institute of Engg. and Tech. (JMIT), Jamuna Nagar, Haryana
48.	Electromagnetic Energy in Material Processing: An Approach to Green Manufacturing	Plenary Speaker in the National Conference at the Ganapati Institute of Technology & Management, 2010.	2010 (12.11.2010)	Ganapati Institute of Technology & Management, Bilaspur, Haryana, India.
49.	New Paradigms in Advanced Manufacturing	Invited Talk Series in the Mechanical Engineering Department	2010 (29.10.2010)	College of Engineering and Rural Technology, Meerut, India
50.	Microwave Processing of Materials – A New Paradigm in Processing of Advanced Materials	Key Speaker in AICTE sponsored National Seminar on Advanced Manufacturing Processes	2010 (21.02.2010)	Noida Institute of Engineering and Technology (NIET), Greater Noida, India.
51.	Microwave Processing of Materials – A New Paradigm in Processing of Engineering Materials	Special Talk Series in the Mechanical Engineering Society	2009 (21.09.2009)	SASTRA University, Thanjavur, TN, India.
52.	Microwave Processing of Materials – A New Paradigm in Processing of Engineering Materials	Community Development Programme	2008 (23.05.2008)	NIT Jalandhar, India.
53.	Designing Advance Engineering Materials – Ceramics and Ceramic Composites	Community Development Programme	2008 (23.05.2008)	NIT Jalandhar, India.

Special Lecture Delivered

Sl.	Title of the Lecture	Colloquium / Course	Year	Institution
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1.	Strategic Planning for Holistic Education: Transitioning through NEP 2020	'Public Policy and Good Governance' (9 th webinar)	June 09, 2025	National Centre for Good Governance (NCGG), Dept. of Administrative Reforms & Public Grievances Ministry of Personnel, Public Grievances & Pensions, Government of India
2.	Design Thinking in the context of Project Management and Innovation	PRIME-1: "Project and R&D Management Essentials"	Jan 29, 2025	Institute of Technology Management (ITM), Mussoorie.
3.	Leadership, Negotiation, Conflict Resolution, and Work Ethics	NPTEL Workshop titled "Developing Leadership and Employability through Soft Skills in a Digital Age"	Nov. 07, 2024	IIT Roorkee
4.	National Education Policy (NEP) 2020: Initiatives of IIT Roorkee	Nurturing Future Leadership Programme (NFLP) under the Madan Mohan Malvy Teacher Training Programme (MMTTP) of the Ministry of Education, Govt. of India, March 26-30, 2024.	March 27, 2024	IIT Roorkee
5.	How to file a Patent ?	IPR Chair, IIT Roorkee webinar "Workshop on Basics of IPR for Beginners"	May 18, 2020	IIT Roorkee
6.	Research, Research Methodology and Research Publication	Research Scholars' Day	May 16, 2018	MIED, IIT Roorkee
7.	Concurrent Engineering	FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee	Feb. 10, 2018	National Institute of Technology (NIT) Uttarakhand, Srinagar
8.	Group Technology	-do-	-do-	-do-
9.	CIM / FMS	-do-	Feb. 10, 2018	-do-
10.	Product Design and Manuf.	-do-	-do-	-do-
11.	Concurrent Engineering	FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee	Dec. 12, 2017	Tula's Institute, Dehradun
12.	Group Technology	-do-	Dec. 12, 2017	Tula's Institute, Dehradun
13.	Flexible Manuf. Systems	-do-	Dec. 11, 2017	Tula's Institute, Dehradun
14.	Product Design and Manuf.	-do-	Dec. 09, 2017	Tula's Institute, Dehradun
15.	Manufacturing and Micromachining: Confusions and Concept	Expert Lecture	Oct. 03, 2017	Quantum School of Technology, Roorkee
16.	Defect-free Casting through In-situ Microwave Casting	AICTE Sponsored Short Term Course	July 07, 2017	IIT Roorkee
17.	Leadership and Personality Development	Ishan Vikas Program	July 01, 2017	IIT Roorkee
18.	Knowing Yourself	Ishan Vikas Program	June 23, 2016	IIT Roorkee
19.	Express Yourself	Ishan Vikas Program	June 13, 2015	IIT Roorkee
20.	Research Publication	AICTE Sponsored Short Term Course	June 19, 2015	IIT Roorkee

