



## Apurbba Kumar Sharma, Ph.D.

### Professor

Mechanical and Industrial Engineering

Joint Faculty, Department of Design

Indian Institute of Technology Roorkee

Roorkee – 247 667



### about...

**Apurbba Kumar Sharma**, currently a Full Professor in the Mechanical and Industrial Engineering Department, Joint Faculty in the Department of Design and Dean of Academic Affairs (DoAA) of Indian Institute of Technology Roorkee, Roorkee – 247 667, Uttarakhand, India, can be reached at +91-1332-28-5421/5255, 9411100286 (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– **Natasha, Ruchira** and wife **Dr. Himadri Phukan**.

## Education

Degree/ Dip.	Discipline / Specialisation	Division / Grade	Year	University/ Institute
B.E.	Mechanical Engg.	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 in the Department of Mechanical and Industrial Engineering and Joint Faculty of the Department of Design at IIT Roorkee, India. Currently, he is also the Dean of Academic Affairs (DoAA). 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 degree from Dibrugarh University, Assam. He has subsequently obtained his Masters and PhD degrees from IIT Madras. 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**; EIGHT of them have already been **Granted**.

He has published more than 131 research papers in International Journals. He has also presented/published more than 120 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, Proc. of the IMechE Part E: Journal of Process Mechanical Engineering, Surface and Coatings Technology, Precision Engineering, Surface Engineering, Tribology International, Tribology Transactions, Tribology Letters and *Kovové Materiály*-Metallic Materials. 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 three other 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 **65<sup>th</sup> 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).

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 advised/supervised **SIXTEEN** PhD programs and EIGHT others are in-progress. He has also supervised Fifty Masters Dissertations and Thirty-Two Bachelor 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 consultancy work.

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.

He has organized NINE AICTE (QIP) sponsored Short Term Courses, Four AICTE Sponsored Workshops, THREE MHRD courses and Two self-sponsored Courses.

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 a few 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.	<b>Apurbba Kumar Sharma</b> R. Krishnamurthy	<b>Indian Patent No. 199106</b> 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.	<b>Dr A K Sharma</b> M S Srinath Dr Pradeep Kumar	<b>Indian Patent No. 309058</b> 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	<b>Dr A K Sharma</b> Dheeraj Gupta	<b>Indian Patent No. 306568</b> 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	<b>Dr. A K Sharma</b> Rajesha S G Venkatesh Dr Pradeep Kumar	<b>Indian Patent No. 283675</b> 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	<b>Dr. A. K. Sharma</b> Dr Pradeep Kumar Rajesha S	<b>Indian Patent No. 358173</b> 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	<b>Apurbba Kumar Sharma</b> , Shantanu Das, Nitin Kumar Lautre, Titto John George, Rajesh Kumar and Pradeep Kumar	<b>Indian Patent No. 426457</b> , 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	<b>Dr. A. K. Sharma</b> Radha Raman Mishra Mohit Choudhury Saurabh Puri	Application No.: 201611037834, November 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 Divedi, Manjot Singh Cheema and <b>Apurbba Kumar Sharma</b>	<b>Indian Patent No. 483135</b> , 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	<b>Apurbba Kumar Sharma</b> Nitesh Arora Prabh Pal Singh Seerha	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 <b>Apurbba Kumar Sharma</b> Radha Raman Mishra Thanga Raj Chelliah	<b>Indian Patent No. 459108</b> , 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	<b>Apurbba Kumar Sharma</b> Pavej	Application No.: 202311041299, June 16, 2023.	A novel apparatus to fabricate directionally solidified metallic casts using microwave energy.

## Fellowship/Scholarship Awarded

### A. International

1. **DAAD Research Fellowship** under Faculty Exchange Programme 2011, Federal Republic of Germany.

### B. National

1. **National Merit Scholarship**, Govt. of India.

## 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 have been 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 has been proposed for post processing of plasma sprayed coatings. Multidisciplinary characterisation techniques have been used to characterize the coatings. Both Materials and Mechanical aspects have been explored during characterization through Structural, Chemical, Mechanical, Physical and Functional evaluation techniques. Structure-property correlation has been highlighted. The research work yielded the following:

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

## Research Interests

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

## Summary of Research Publications ([Details on page 28](#))

SI No	Patent	Total	Present Status	
			Granted	Registered
1.	Indian Patent	<b>11</b>	<b>08</b>	03

SI No	Journal / Conference	Total	Present Status	
			Published	In-press / Accepted
2.	Journal Papers	<b>133</b>	133	--
3.	International Conferences	<b>106</b>	--	--
4.	National Conferences	<b>35</b>	--	--

## Contribution in McGraw-Hill Education Handbook (International Edition)

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.	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
2.	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
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 Understanding and	Recent Advances in Mechanical Engineering (pp.517-529)	Naik, T.P., Rana, R.S., Singh, I. and Apurbba Kumar	Springer, 2021. ( <a href="https://doi.org/10.1007/978-981-15-7711-6_52">https://doi.org/10.1007/978-981-15-7711-6_52</a> )

	Future Opportunities		Sharma	
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. ( <a href="https://doi.org/10.1007/978-981-33-4018-3_2">https://doi.org/10.1007/978-981-33-4018-3_2</a> )
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 ICROME 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, ( <a href="https://doi.org/10.1201/9781003248743">https://doi.org/10.1201/9781003248743</a> )
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, ( <a href="https://doi.org/10.1201/9781003248743">https://doi.org/10.1201/9781003248743</a> )



## Publication Metrics

1.	Citations (Google Scholar, as on Feb 25, 2024)	<b>5939</b>
2.	h-index (Google Scholar)	<b>43</b>
3.	i10-index (Google Scholar)	<b>97</b>
4.	Reads Score (Research Gate, as on January 02, 2023)	<b>78,371</b>
5.	Citation (Research Gate, as on January 02, 2023)	<b>5476</b>
6.	Views: (Mendeley, as on November 06, 2020)	<b>54,193</b>

## Research Guidance

### [A] Ph. D. Thesis Supervision (16 + 08)

Sl.	Title/Area of research	Name of scholar	Co supervisor	Status
1.	Microwave Synthesis of waste materials	<b>Garima Raghav</b> (Jul, 2023 – )	--	In-progress
2.	Microwave Processing of Natural Fiber Reinforced Composites	<b>Raj Kumar</b> (Jul, 2022 – )	--	In-progress
3.	Investigation on Mechanism of Microwave Drilling	<b>Pranjal Gupta</b> (Jul, 2019 – )	Prof. Inderdeep Singh	In-progress
4.	Development of bio-implant through Microwave sintering	<b>Ram Singh</b> (Jan, 2019 – Jun, 2023)	Prof. Inderdeep Singh	Defended (Jul 17, 2023)
5.	Microwave sintering of nanostructured material for bearing application	<b>Chintam Suresh</b> (Jan, 2019 – )	--	In-progress
6.	Development of green furniture using sustainable technique	<b>Tejas P. Naik</b> (Jan, 2019 – )	Prof. Inderdeep Singh	In-progress
7.	Directional solidification in in-situ microwave casts of metal-based materials	<b>Parvej</b> (Jul, 2018 – )	--	In-progress
8.	Development of Biodegradable Composites through Microwave Sintering for Orthopedic Applications	<b>Shivani Gupta</b> (Jul, 2017 – )	--	In-progress
9.	Microwave drilling of metallic materials	<b>Anurag Singh</b> (Jan, 2017 – )	--	In-progress
10.	Microwave drilling of metal-based materials	<b>Gaurav Kumar</b> (July, 2015 – Sep, 2020)	--	Defended (Oct 15, 2020)
11.	Development of microchannels by micro-USM on silicon wafer for heat transfer applications	<b>Dungali Sreehari</b> (Jan, 2015 – April, 2019)	--	Defended (Jun 28, 2019)
12.	Modeling of carbon compliant supply chain network for tyre remanufacturing industry	<b>Lokesh Saxena</b> (Mar, 2015 – Nov, 2018)	Dr. P K Jain	Defended (Dec 12, 2018)
13.	Investigations on in-situ microwave casting of metallic materials	<b>Radha Raman Mishra</b> (July, 2014 – Aug., 2018)	--	Defended (Aug 16, 2018)
14.	Performance analysis of ECDM process while machining glass and alumina	<b>Mudimallana Goud</b> (July, 2013 - Dec, 2016)	--	Defended (Dec 12, 2016)
15.	Development of nano structured	<b>Sunny Zafar</b>	--	Defended

	wear resistant surfaces through microwave cladding	(July, 2013 – Aug, 2016)		(Aug 12, 2016)
16.	Investigations on Microwave drilling of Characteristically different materials	<b>Nitin Kumar Lautre</b> (July, 2012 – Sept, 2015)	Dr. Pradeep Kumar	Defended (Sept 20, 2016)
17.	Performance Analysis of Ultrasonic Assisted Abrasive Flow Machining Process	<b>Gudipadu Venkatesh</b> (Jan, 2012 – May, 2015)	Dr. Pradeep Kumar	Defended (Sept 11, 2015)
18.	An Ultrasonic Micro Machining Approach to Fabricate Microchannels on Glass	<b>Manjot Singh Cheema</b> (July, 2011 – June, 2015)	Dr. Akshay Dvivedi	Defended (Sept 08, 2015)
19.	Fusion Joining of Advanced Materials using Microwave Hybrid Heating	<b>Amit Bansal</b> (July, 2011 – Dec, 2014)	Dr. Pradeep Kumar	Defended (May 04, 2015)
20.	Investigations on performance enhancement of ECDM process while machining glass	<b>C. S. Jawalkar</b> (July, 2010 – July, 2013)	Dr. Pradeep Kumar	Defended (Jan 31, 2014)
21.	Some Studies on Development of Microchannels Using Micro Ultrasonic Machining	<b>Vivek Jain</b> (July, 2010 – April, 2012)	Dr. Pradeep Kumar	Defended (June 09, 2012)
22.	Microwave Cladding of Metal-based Materials and their Characterisation	<b>Dheeraj Gupta</b> (Jan, 2009 – Jan, 2012)	--	Defended (May 22, 2012)
23.	Joining and Characterisation of Metallic Materials through Microwave Hybrid Heating	<b>M S Srinath</b> (July, 2008 – May, 2011)	Dr. Pradeep Kumar	Defended (Oct. 17, 2011)
24.	Some Studies to Enhance the Capabilities of Abrasive Flow Machining Process	<b>Rajesha S</b> (July, 2008 – Feb, 2011)	Dr. Pradeep Kumar	Defended (May 27, 2011)

### [B] Masters Thesis Supervision (Total : 53 + 01)

Sl.	Title /Area of research	Name of scholar	Co supervisor	Status
1.	A Digital Twin Approach For Factory Optimization Using Discrete Event Simulation (Des) Tools And Industry 4.0 Techniques	<b>Chaudhari Mohammad Tarique Mohammad Arif</b>	--	In-progress (2023-24)
2.				
3.	Studies on Microwave Cladding	<b>Nikita Rai</b>	--	Awarded (2022-23)
4.	Fabrication of High Aspect Ratio Microchannels on Borosilicate Glass using Micro-USM Process	<b>Sebin Zavier</b>	--	Awarded (2021–22)
5.	Microwave curing of green composites	<b>Zorawar Rana</b>	Dr. Inderdeep Singh	Awarded (2019–20)
6.	Experimental Studies on directional solidification in microwave casting	<b>Vishal Manav</b>	--	Awarded (2018–19)
7.	Microwave joining of nitronic steel	<b>Shivani</b>	Dr. Navneet Arora	Awarded (2018–19)
8.	Microwave casting of Mg-based alloy	<b>Jitendra Yadav</b>	--	Awarded (2017–18)
9.	Sintering of magnesium metal matrix composite by microwave energy	<b>Sakshi Jaiswal</b>	--	Awarded (2017–19)



10.	A Novel design of musical flute with continuous output frequency	<b>Dhruv Narayan</b>	Dr. Akshay Dvivedi	Awarded (2016–17)
11.	An ultrasonic micromachining approach for fabrication of micromoulds	<b>Rohit Kumar</b>	Dr. Akshay Dvivedi	Awarded (2016–17)
12.	Joining of pipes by Microwave Energy	<b>Dheerendra Gamit</b>	--	Awarded (2015–16)
13.	Studies on Machining of Composite Material using ECDM Process	<b>Debabrata Naskar</b>	Dr. Akshay Dvivedi	Awarded (2015–16)
14.	Study of Concentrator in Microwave Machining of Materials	<b>Parvej</b>	--	Awarded (2015–16)
15.	Machining of Silicon Wafers using Ultrasonic Machining	<b>Shailesh Kumar Gupta</b>	--	Awarded (2015–16)
16.	Microwave curing of Natural fiber reinforced PMCs	<b>Gaurav Kumar</b>	Dr. Inderdeep Singh	Awarded (2015–16)
17.	Machining of hard to cut materials using ECDM	<b>Sachin Baghel</b>	Dr. Inderdeep Singh	Awarded (2014–15)
18.	Comparative Analysis of Polymer Matrix Composites Processed by Microwaves and Compression Molding	<b>Prag Sharma</b>	Dr. Inderdeep Singh	Awarded (2014–15)
19.	Parametric Investigations on Electrochemical Discharge Form Machining	<b>Khandelwal Gaurav Prakash</b>	Dr. Akshay Dvivedi	Awarded (2014–15)
20.	Some Studies on Weldability Aspects of Nitronic Steels	<b>Naveen Kumar</b>	Dr. Navneet Arora	Awarded (2014–15)
21.	Fabrication of closed microchannel using USM	<b>Saurav Acharya</b>	--	Awarded (2013–14)
22.	Processing of industrial wastes using microwaves	<b>Vaibhav Bist</b>	Dr. Pradeep Kumar	Awarded (2013–14)
23.	Machining of Al-alloy using USM	<b>Dungali Sreehari</b>	Dr. Akshay Dvivedi	Awarded (2013–14)
24.	Microwave joining of MMCs	<b>Jeevan Bist</b>	Dr. Akshay Dvivedi	Awarded (2013–14)
25.	Some studies in Rotary ECDM	<b>Faraz Ansari</b>	Dr. D B Karunakar	Awarded (2013–14)
26.	Investigation on effect of process parameters for enhancing capabilities of micro USM	<b>Sunil Kumar Maddeshia</b>	Dr. Pradeep Kumar	Awarded (2012–13)
27.	Investigation on Finishing of External surfaces using abrasive Flow Machining	<b>Tarlochan Singh</b>	Dr. Akshay Dvivedi	Awarded (2012–13)
28.	Characterisation of MMCs developed using different moulding materials	<b>Ramesh Babu Ningala</b>	Dr. P K Jha	Awarded (2012–13)
29.	Investigations on dry-sliding and erosion wear of microwave induced wear resistant surfaces	<b>Sunny Zafar</b>	Dr. Navneet Arora	Awarded (2012–13)
30.	Development and characterisation of sustainable polymeric composites using microwaves	<b>Mali Akshay Atul</b>	Dr. Inderdeep Singh	Awarded (2012–13)
31.	Studies on Fabrication of Microchannels	<b>Saurabh Swain</b>	Dr. Pradeep Kumar	Awarded (2011–12)
32.	Modeling and simulation of Ultrasonic Assisted AFM process	<b>Gaurav Arora</b>	Dr. Pradeep Kumar	Awarded (2011–12)