21.	Resource Generation and Research Funding	AICTE Sponsored Short Term Course	June 17, 2015	IIT Roorkee
22.	Quality in Research	AICTE Sponsored Short Term Course	June 16, 2015	IIT Roorkee
23.	Research and Doing Research	AICTE Sponsored Short Term Course	June 16, 2015	IIT Roorkee
24.	Microwave Processing of Materials	AICTE Sponsored Short Term Course	July 08, 2014	IIT Roorkee
25.	Microwave Joining of Materials	One-Day QIP Workshop	June 20, 2014	IIT Roorkee, Roorkee
26.	Significance of Microwaves in Material Processing	One-Day QIP Workshop	June 20, 2014	IIT Roorkee, Roorkee
27.	Advanced Manufacturing with Special Reference to Hybrid Manufacturing	Expert Lecture	November 29, 2014	Graphic Era Hill University, Dehradun
28.	Processing of metal-based materials using 2.45 GHz microwaves	International Colloquium Veda-Kolleg 2013	October 20, 2013	IIT Roorkee, Roorkee
29.	Processing of metal-based materials using 2.45 GHz microwaves with applications in joining and cladding	Quality Improvement Programme for Faculty	September 18, 2013	Indian Institute of Technology Kanpur (IITK), Kanpur
30.	Micromachining: Fundamentals and developments in USM and ECDM based Techniques	Invited lecture under TEQIP	September 09, 2013	PEC University, Chandigarh
31.	A State-of-the-art in Finish Machining : Concepts and Technologies	AICTE Sponsored Short Term Course	September 02, 2013	IIT Roorkee
32.	Micromachining: Concepts and Enabling Technologies with cases in Fabrication of Microchannels	Faculty Development Programme under TEQIP	June 06, 2013	PEC University, Chandigarh
33.	Enabling Micromachining Technologies in Fabrication of Microchannels	QIP-sponsored Workshop	13 March, 2013	I.I.T. Roorkee
34.	Microwave Heating Approach to Processing of Green Composites	QIP-sponsored Workshop	09 March, 2013	I.I.T. Roorkee
35.	Manufacturing Excellence and Quality	AICTE Sponsored Short Term Course	09 July, 2012	I.I.T. Roorkee
36.	Advanced Material Removal Processes – I	AICTE Sponsored Short Term Course	13 July, 2012	I.I.T. Roorkee
37.	Advanced Material Removal Processes – II	AICTE Sponsored Short Term Course	13 July, 2012	I.I.T. Roorkee
38.	Developments in Surface Finishing Technologies	QIP-sponsored Workshop	Feb 19, 2012	I.I.T. Roorkee
39.	Microwave Processing of Metal-based Materials: A Sustainable Approach for Development of Metallic Joints and Wear Resistant Composite Cladding	IHM-Colloquium	June 30, 2011	Institute of Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
40.	Developments in Materials Research and Emergence of Micromachining	AICTE Sponsored Short Term Course	14 th June, 2010	I.I.T. Roorkee
41.	Processing of Ceramic composites	AICTE Sponsored Short Term Course	15 th June, 2010	I.I.T. Roorkee
42.	Materials Processing using Electromagnetic Energy	AICTE Sponsored Short Term Course	18 th June, 2010	I.I.T. Roorkee
43.	Materials and Metallurgical Characterisation Techniques : An Overview	Continuing Education Programme	25 th May, 2010	I.I.T. Roorkee

44.	Quality in Design and Manufacturing	QIP Sponsored Short Term Course	2008	I.I.T. Roorkee
45.	Mechanical and metallurgical aspects in controlling abrasion and erosion wear	Continuing Education Programme	2008	I.I.T. Roorkee
46.	Plasma spraying and microwave glazing for performance enhancement	Continuing Education Programme	2008	I.I.T. Roorkee
47.	Characterisation of engineered surfaces	Continuing Education Program	2008	I.I.T. Roorkee
48.	Characterisation of engineered surfaces	Continuing Education Program	2007	I.I.T. Roorkee
49.	Plasma spray deposits in controlling erosion wear	Continuing Education Programme	2007	I.I.T. Roorkee
50.	An Overview of Composite Materials	QIP Sponsored Short Term Course	2006	I.I.T. Roorkee
51.	Processing of Ceramic Composites	QIP Sponsored Short Term Course	2006	I.I.T. Roorkee
52.	Ceramics and Ceramic Composites	QIP Sponsored Short Term Course	2004	I.I.T. Guwahati
53.	Tools for Intelligent Manufacturing	AICTE Sponsored Short Term Course	2001	Sri Venkateshwara College of Engg., Chennai