33.	Modeling and simulation of Microwave Joining process	<b>John George Tito</b>	Dr. Pradeep Kumar	Awarded (2011–12)
34.	Development of Green Composites using Microwave energy	<b>Sabir Ali</b>	Dr. Inderdeep Singh	Awarded (2011–12)
35.	Characterisation of sustainable composites	<b>Anil Sharma</b>	Dr. Inderdeep Singh	Awarded (2011–12)
36.	Finishing of EDMed Inconel 718 Surface through Abrasive Flow Machining	<b>Pramod Kumar Patnaik</b>	Dr. Pradeep Kumar	Awarded (2010–11)
37.	Experimental Investigation of Various Process Parameters While Machining Glass Through Micro- USM	<b>Vineet Chak</b>	Dr. Pradeep Kumar	Awarded (2010–11)
38.	Modeling and Simulation of Microwave Metal Interaction and its Validation	<b>P. Suryanarayana Murthy</b>	Dr. Pradeep Kumar	Awarded (2010–11)
39.	Development and Characterization of Jet Slurry Erosion Resistant Metallic Cladding on Austenitic Stainless Steel	<b>Prabhakar M. Bhovi</b>	Dr. Sushanta Dutta	Awarded (2010–11)
40.	Development of New Polymer Media for Abrasive Flow Machining	<b>G Venkatesh</b>	Dr. Pradeep Kumar	Awarded (2009–10)
41.	Optimization of Process Parameters in Microwave Joining of Metallic Materials in a Multimode Microwave Applicator	<b>Chintam Suresh Kumar</b>	Dr. Pradeep Kumar	Awarded (2009–10)
42.	Theoretical Studies on the Material Grain Development during Severe Plastic Deformation (SPD) Process	<b>Venkata Subbarayudu Pesala</b>	--	Awarded (2009–10)
43.	Behaviour of Closed-Cell Aluminium Foam under Impact Loading as Energy Absorber	<b>Vaidya Sudarshan Vishnurao</b>	Dr. Inderdeep Singh	Awarded (2009–10)
44.	Investigation on Influence of Process Parameters of Electro Discharge Machining of Al 7075 SiC Composite	<b>Kunal Nawasagare</b>	Dr. D B Karunakar	Awarded (2009–11)
45.	Numerical Simulation of ballistic impact on polymer matrix composite material	<b>Sunil Kumar</b>	Dr. Inderdeep Singh	Awarded (2008–09)
46.	Maintenance prevention Design and equipment planning for OEE implementation	<b>Sanjit Singh</b>	Dr. Dinesh Kumar	Awarded (2008–09)
47.	Electrochemical honing of helical gears	<b>Joy Prakash Mishra</b>	Dr. N. K. Jain	Awarded (2008–09)
48.	FE analysis of honeycomb structures	<b>Milind Gcharge</b>	Dr. Inderdeep Singh	Awarded (2008–09)
49.	Numerical simulation of low velocity and Ballistic impact on polymer composite Laminated structures	<b>Durga Shankar Gupta</b>	Dr. Inderdeep Singh	Awarded (2007–08)
50.	Design and analysis of Insertion mechanism and trajectory control for in-vivo robot for stomach	<b>Sreenath Reddy</b>	Dr. P. M. Pathak	Awarded (2007–08)

	biopsy			
51.	Development of Electrochemical Honing for finish machining of spur gears	<b>Ramlal Naik</b>	Dr. N. K. Jain	Awarded (2007-08)
52.	Maintenance strategy selection	<b>Uday Devekar</b>	Dr. Dinesh Kumar	Awarded (2007-08)
53.	Modeling and dynamic analysis of biocompatible robotic arm	<b>Chandekar Bhupendra Gopal</b>	Dr. P. M. Pathak	Awarded (2006-07)
54.	Diamond grinding of Thermal spray deposits	<b>L. Deshpandulal</b>	--	Awarded (2006-07)
55.	Some studies on effect of process parameters on process performance in hybrid abrasive flow machining	<b>K. Malla Reddy</b>	Dr. Pradeep Kumar	Awarded (2006-07)

**[C] Undergraduate (B. Tech.) Dissertation Supervision (Total : 38 + 01)**

Sl.	Degree	Title of Dissertation	Name of student	Co supervisor	Year
1.	B.Tech. (Indl. & Prod. Engg.)	A model for locating EV charging station in India	<b>Manshi Madhushree Mitali Borkar Parag Garg</b>	--	2022-23
2.	B.Tech. (Mech. Engg.)	Development of a proctoring tool using machine learning	<b>Samarth Koolwal Sankalp Choudhary Shukshi Raj</b>	--	2021-22
3.	-do-	Development of an assisting device for differently able person	<b>Keshvam Nikhil Mittal Piyush Jadiya</b>	--	2020-21
4.	-do-	Development of AR-based virtual laboratory	<b>Ayush Dixit Vibhanshu Sharma Vivek Chand</b>	--	2020-21
5.	-do-	Joining of composite materials using various techniques	<b>Yagya Narayan Satya Prakash</b>	Prof. Inderdeep Singh	2019-20
6.	-do-	Development of data-driven heuristic/ metaheuristic for real-life multi-product production network planning	<b>Anant Vashisth</b>	--	2018-19
7.	-do-	Development of Data-Driven Productivity Enhancement Pipeline.	<b>Raut Ankush Chandrakant Saurabh Shubham Hitendra Pal Singh Rao</b>	--	2018-19
8.	B.Tech. (Mech. Engg.)	Quality analysis of food grains using image processing	<b>Praful Anand Anand Kumar Roopkishor Singh</b>	--	2017-18
9.	B.Tech. (Indl. & Prod. Engg.)	Study of food & grocery supply chain in Indian context	<b>Hingar Rahul Brajesh Palash Choudhary Patel Rushi B. Kumar</b>	--	2017-18
10.	-do-	Experimental studies for determining feasibility of microwave drilling in metals	<b>D. Roshan Ujjwal Gahlot Siddhant Sharma Manish Kumar Jangir</b>	--	2017-18
11.	-do-	Development of a customer-	<b>Apurv Maheshwari</b>	--	2016-17

		bid based model for pricing cab fare.	<b>Utkarsh Narayan Yash Gupta</b>		
12.	-do-	Analysis of Manufacturing Systems using Predictive Decision Model	<b>Tanmay Jain Nikhil Guria Diksha Meena</b>	--	2015–16
13.	-do-	Analysis of Facilities in the MIED, IIT Roorkee	<b>Varun Pallav Jain</b>	--	2015–16
14.	-do-	DSS for Site Selection	<b>Ashish Taneja Mohit Hemrajani Rohit Pathak</b>	--	2014–15
15.	-do-	Processing of Materials with Microwaves for Joining Applications	<b>Akash Chaudhury Mahipat Shahi Rahul Jain</b>	--	2014–15
16.	- Do -	Characterisation of microwave cast.	<b>Revti Raman Suman Kumar Suman Manu Mrinal</b>	--	2013–14
17.	- Do -	Development of microwave casting.	<b>Mohit Chaudhary Sourabh Puri</b>	--	2012–13
18.	- Do -	Characterisation of microwave sintered mechanical elements.	<b>Abhay Jain Anuj Gang Bhartendu Sirohi</b>	--	2012–13
19.	- Do -	Microwave processing of green composites	<b>Aniket Modi Himanshu Sharma</b>	Dr. Inderdeep Singh	2012–13
20.	- Do -	Development and characterisation of Microwave cladding of Inconel on stainless steel.	<b>Archana Singh Manisha Rana</b>	--	2011–12
21.	- Do -	Modeling and Simulation of Hybrid Abrasive Flow Machining (AFM)	<b>Prateek Rai</b>	--	2010–11
22.	- Do -	Automation of motion control system for Micro USM	<b>Anant Saxena Lalit Mohan Singh Meena Lokesh Gulati Manoj Meena</b>	--	2010–11
23.	- Do -	Design and Fabrication of Abrasive Jet Machine with emphasis on Nozzle Design	<b>Rohit Srivastava Sharwan Ram Kumhar Shashank Shekhar</b>	--	2009–10
24.	- Do -	Development of Copper Coating on Graphite using Microwave Field	<b>Anshul Meshram Sameer Kumar Mandal Satya Pal Singh</b>	--	2009–10
25.	- Do -	Assessment of HAZ in EDMed surface	<b>Samrat Maji Tuhin Harit Rohitash Kumar (M.E.)</b>	--	2008-09
26.	- Do -	Index of Agility in Indian Two-Wheeler Manufacturing Industry	<b>V. Chabra, V. Jain</b>	--	2006-07
27.	- Do -	Fabrication and Testing of thin CFRP	<b>Kumar Pritom S. Sharma A. Agarwal</b>	Dr. I. Singh	2006-07
28.	B. E. (Mech.	Adaptive Slicing for Effective Rapid Prototyping	<b>S. Mohan N. Chakravarthy</b>	--	2005

	Engg.)		<b>B. Das</b>		
29.	- Do -	PC-Based Automatic Check Gate Operation System	<b>D. Nath P.P. Bora P.P. Dutta</b>	--	2005
30.	- Do -	Design of a Bamboo Shoot Peeling Cutter	<b>Indra Mohan Das Ekbal Hussain Prodhani Saurabh Bikas Borah Pallab Kumar Kalita</b>	Dr. Plabon Kakoti	2005
31.	- Do -	A Study on Rapid Prototyping Processes With Special Emphasis on Three-Dimensional Deposition Method	<b>B. Goswami B. Sharma P. P. Maut</b>	--	2004
32.	- Do -	Study of CNC Systems and development of a CNC Integrated Software	<b>K. Churanjit B. Gogoi A. Chakraborty</b>	--	2004
33.	- Do -	Design and Fabrication of a Low Cost Solar Electric Hybrid Dryer for Mushroom	<b>Rajib Kr. Singh</b>	--	1999
34.	- Do -	Design and Fabrication of a Mechanised Device for Surface Finishing	<b>A. K. Sharma M. K. Agarwal</b>	--	1998
35.	- Do -	Design and Fabrication of a Walking Robot	<b>Rana Saikia</b>	--	1998
36.	- Do -	Development of a Computerised Parts coding System : A Group Technology Approach	<b>I. Haque D. Singh T. Deka Agha J. Khan</b>	--	1997
37.	- Do -	Microstructure Study of a few Common Mechanical Elements Subjected to Dynamic Thermal Load	<b>J. Devi L.Rajkhowa</b>	--	1997
38.	- Do -	Robotic Engineering : An Overview with Solution of Direct Kinematics Problem involved in Robot Manipulator	<b>Mohan K. Taye B. Deka P. Deori</b>	Dr S M Hazarika	1994
39.	- Do -	Design Considerations of an Orifice Meter	<b>D. Chetri</b>	--	1993

## Ph. D. Examiner

Sl.	Title of the Thesis	Name of scholar (Date of Exam)	Supervisor(s)	Institute/ University
1.	Experimental Investigations of Through-holes Formation in Glass by Electrochemical Discharge Machining	Mr. Arab Julfekar M. Mastan	Dr. Pradeep Dixit	IIT Bombay
2.	Experimental Investigation of Micro-milling of Aerospace Materials	Ms. Padmaja Tripathy (29.06.2020)	Dr. K. P. Maity	NIT Rourkela, Rourkela-769008, Odisha
3.	Study of Mechanical and Tribological Characteristics of as-	Mr. Mohanakumara K. C.	Dr. Ajith Prasad S. L.	VTU, Belagavi, Karnataka



	cast and extruded Al-SiCp Metal Matrix Composites	(16.06.2020)		
4.	Prediction of single point cutting tool wear with cutting force signals using artificial neural networks	Mr. S. K. Thangarasu (09.06. 2020)	Dr. S. Shankar	Anna University, TN
5.	Analysis of Shrinkage and Distortion in Thin Walled Complex Geometrical Investment Casting	Ms. Sangita Nitin Bansode (24.12.2019)	Dr. V. M. Phalle	Veermata Jijabai Technological Institute (VJTI), Central Technological Institute, Mumbai, Maharashtra
6.	Investigation on the Performance of Cellulose Filled Polyester Hybrid Composite Reinforced with Treated Acacia and Cactus Fibers	Sakthi Vadivel K (25.11.2019)	Dr. P. Govindasamy	Anna University, TN
7.	Mechanical and Tribological Properties of AA6061-2SiCp-xGr Hybrid Nanocomposites Fabricated Through Ultrasonically Assisted Stir Casting Method	Mr. A Prasad Reddy (13.11.2019)	Dr. P. Vamsi Krishna & Dr. Rao	NIT Warangal, Telengana
8.	Experimental Investigations for Dimensional Accuracy and Surface Finish in Single Point Incremental Forming Process	Mr. Narinder Kumar (28.09.2019)	Dr. R. M. Belokar	PEC University of Technology Chandigarh
9.	Investigations on Machinability Characteristics of Spring Steel Using Optimization Techniques	Mr. Vasu M. (16.09.2019)	Dr. Shivananda Nayaka	NIT Karnataka, Surathkal, Mangalore
10.	Thermal analysis of dental implant guides fabricated by rapid prototyping	Varun Arora (02.04.2019)	Dr. Sanjeev Kumar Dr. Praveen Kalra	PEC University of Technology Chandigarh, India
11.	Dynamic analysis of flexible tubes conveying fluids subjected to external excitation	Mr. Unnikrishnan M. (Thesis evaluated, 2018)	Dr. Jayaraj Kochupillai	Kerala University, College of Engg., Thiruvananthapuram
12.	Investigation into the Extrusion Honing Process Performance	Devadath V R (04.12.2018)	Dr. H. P. Raju (PESCE, Mandya)	VTU, Belgaum
13.	Investigations on Capability Enhancement in Computer Numeric Control Machining Centers	Mr. Kuldeep Verma (29.09.2018)	Dr. R. M. Belokar	PEC University of Technology Chandigarh, India
14.	Experimental Investigation on Tribological and Machining Behavior of Aluminum Hybrid Metal Matrix Composites for Automobile Brake Rotor Application	Kumar M (27.08.2018)	Dr. Megalingam Murugan (Benari Amman Institute of Technology)	Anna University, TN
15.	Experimental Investigation on surface properties of electroless Ni-P/ZnO composite coatings on AZ91 Magnesium alloy	Mohmd. Imran Ansari (Thesis evaluated, 2018)	Dr. D. G. Thakur (DIAT, Pune)	Defence Institute of Advanced Technology, Pune
16.	An experimental investigation on electrochemical grinding of hybrid Al/(Al <sub>2</sub> O <sub>3</sub> + ZrO <sub>2</sub> ) – MMC	Kamarur Zaman Molla (05.09.2017)	Dr. Alakesh Manna	PEC University of Technology Chandigarh, India
17.	Processing, Characterization and Mechanical Behaviour of Boron Carbide Reinforced Aluminum Metal Matrix Composites	Ritesh Raj (Thesis Evaluated, 2017)	Dr. D. G. Thakur (DIAT, Pune)	Defence Institute of Advanced Technology, Pune
18.	Performance Assessment of Vegetable Oil based Nano Cutting Fluids in Turning AISI 1040 Steel	Smt. Padmini R (11.07.2016)	Dr. P. Vamsi Krishna (NIT, Warangal) &	Jawaharlal Nehru Technological University, Hyderabad