Membership of Professional Bodies

1. Fellow, Institution of Engineers (India) (Membership No. F – 1214035).
2. Member, ASME, USA (Membership No. 100154747).
3. Member, Society of Manufacturing Engineers (SME), USA (Membership No.15716656).
4. Life Member, Indian Institution of Industrial Engineering, Mumbai (Membership No. LM9198 (99)).
5. Member, Global Science and Technology Forum, Singapore.
6. Life Member, Materials Research Society of India, Bangalore, (Membership No. LMB 1621).
7. Life Member, Indian Society for Technical Education, New Delhi, (Membership No.LM25634).
8. e-Member, TMS, USA.

Courses Developed

[A] National Programme on Technology Enhanced Learning (NPTEL)

Apurbba Kumar Sharma and Pradeep Kumar, "Advanced Manufacturing Processes", 2014.

[B] National Mission Project on Pedagogic Development (Sponsored by the MHRD)

Apurbba Kumar Sharma, Inderdeep Singh, Pradeep Kumar, "Principles of Industrial Engineering", 2010.

[C] For Post Graduate Students at IIT Roorkee (M. Des./M. Tech./Pre-Ph.D.)

- a. Surface Engineering
- b. Friction and Wear
- c. Laser Material Processing
- d. Materials and Manufacturing

[D] For Undergraduate students (B.Tech./ B.E.)

- a. Microwave Materials Processing: Theory and Practice

b. Computer Numerical Control

DETAILS OF RESEARCH PUBLICATIONS

(Name: Dr. Apurbba Kumar Sharma)

List of Patents

Indian Patent (Granted: 12, Filed: 02)

1. **Apurbba Kumar Sharma** and R. Krishnamurthy, Articles of Glazed Ceramic Composites on Metal Substrates and Method of Manufacture Thereof, Indian Patent No. **199106**, Date: 09.7.2001.
2. **Apurbba Kumar Sharma**, M S Srinath and Pradeep Kumar, A method of joining of bulk metallic materials by microwave hybrid heating, Indian Patent No. **309058**, Date: 12.03.2019.
3. **Apurbba Kumar Sharma** and Dheeraj Gupta, A method of developing metallic cladding/coating on metallic substrates by microwave irradiation, Indian Patent No. **306568**, Date: 30.01.2019.
4. **Apurbba Kumar Sharma**, S Rajesha, G Venkatesh and Pradeep Kumar, A natural polymer abrasive media for the abrasive flow machining and a process for preparation thereof, Indian Patent No. **283675**, Date: 29.05.2017.
5. **Apurbba Kumar Sharma**, Pradeep Kumar and Rajesha S, An improved ultrasonic abrasive flow machining and a device therefor, Indian Patent No. **358173**, Date: 10.02.2021.
6. **Apurbba Kumar Sharma**, Shantanu Das, Nitin Kumar Lautre, Titto John George, Rajesh Kumar and Pradeep Kumar, A Method of Micro-drilling with Microwaves through Metallic Concentrator, Indian Patent No. **426457**, Date: 23.03.2023 (Application No. 201621004759, Date of Application: 10.02.2016). (IIT Roorkee and DAE, Govt. of India)
7. **Apurbba Kumar Sharma**, Radha Raman Mishra, Mohit Choudhury and Saurabh Puri, A Device for in-situ microwave casting of metals and alloys. **Indian Patent No.521301**, Date: 07.03.2024. (Application No.: 201611037834, November 05, 2016.)
8. Akshay Dvivedi, Manjot Singh Cheema and **Apurbba Kumar Sharma**, A Flexible Device for Multiple Ultrasonic Machining Operations. Indian Patent No. **483135**, Date: 15.12.2023. (Application No.: 201611041640, December 06, 2016)
9. **Apurbba Kumar Sharma**, Nitesh Arora and Prabh Pal Singh Seerha, Mechanical safety apparatus for thread failure in power screw based lifts. Indian Patent No. **540147**, Date: 30.05.2024 (Application No.: 201811028210, July 26, 2018)
10. Shah Faizan, **Apurbba Kumar Sharma**, Radha Raman Mishra, Thanga Raj Chelliah, A four-way valve for directional control. Indian Patent No. **459108**, Date: 16/10/2023. (Application No.: 202011009048).
11. **Apurbba Kumar Sharma** and Parvej, An apparatus and method for directional solidification in casting of metallic materials using microwave energy. (Application No. 202311041299 dated 16/06/2023.)
12. **Apurbba Kumar Sharma** and Garima Raghav, An improved method for synthesis of graphene oxide from agricultural waste using microwave energy. (Application No. 202511078988, **dated** 20/08/2025.)