			Dr. K. G. Krishna Rao (JNTU)	
19.	Investigations on Tribological and Machining rganized stics of Aluminium Rice Husk Ash Composite	S D Saravanan (05.12.2015)	Dr. Senthil Kumar (PSG College, Coimbatore)	Anna University, TN
20.	Improving the surface properties of superalloys by electrical discharge machining process.	Anoop Kumar Singh (24.09.2015)	Dr. Sanjiv Kumar Dr. V P Singh	PEC University of Technology Chandigarh, India
21.	Surface alloying by electrical discharge machining process using powder metallurgy electrodes	Amoljit Singh Gill (24.09.2015)	Dr. Sanjiv Kumar	PEC University of Technology Chandigarh, India
22.	A Study on Tribological Behaviour of Composite Materials	Sudarashanrao K (26.08.2015)	Dr. Y S Varadarajan (NIE, Mysuru)	VTU, Belgaum
23.	Studies on Grindability of Inconel 751 with various Cooling Strategies	A S S Balan (11.07.2014)	Professor L. Vijayaraghavan (IITM)	I.I.T. Madras
24.	Parametric Investigations in ECDM	S. Sathisha (07.11.2014)	Dr. Somashekhar Hiremath (IITM)	VTU, Belgaum
25.	Study of Machinability properties of Zinc-Aluminium (ZA43) alloy reinforced with SiC particulate metal matrix composites	Rajaneesh N. Marigoudar	Professor K Sadashivappa	Visveswaraya Tech. University, Belgaum, Karnataka. (Bapuji Institute of Technology, Karnataka)
26.	Analysis of Bidirectional Fiber Reinforced Composites	V V Sridhara Raju (Thesis Evaluated)	Dr. V Bala Krishna Murthy Dr. J. Suresh Kumar	JNTU, Hyderabad
27.	Analysis of composite laminated plates using higher order theories with zig-zag function	T. Dharma Raju (Thesis Evaluated)	Dr. V Bala Krishna Murthy Dr. J. Suresh Kumar	JNTU, Hyderabad
28.	Tribo-performance Evaluation of Fiber Reinforced and Nano filled Composites Friction Materials	Tej Singh (Thesis Evaluated)	Dr. Amar Patnaik and Dr. B.K. Satapathy	NIT, Hamirpur
29.	Some investigations into Cylindrical Electrochemical Abrasive Machining Process	Judal Kesarabhai Bhikhabhai (29.08.2013)	Professor Vinod Yadava	NIT, Allahabad.
30.	Optimization of welding parameters for chromium base hardfacing alloy using various processes and some comparative studies on wear characteristics	K.M. KENCHI REDDY (21.06.2013)	Dr. C. T. Jayadeva	Visveswaraya Technological Univ., Belgaum, Karnataka. (Adichunchanagiri Institute of Technology Chikmagalur -577102)
31.	Optimal path planning for mobile robots in off-line & on-line situations	P. Raja (02.10.2012)	Dr. S. Pugazhenth	SASTRA University, Thanjavur, Tamil Nadu – 613 401, India
32.	Optimization of operation sequencing in computer aided process planning using hybrid S-GENSAT algorithm	Nallakumarasamy G. (03.01.2012)	Dr. P. S. Srinivasan	Anna University, Chennai, Tamil Nadu – 613 401, India
33.	Optimization of work piece location and machining parameters for hexapod machine tool	S. Muruganandam (21.09.2009)	Dr. S. Pugazhenth	SASTRA University, Thanjavur, Tamil Nadu – 613 401, India

## International Journal Reviewer / Editorial Board Member

<b>A.</b>	<b>Reviewer (Journal)</b>
1.	Journal of Microwave Power and Electromagnetic Energy (Taylor & Francis)
2.	Materials Science and Technology (Taylor & Francis)
3.	International Journal of Mechanical Sciences (Elsevier)
4.	Composites Part A: Applied Science and Manufacturing
5.	Journal of Alloys and Compounds (Elsevier)
6.	Applied Surface Science (Elsevier)
7.	Journal of Manufacturing Processes (SME)
8.	Journal of Tribology (ASME)
9.	International Journal of Metalcasting (Springer, American Foundrymen Society, USA)
10.	Ceramics International (Elsevier)
11.	Tribology International (Elsevier)
12.	Tribology Transactions (Taylor & Francis)
13.	Tribology Letters (Springer)
14.	Precision Engineering (Elsevier)
15.	Physica Scripta (IOP Publishing)
16.	Journal of Testing and Evaluation (ASTM)
17.	Kovové Materiály – Metallic Materials
18.	Surface Engineering (Taylor & Francis)
19.	Proceedings of the ImechE Part B: Journal of Engineering Manufacture (Sage)
20.	Proceedings of the ImechE Part E: Journal of Process Mechanical Engg. (Sage)
21.	Journal of Composite Materials (Sage)
22.	Journal of Thermoplastic Composite Materials (Sage)
23.	International Journal of Advanced Manufacturing Technology (Springer)
24.	Surface & Coatings Technology (Elsevier)
25.	Indian Journal of Engineering & Material Sciences (NISCAIR)
26.	Sadhna (Springer)
27.	Transaction of the Indian Institute of Metals
<b>B.</b>	<b>Guest Co-Editor of International Journal</b>
1.	International Journal of Advanced Manufacturing Technology (2008) 38.
<b>C.</b>	<b>Editorial Board Member</b>
	ISME Journal of Manufacturing Sciences, published by the Indian Society of Mechanical Engineers, New Delhi.
<b>D.</b>	<b>Editorial Board Member (International Conference Proceedings)</b>
1.	Jointly Edited the Proceedings of the First International and 22 <sup>nd</sup> AIMTDR Conference held at IIT Roorkee, 2006

## Other International Recognition

<b>A.</b>	<b>Who's Who</b>
1.	Selected as one of the Biographees of The Marquis <b>Who's Who in the World</b> in the 27 <sup>th</sup> Edition (2010).

## Session Chair

1.	Chaired a Technical Session on Non-Traditional Processing of Advanced Material Processing Track in the <b>ASME 2013 International Manufacturing Science and Engineering Conference (MSEC2013)</b> , June 10-14, 2013, Madison, Wisconsin, USA.
2.	Chaired a Technical Session on May 30, 2020 in the <b>International Conference on Aspects of Materials Science and Engineering</b> , Panjab University, Chandigarh, India.
3.	Chaired a Plenary Session and a Technical Session in the <b>International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN: 3I-2017)</b> rganized by the Department of Mechanical and Industrial Engineering, IIT Roorkee, Roorkee, India on December 06, 2017.
4.	Chaired a Parallel Technical Session in the <b>International Conference on Processing and Fabrication of Advanced Materials (PFAM-2014)</b> rganized by the Department of Mechanical and Industrial Engineering, IIT Roorkee, Roorkee, India on December 05, 2015.
5.	Co-chaired a Plenary session in the <b>International Conference on Advanced Materials and Processing (ICAMP – 2011)</b> 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.
6.	Chaired a Parallel Session in the <b>National Conference on Emerging Challenges for Sustainable Business – 2012</b> organised by the Department of Management Studies, IIT Roorkee, Roorkee, India on June 01, 2012.

## Research Papers Presented Outside India

Sl No.	Title of the Research Paper	Programme	Date (Duration)	Venue
1.	Study of Mechanical Properties of Microwave Processed Biodegradable Metal Composites.	MS&T20, Materials Science & Technology Conference	November 2-6, 2020	Pittsburgh, USA (Virtual).
2.	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, <b>Oxford, UK</b>
3.	Experimental investigation on in-situ	Intl. Conference on Recent Advances	Nov. 28-29, 2017	BITS Pilani, Dubai Campus, <b>UAE</b>

	microwave casting of copper	in Materials & Manuf. Technologies (IMMT 2017) (Invited Talk)		
4.	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, <b>Tokyo, Japan</b>
5.	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 <b>Madison, USA.</b>
6.	Investigations on microstructural characterization of microwave composite clads on austenitic stainless steel	2 <sup>nd</sup> Annual International Conference on Materials Science, Metal & Manufacturing (M3 2012)	November 19-20, 2012	Hotel Fort Canning, <b>Singapore</b>
7.	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, <b>Switzerland.</b>
8.	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, <b>United States of America (USA).</b>
9.	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, <b>UK.</b>



## 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: Fulbright Specialist Program (FSP)</i>	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 (Al-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 (UAAF) for Precision Finishing	DST, New Delhi	20,40,000.00	Completed
Parametric studies during machining of microchannels on silicon wafer using micro ultrasonic machining.	Council of Scientific and Industrial Research (CSIR), New Delhi, India.	13,00,000.00	Completed
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

## Academic Administration / Reform / Institute Responsibility

1. Dean, Academic Affairs, IIT Roorkee, April 01, 2021 onwards.
2. Chairman, Institute Academic Program Committee, IIT Roorkee, April 01, 2021 onwards.
3. Chairman, Institute Research Committee, IIT Roorkee, April 01, 2021 onwards.
4. Chairman, Undergraduate Curriculum Review Committee (UCRC), IIT Roorkee, April, 2021 to June, 2023.
5. Chairman, Institute Research Day Committee, January 2022 onwards.
6. Coordinator, Design Innovation Center, IIT Roorkee : August, 2018 to March 31, 2021.
7. Member, Advisory Committee, TIDES, Business Incubator, IIT Roorkee: March, 2017 onwards.
8. Associate Dean, Academic Studies, July 19, 2013 – April 26, 2017.
9. Member, Senate, IIT Roorkee : July 19, 2013 – April 26, 2017 and December 22, 2019 onwards.
10. Member, Executive Committee on Senate (ECS), IIT Roorkee : July, 2013 – April, 2017.
11. Member, Institute Research Committee (IRC) : July, 2020 – April, 2021.
12. Member, Institute Academic Programme Committee (IAPC) : July, 2013 – April, 2017.
13. Member, Academic Restructuring Committee, IIT Roorkee, 2013.
14. Member Secretary, Post Graduate Programme Review Committee, 2013.
15. Chairman, Institute Academic Performance Evaluation Committee, IIT Roorkee : February, 2013 – April 26, 2017.
16. Chairman, Departmental Research Committee (DRC), May, 2020 – April, 2021.
17. Member, Intellectual Property Right Cell, IIT Roorkee, 2012 onwards.
18. Member, Department Faculty Assessment Committee (DFAC), MIED, January 2019 – December 2020.
19. Member (External), Department Faculty Assessment Committee (DFAC), Polymer & Process Engineering, July 2019 – June, 2021.
20. Member (External), Department Faculty Search Committee (DFSC), MMED & DOMS, July 2019 – June, 2021.
21. Member, Department Administrative Committee (DAC), MIED, July 2014 – February, 2016. August, 2019 – June, 2021.
22. Member, Departmental Academic Studies Committee (DASC), MIED, July 2012 – June 2014.
23. External Member, Board of Studies for Mechanical Engineering, Graphic Era Hill University, Dehradun, Uttarakhand.
24. Member, Departmental Research Committee (DRC), July 2010-June 2012.

## 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.

## Courses Organised

Sl	Title of the Course	Sponsored By	Duration	Date
1.	Innovative Products : Conceptualisation to Commercialisation	QIP, IIT Roorkee	One Weeks	Jun 15 -19, 2018
2.	Make in India : Dreams to Reality	QIP, IIT Roorkee	Two Weeks	Jan 04 -14, 2017
3.	Ishan Vikas	MHRD, Govt. of India	11 Days	Dec 5-Dec 15, 2016
4.	Ishan Vikas	MHRD, Govt. of India	12 Days	June 22-Jul 03, 2016
5.	Ishan Vikas	MHRD, Govt. of India	09 Days	June 11-19, 2015
6.	Applied Research: Design and Execution	QIP, IIT Roorkee	One Week	June 15-19, 2015
7.	Microwaves in Material Processing (One-Day Workshop)	QIP, IIT Roorkee	One Day	June 20, 2014
8.	Finish Machining: A State-of-the-Art	QIP, IIT Roorkee	One Week	September 02-09, 2013
9.	Ultrasonic machining approach to fabrication of microchannels (One-Day Workshop)	QIP, IIT Roorkee	One Day	March 13, 2013
10.	A Novel Approach to Processing of Green Composites	QIP, IIT Roorkee	One Day	March 09, 2013
11.	Manufacturing Excellence through Quality Assurance	QIP, IIT Roorkee	One Week	July 09 – 13, 2012
12.	Advances in Surface Finishing Technologies with Special reference to Abrasive Flow Machining	QIP, IIT Roorkee	One Day	February 19, 2012
13.	Processing Challenges and Newer Manufacturing Methods	QIP, IIT Roorkee	One Week	June 25 – 29, 2011
14.	Advanced Materials and Manufacturing	AICTE, New Delhi	One Week	June 14– 18, 2010
15.	Composites: Design and Manufacturing	AICTE, New Delhi	One Week	July 7 – 11, 2008
16.	Controlling Abrasion and Erosion in Cement Plants	Self-sponsored under CEC, IIT Roorkee	Four days	May 7 – 11, 2008
17.	Combating Wear	Self-sponsored	One week	May 29 –

		under CEC, IIT Roorkee		June 02, 2007
18.	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.	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
2.	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
3.	Microwave joining of materials	Short Term Training Programme (STTP) under AICTE-AQIS on Eclectic Research Trends in Manufacturing	Oct. 06, 2020	Poornima College of Engineering, Jaipur
4.	Design Thinking Approach to Development of Medical Devices	ATAL FDP on Design Thinking for Innovative Medical Devices	Sept. 23, 2020	Malaviya NIT, Jaipur
5.	Microwave Energy – Applications in Manufacturing	STC on “Green Technologies for Sustainable Growth”	Sept. 15, 2020	NIT Meghalaya, Shillong
6.	Drilling of Materials using Microwave Energy	STC on “Green Technologies for Sustainable Growth”	Sept. 15, 2020	NIT Meghalaya, Shillong
7.	Applying Design Thinking: Bad Design to Good Design	ATAL FDP on Design Thinking	Sept. 11, 2020	Oriental Institute of Engg. & Tech., Bhopal
8.	Material Genomics: some thoughts from processing perspectives	TEQIP-III sponsored STC on “Contemporary Material Technologies”	Sept. 09, 2020	NIT Jalandhar
9.	Green Tribology – some thoughts	TEQIP-III sponsored FDP on Advances in Green Tribology	May 06, 2019	Moradabad Institute of Technology, Moradabad.
10.	Green Tribology – towards solutions	TEQIP-III sponsored FDP on Advances in Green Tribology	May 06, 2019	Moradabad Institute of Technology, Moradabad.
11.	Tools for Advance Manufacturing 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
12.	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, <b>Oxford, UK</b>
13.	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