List of Publications

A. Journal (Total = 148)

1. Pranjal Gupta, **Apurbba Kumar Sharma**, Inderdeep Singh, Surface and subsurface characteristics of microwave-metal discharge machined nickel-based superalloy, *Surfaces and Interfaces*, 2025.
2. Parvej, **Apurbba Kumar Sharma***, On heating characteristics and mass depletion of structurally different SiC and graphite susceptors under microwave irradiation, *Materials Chemistry and Physics*. (ACCEPTED)
3. Chintam Suresh Kumar, Shivani Gupta, **Apurbba Kumar Sharma***, Characterization of TiN-HA Nanocomposite Developed Through Rapid Microwave Sintering Route at High Temperature, *International Journal of Applied Ceramic Technology*, 2025. DOI: <https://doi.org/10.1111/ijac.15070>
4. Parvej, **Apurbba Kumar Sharma***, Structure-property correlation in directionally solidified in-situ microwave cast of AA 2024 alloy irradiated at 2.45GHz, *Journal of Alloys and Compounds*, (2024). DOI: <https://doi.org/10.1016/j.jallcom.2024.177368>
5. Parvej, **Apurbba Kumar Sharma***, On tailored microstructure in AA 2024 alloy during in-situ microwave casting. *Materialia*, 38 (2024). DOI: doi.org/10.1016/j.mta.2024.102244
6. Chintam Suresh Kumar, **Apurbba Kumar Sharma**, Ostap Zgalat-Lozynskyi, Andrey V. Ragulya, On Mechanical and Tribological Behaviour of Microwave Sintered TiN – 5 wt% Al₂O₃ – 5 wt% Y₂O₃ Nanocomposite. *Powder Technology*, 447 (2024), 1–16. DOI: <https://doi.org/10.1016/j.powtec.2024.120196>
7. T P Naik, S Jaiswal, I Singh, **Apurbba Kumar Sharma**, A Joshi, Design and Development of a Pine Needle Briquetting Machine for the Uttarakhand Region of India, *Mechanics of Advanced Composite Structures*, 2024. DOI: 10.22075/mac.2024.33800.1644
8. Pranjal Gupta, **Apurbba Kumar Sharma**, Inderdeep Singh, Plasma formation and material removal characteristics in microwave-metal discharge-based machining of AISI 304 stainless steel, *Journal of Manufacturing Processes*, 124 (2024) 1159–1179. DOI: <https://doi.org/10.1016/j.jmapro.2024.06.069>
9. Parvej, **Apurbba Kumar Sharma**, Effect of insulation materials and power on microwave heating characteristics of SiC susceptor under material-specific parametric conditions, *International Journal of Thermal Sciences*, 204 (2024), pages: 23, 109229. DOI: <https://doi.org/10.1016/j.ijthermalsci.2024.109229>
10. Chintam Suresh Kumar, **Apurbba Kumar Sharma**, Zgalat-lozynskyi Ostap, Andrey V. Ragulya, Microstructural and Mechanical Properties of Microwave Sintered Bulk Titanium Nitride Nanoceramics, *Ceramics International*, 50 (2024) 29293–29305. DOI: <https://doi.org/10.1016/j.ceramint.2024.05.224>
11. Parvej, **Apurbba Kumar Sharma**, Effect of mould material and solidification conditions on microstructural and mechanical properties of directionally solidified Sn–0.7Cu alloy developed using microwave energy, *Journal of Materials Engineering and Performance*, (2024), pages: 13. DOI: <https://doi.org/10.1007/s11665-024-09732-9>
12. Gaurav Kumar, Pranjal Gupta, Tejas Pramod Naik, **Apurbba Kumar Sharma** and Inderdeep Singh, Drilling of natural fiber reinforced thermoplastic composite laminates using microwave energy at 2.45GHz, *Materials Today Communications*, 38 (2024), pages: 13. DOI: <https://doi.org/10.1016/j.mtcomm.2024.108419>
13. Tejas Pramod Naik, Sandeep Gairola, Inderdeep Singh, **Apurbba Kumar Sharma**, Microwave-assisted alkali treatment of sisal fiber for fabricating composite as non-structural building materials. *Construction and Building Materials*, 411 (2024), pages: 17. <https://doi.org/10.1016/j.conbuildmat.2023.134651>.
14. P Gupta, **Apurbba Kumar Sharma**, I Singh, Characterization and exploring antibacterial response of tungsten oxide nanoparticles synthesized using microwave-metal discharge in atmospheric air, *Ceramics International*, 49 (2023), 35585–35596. <https://doi.org/10.1016/j.ceramint.2023.08.237>.
15. Gupta, S.; **Apurbba Kumar Sharma**; Agrawal, D.; Lanagan, M.T.; Sikora, E.; Singh, I. Characterization of AZ31/HA Biodegradable Metal Matrix Composites Manufactured by Rapid Microwave Sintering. *Materials*, 16 (2023), 1905. DOI: <https://doi.org/10.3390/ma16051905>.