14.	Microwave joining of metallic pipes: challenges and achievements	Key Note Address, 1 <sup>st</sup> National Conference on Advances in Welding Technology– NAWT 2018	September 18, 2018	NIET, Greater Noida
15.	Intellectual Property Right: Importance and Steps	Expert Lecture	July 20, 2018	Uttaranchal University, Dehradun
16.	Micromachining – challenges and achievements: some results from IIT Roorkee	Expert Lecture	July 03, 2018	ABES College of Engineering, Noida
17.	Nanometric WC-based Microwave Clad for Wear Applications	TEQIP-III sponsored FDP on Advances in Surface Engineering	May 02, 2018	Delhi Technical University, Delhi
18.	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
19.	Quality in Research Publications	Expert Lecture in the TEQIP Program	February 17, 2018	Malnad College of Engg. (MCE), Hasan
20.	Hybrid Machining - Implementations and Results	Expert Lecture in the TEQIP Program	February 16, 2018	Malnad College of Engg. (MCE), Hasan
21.	What is advance in Advance Manufacturing ?	Expert Lecture	February 10, 2018	National Institute of Technology (NIT) Uttarakhand, Srinagar
22.	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
23.	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
24.	What is Advanced in Advance Manufacturing? A case of Finish Machining through Ultrasonically Assisted Abrasive Flow Machining (UAAFMM)	Expert Lecture in the TEQIP Program	October 18, 2016	NIT, Kurukshetra
25.	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
26.	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.
27.	Intellectual Property Right and a few Patents of IIT Roorkee	Faculty Development Program	June 01, 2015	College of Engineering, Pune (CoEP)
28.	Applications of 2.45 GHz	Faculty Development	June 01, 2015	College of Engg.,



	Microwaves in Micro-Drilling	Program		Pune (CoEP)
29.	Processing Challenges of Ceramic Composites and a Newer Processing Route	Quality Improvement Program for Faculty	2015 (28.2.2015)	ITS Engineering College, Greater Noida
30.	Processing of metal-based materials using 2.45 GHz microwaves with applications in joining and cladding	<b>Invited Talk, 5<sup>th</sup> International and 26<sup>th</sup> AIMTDR -2014</b>	2014 (13.12.2014)	IIT Guwahati, Guwahati
31.	Advanced Manufacturing with Special Reference to Hybrid Manufacturing	Expert Lecture	2014 (29.11.2014)	Graphic Era Hill University, Dehradun
32.	Microwaves in Material Processing	Quality Improvement Program for Faculty	2014 (31.07.2014)	GNDEC, Ludhiana
33.	Some aspects of Ultrasonic based Micromachining	Invited lecture under TEQIP	2014 (05.06.2014)	PEC University, Chandigarh.
34.	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.
35.	Processing of metal-based materials using 2.45 GHz microwaves	International Colloquium Veda-Kolleg 2013	2013 (20.10.2013)	IIT Roorkee, Roorkee
36.	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.
37.	Micromachining: Fundamentals and developments in USM and ECDM based Techniques	Invited lecture under TEQIP	2013 (14.09.2013)	PEC University, Chandigarh.
38.	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.
39.	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.
40.	Micromachining: Developments and Possibilities	Faculty Development Programme sponsored by Punjab Technical University (PTU)	2013 (04.01.2013)	Amritsar College of Technology and Engineering, Amritsar.
41.	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), Radaur-135133 (Jamuna Nagar) Haryana, India
42.	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.
43.	New Paradigms in	Invited Talk Series in the	2010	College of

	Advanced Manufacturing	Mechanical Engineering Department	(29.10.2010)	Engineering and Rural Technology, Meerut, India
44.	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.
45.	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.
46.	Microwave Processing of Materials – A New Paradigm in Processing of Engineering Materials	Community Development Programme	2008 (23.05.2008)	NIT Jalandhar, India.
47.	Designing Advance Engineering Materials – Ceramics and Ceramic Composites	Community Development Programme	2008 (23.05.2008)	NIT Jalandhar, India.

### Special Seminar / Lectures Delivered

Sl No.	Title of the Lecture	Colloquium / Course	Year	Institution
1.	How to file a Patent ?	IPR Chair, IIT Roorkee webinar “Workshop on Basics of IPR for Beginners”	May 18, 2020	IIT Roorkee
2.	Research, Research Methodology and Research Publication	Research Scholars’ Day	May 16, 2018	MIED, IIT Roorkee
3.	Concurrent Engineering	FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee	Feb. 10, 2018	National Institute of Technology (NIT) Uttarakhand, Srinagar
4.	Group Technology	-do-	-do-	-do-
5.	CIM / FMS	-do-	Feb. 10, 2018	-do-
6.	Product Design and Manuf.	-do-	-do-	-do-
7.	Concurrent Engineering	FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee	Dec. 12, 2017	Tula’s Institute, Dehradun
8.	Group Technology	-do-	Dec. 12, 2017	Tula’s Institute, Dehradun
9.	Flexible Manuf. Systems	-do-	Dec. 11, 2017	Tula’s Institute, Dehradun
10.	Product Design and Manuf.	-do-	Dec. 09, 2017	Tula’s Institute, Dehradun
11.	Manufacturing and Micromachining: Confusions and Concept	Expert Lecture	Oct. 03, 2017	Quantum School of Technology, Roorkee
12.	Defect-free Casting through In-situ Microwave Casting	AICTE Sponsored Short Term Course	July 07, 2017	IIT Roorkee

13.	Leadership and Personality Development	Ishan Vikas Program	July 01, 2017	IIT Roorkee
14.	Knowing Yourself	Ishan Vikas Program	June 23, 2016	IIT Roorkee
15.	Express Yourself	Ishan Vikas Program	June 13, 2015	IIT Roorkee
16.	Research Publication	AICTE Sponsored Short Term Course	June 19, 2015	IIT Roorkee
17.	Resource Generation and Research Funding	AICTE Sponsored Short Term Course	June 17, 2015	IIT Roorkee
18.	Quality in Research	AICTE Sponsored Short Term Course	June 16, 2015	IIT Roorkee
19.	Research and Doing Research	AICTE Sponsored Short Term Course	June 16, 2015	IIT Roorkee
20.	Microwave Processing of Materials	AICTE Sponsored Short Term Course	July 08, 2014	IIT Roorkee
21.	Microwave Joining of Materials	One-Day QIP Workshop	June 20, 2014	IIT Roorkee, Roorkee
22.	Significance of Microwaves in Material Processing	One-Day QIP Workshop	June 20, 2014	IIT Roorkee, Roorkee
23.	Advanced Manufacturing with Special Reference to Hybrid Manufacturing	Expert Lecture	November 29, 2014	Graphic Era Hill University, Dehradun
24.	Processing of metal-based materials using 2.45 GHz microwaves	International Colloquium Veda-Kolleg 2013	October 20, 2013	IIT Roorkee, Roorkee
25.	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
26.	Micromachining: Fundamentals and developments in USM and ECDM based Techniques	Invited lecture under TEQIP	September 09, 2013	PEC University, Chandigarh
27.	A State-of-the-art in Finish Machining : Concepts and Technologies	AICTE Sponsored Short Term Course	September 02, 2013	IIT Roorkee
28.	Micromachining : Concepts and Enabling Technologies with cases in Fabrication of Microchannels	Faculty Development Programme under TEQIP	June 06, 2013	PEC University, Chandigarh
29.	Enabling Micromachining Technologies in Fabrication of Microchannels	QIP-sponsored Workshop	13 March, 2013	I.I.T. Roorkee
30.	Microwave Heating Approach to Processing of Green Composites	QIP-sponsored Workshop	09 March, 2013	I.I.T. Roorkee
31.	Manufacturing Excellence and Quality	AICTE Sponsored Short Term Course	09 July, 2012	I.I.T. Roorkee
32.	Advanced Material Removal Processes – I	AICTE Sponsored Short Term Course	13 July, 2012	I.I.T. Roorkee
33.	Advanced Material Removal Processes – II	AICTE Sponsored Short Term Course	13 July, 2012	I.I.T. Roorkee
34.	Developments in Surface	QIP-sponsored Workshop	Feb 19,	I.I.T. Roorkee