16. Tejas Pramod Naik, Sandeep Gairola, Inderdeep Singh, **Apurbba Kumar Sharma**, Microwave-assisted molding of sisal/HDPE composites: Water absorption, diffusion kinetics and tribological behavior, *Polymer Composites* (2023). 44:6194–6211. DOI: 10.1002/pc.27556.
17. Anurag Singh and **Apurbba Kumar Sharma**, 2023, Analyses of low-power microwave drilling of stainless steel-304. *Journal of Materials Engineering and Performance* (2023). <https://doi.org/10.1007/s11665-023-08470-8>.
18. Ram Singh Rana, Jayant Kumar, Inderdeep Singh, and **Apurbba Kumar Sharma**, Comparative analysis of drilled and molded holes in short natural fiber reinforced composites, *Proc IMechE Part L: J Materials: Design and Applications* (2023), 1–11. DOI: 10.1177/14644207231191618
19. Ram Singh Rana, Inderdeep Singh, **Apurbba Kumar Sharma**, Ultrasonic welding of banana fiber based HDPE composites with energy directors, *Composite Structures* 320 (2023). <https://doi.org/10.1016/j.compstruct.2023.117222>.
20. Ram Singh Rana, Inderdeep Singh, **Apurbba Kumar Sharma**, 2023, Ultrasonic welding of printed/molded sustainable polymer specimens with energy directors, *Ultrasonics*, **134**. doi.org/10.1016/j.ultras.2023.107078
21. Pranjal Gupta, Anurag Singh, **Apurbba Kumar Sharma**, Inderdeep Singh, 2023, Influence of liquid dielectric medium on microwave-metal discharge-based drilling of AISI 304 stainless steel. *Applied Physics A*, 129:150, <https://doi.org/10.1007/s00339-023-06441-3>
22. Rana, R. S., Kumar, J., Singh, Y., Naik, T. P., Singh, I., & **Sharma, A. K.** (2022). Ultrasonic welding of banana/bagasse based polypropylene composites. *Journal of Natural Fibers*, 1-16. <https://doi.org/10.1080/15440478.2022.2133054>
23. Naik, T.P., Gairola, S., Singh, I. and **Sharma, Apurbba Kumar**, 2022. Microwave Hybrid Heating for Moulding of Sisal/Jute/HDPE Composites. *Journal of Natural Fibers*, pp.1-15. <https://doi.org/10.1080/15440478.2022.2100553>
24. Naik, T.P., Singh, I. and **Sharma, Apurbba Kumar**, 2022. Processing of polymer matrix composites using microwave energy: A review. *Composites Part A: Applied Science and Manufacturing*, p.106870. <https://doi.org/10.1016/j.compositesa.2022.106870>
25. Bhupinder Singh, Ruslan M. Karimbaev, **Apurbba Kumar Sharma**, Auezhan Amanov, Sunny Zafar, Effects of Ultrasonic Nanocrystal Surface Modification on Dry Tribological and Slurry Erosion Performance of Non-reinforced and Reinforced Ni-based Microwave Clads, *Surface & Coatings Technology*, 428 (2021) 127893, DOI: <https://doi.org/10.1016/j.surfcoat.2021.127893>
26. G Kumar, RR Mishra, Apurbba Kumar Sharma, On finite element analysis of material removal rate in microwave drilling of borosilicate glass, *Materials Today: Proceedings*, 41 (2021), 759-764. <https://doi.org/10.1016/j.matpr.2020.08.407>
27. Radha Raman Mishra, **Apurbba Kumar Sharma**, Effect of input microwave power and insulation on microstructure and tensile properties of cast Al 7039 alloy produced at 2.45 GHz. *Journal of Microwave Power and Electromagnetic Energy*. DOI: 10.1080/08327823.2020.1838049. pp. 312-329, 2020.
28. Shivani Bhandari, Shivani Gupta, Radha Raman Mishra, **Apurbba Kumar Sharma**, Navneet Arora, On Microstructural and Mechanical Properties of 21-4-N Nitronic Steel Joint Developed using Microwave Energy, *Journal of Micromanufacturing*, 6 (1), 2023, pp. 12-18. <https://doi.org/10.1177/25165984211033427>.
29. Gupta, S., Sharma, A.K. Microstructure and Microhardness of Mg/SiC Metal Matrix Composites Developed by Microwave Sintering. *J. Inst. Eng. India Ser. C* **103**, 63–68 (2022). <https://doi.org/10.1007/s40032-020-00636-w>
30. Singh, A., **Sharma, Apurbba Kumar** On microwave drilling of metal-based materials at 2.45 GHz. *Appl. Phys. A* **126**, 822 (2020). <https://doi.org/10.1007/s00339-020-03994-5>
31. Gaurav Kumar, Radha Raman Mishra, **Apurbba Kumar Sharma**, On defect minimization during microwave drilling of borosilicate glass at 2.45 GHz using flowing dielectric and optimized input power. *Transactions of the ASME: Journal of Thermal Science and Engineering Applications*. Vol. 13 (3), 2021. <https://doi.org/10.1115/1.4048667>

32. Chandrashekhar Jawalkar, **Apurbba Kumar Sharma**, Pradeep Kumar, Innovations in Electro Chemical Discharge Machining process through Electrolyte Stirring and Tool Rotations, *International Journal of Machining and Machinability of Materials*, 22(6), 487-503 (2020). (<https://doi.org/10.1504/IJMMM.2020.111354>)
33. Kumar, G., **Sharma, Apurbba Kumar**, On processing strategy to minimize defects while drilling borosilicate glass with microwave energy. *Int J Adv Manuf Technol* (2020). (<https://doi.org/10.1007/s00170-020-05563-9>)
34. **Apurbba Kumar Sharma**, Shivani Gupta, Microwave Processing of Biomaterials for Orthopedic Implants: Challenges and Possibilities. *Journal of Metals*, 72 (3), 1211–1228 (2020). (<https://doi.org/10.1007/s11837-020-04003-z>)
35. Kumar, L., Jain, P.K. & **Sharma, Apurbba Kumar**, A fuzzy goal programme–based sustainable Greenfield supply network design for tyre retreading industry. *Int J Adv Manuf Technol* 108, 2855–2880 (2020). (<https://doi.org/10.1007/s00170-020-05140-0>)
36. Dungali Sreehari and **Apurbba Kumar Sharma**, On thermal performance of serpentine silicon microchannels, *International Journal of Thermal Sciences*, 146 (2019). (<https://doi.org/10.1016/j.jthermalsci.2019.106067>)
37. Mishra, Radha Raman, **Apurbba Kumar Sharma**, Microstructural characteristics and tensile properties of in-situ and ex-situ microwave casts of Al-7039 alloy, *Materials Research Express*, 6, 126591 (2019). (<https://doi.org/10.1088/2053-1591/ab5ab1>)
38. Lautre*, N., Sharma, **Apurbba Kumar Sharma**, Kumar, P., and Das, S., Experimental Evaluation of a Microwave Drilling Process in Perspex, *Journal of Testing and Evaluation*, (2020) 48(4), 2880-2894, <https://doi.org/10.1520/JTE20180103>.
39. Nitin Kumar Lautre, **Apurbba Kumar Sharma**, Pradeep Kumar and Shantanu Das, Characterization of drilled hole in low melting point material during low power microwave drilling process, *Materials Research Express*, 6 (9), 2019. (doi.org/10.1088/2053-1591/ab3299)
40. **Apurbba Kumar Sharma** and Radha Raman Mishra, Challenges in microwave processing of bulk metallic materials and recent developments, *AMPERE Newsletter*, **96**, 2018, 7-15.
41. Radha Raman Mishra and **Apurbba Kumar Sharma**, Microwave heating characteristics of bulk metallic materials and role of oxides, *Journal of Materials Science*, 53 (24), 2018, 16567–16584. (doi.org/10.1007/s10853-018-2771-9)
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