	Finishing Technologies		2012	
35.	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 Tech, Karlsruhe Institute of Technology (KIT), Karlsruhe, <b>Germany</b>
36.	Developments in Materials Research and Emergence of Micromachining	AICTE Sponsored Short Term Course	14 <sup>th</sup> June, 2010	I.I.T. Roorkee
37.	Processing of Ceramic composites	AICTE Sponsored Short Term Course	15 <sup>th</sup> June, 2010	I.I.T. Roorkee
38.	Materials Processing using Electromagnetic Energy	AICTE Sponsored Short Term Course	18 <sup>th</sup> June, 2010	I.I.T. Roorkee
39.	Materials and Metallurgical Characterisation Techniques : An Overview	Continuing Education Programme	25 <sup>th</sup> May, 2010	I.I.T. Roorkee
40.	Quality in Design and Manufacturing	QIP Sponsored Short Term Course	2008	I.I.T. Roorkee
41.	Mechanical and metallurgical aspects in controlling abrasion and erosion wear	Continuing Education Programme	2008	I.I.T. Roorkee
42.	Plasma spraying and microwave glazing for performance enhancement	Continuing Education Programme	2008	I.I.T. Roorkee
43.	Characterisation of engineered surfaces	Continuing Education Program	2008	I.I.T. Roorkee
44.	Characterisation of engineered surfaces	Continuing Education Program	2007	I.I.T. Roorkee
45.	Plasma spray deposits in controlling erosion wear	Continuing Education Programme	2007	I.I.T. Roorkee
46.	An Overview of Composite Materials	QIP Sponsored Short Term Course	2006	I.I.T. Roorkee
47.	Processing of Ceramic Composites	QIP Sponsored Short Term Course	2006	I.I.T. Roorkee
48.	Ceramics and Ceramic Composites	QIP Sponsored Short Term Course	2004	I.I.T. Guwahati
49.	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

<b>[A]</b>	<b>National Programme on Technology Enhanced Learning (NPTEL)</b>
	Apurbba Kumar Sharma and Pradeep Kumar, “Advanced Manufacturing Processes”, 2014.
<b>[B]</b>	<b>National Mission Project on Pedagogic Development</b> (Sponsored by the MHRD)
	Apurbba Kumar Sharma, Inderdeep Singh, Pradeep Kumar, “Principles of Industrial Engineering”, 2010.
<b>[C]</b>	<b>For Post Graduate Students at IIT Roorkee (M. Tech./Pre-Ph.D.)</b>
	a. Friction and Wear b. Laser Material Processing
<b>[D]</b>	<b>For Undergraduate students (B.Tech./ B.E.)</b>
	Computer Numerical Control



## DETAILS OF RESEARCH PUBLICATIONS

(Name: Dr. Apurbba Kumar Sharma)

### List of Patents

	<b><u>Indian Patent</u> (Granted : 06, Filed : 05)</b>
1.	<b>Apurbba Kumar Sharma</b> and R. Krishnamurthy, Articles of Glazed Ceramic Composites on Metal Substrates and Method of Manufacture Thereof, Indian Patent No. <b>199106</b> , Date: 09.7.2001.
2.	<b>Apurbba Kumar Sharma</b> , M S Srinath and Pradeep Kumar, A method of joining of bulk metallic materials by microwave hybrid heating, Indian Patent No. <b>309058</b> , Date: 12.03.2019.
3.	<b>Apurbba Kumar Sharma</b> and Dheeraj Gupta, A method of developing metallic cladding/ coating on metallic substrates by microwave irradiation, Indian Patent No. <b>306568</b> , Date: 30.01.2019.
4.	<b>Apurbba Kumar Sharma</b> , 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. <b>283675</b> , Date: 29.05.2017.
5.	<b>Apurbba Kumar Sharma</b> , Pradeep Kumar and Rajesha S, An improved ultrasonic abrasive flow machining and a device therefor, Indian Patent No. <b>358173</b> , Date: 10.02.2021.
6.	<b>Apurbba Kumar Sharma</b> , 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. <b>426457</b> , Date: 23.03.2023 (Application No. 201621004759, Date of Application: 10.02.2016). (IIT Roorkee and DAE, Govt. of India)
7.	<b>Apurbba Kumar Sharma</b> , Radha Raman Mishra, Mohit Choudhury and Saurabh Puri, A Device for in-situ microwave casting of metals and alloys. (Application No.: 201611037834, November 05, 2016.)
8.	Akshay Dvivedi, Manjot Singh Cheema and <b>Apurbba Kumar Sharma</b> , A Flexible Device for Multiple Ultrasonic Machining Operations. Indian Patent No. <b>483135</b> , Date: 15.12.2023. (Application No.: 201611041640, December 06, 2016)
9.	<b>Apurbba Kumar Sharma</b> , Nitesh Arora and Prabh Pal Singh Seerha, Mechanical safety apparatus for thread failure in power screw based lifts. (Application No.: 201811028210, July 26, 2018)
10.	Shah Faizan, <b>Apurbba Kumar Sharma</b> , Radha Raman Mishra, Thanga Raj Chelliah, A four-way valve for directional control. Indian Patent No. <b>459108</b> , Date: 16/10/2023. (Application No.: 202011009048).
11.	<b>Apurbba Kumar Sharma</b> and Parvej, An apparatus and method for directional solidification in casting of metallic materials using microwave energy. (Application No. 202311041299 dated 16/06/2023.)

## List of Publications

<b>A.</b>	<b><u>Journal</u> (Total = 137)</b>
1.	Gaurav Kumar, Pranjal Gupta, Tejas Pramod Naik, <b>Apurbba Kumar Sharma</b> and Inderdeep Singh, Drilling of natural fiber reinforced thermoplastic composite laminates using microwave energy at 2.45GHz, <i>Materials Today Communications</i> , (2024), doi: <a href="https://doi.org/10.1016/j.mtcomm.2024.108419">https://doi.org/10.1016/j.mtcomm.2024.108419</a>
2.	Tejas Pramod Naik, Sandeep Gairola, Inderdeep Singh, <b>Apurbba Kumar Sharma</b> , Microwave-assisted alkali treatment of sisal fiber for fabricating composite as non-structural building materials. <i>Construction and Building Materials</i> , 411 (2024). <a href="https://doi.org/10.1016/j.conbuildmat.2023.134651">https://doi.org/10.1016/j.conbuildmat.2023.134651</a> .
3.	P Gupta, <b>Apurbba Kumar Sharma</b> , I Singh, Characterization and exploring antibacterial response of tungsten oxide nanoparticles synthesized using microwave-metal discharge in atmospheric air, <i>Ceramics International</i> , 49 (2023), 35585-35596. <a href="https://doi.org/10.1016/j.ceramint.2023.08.237">https://doi.org/10.1016/j.ceramint.2023.08.237</a> .
4.	Gupta, S.; <b>Apurbba Kumar Sharma</b> ; Agrawal, D.; Lanagan, M.T.; Sikora, E.; Singh, I. Characterization of AZ31/HA Biodegradable Metal Matrix Composites Manufactured by Rapid Microwave Sintering. <i>Materials</i> , 16 (2023), 1905. <a href="https://doi.org/10.3390/ma16051905">https://doi.org/10.3390/ma16051905</a> .
5.	Tejas Pramod Naik, Sandeep Gairola, Inderdeep Singh, <b>Apurbba Kumar Sharma</b> , Microwave-assisted molding of sisal/HDPE composites: Water absorption, diffusion kinetics and tribological behavior, <i>Polymer Composites</i> (2023). 44:6194–6211. DOI: 10.1002/pc.27556.
6.	Anurag Singh and <b>Apurbba Kumar Sharma</b> , 2023, Analyses of low-power microwave drilling of stainless steel-304. <i>Journal of Materials Engineering and Performance</i> (2023). <a href="https://doi.org/10.1007/s11665-023-08470-8">https://doi.org/10.1007/s11665-023-08470-8</a> .
7.	Ram Singh Rana, Jayant Kumar, Inderdeep Singh, and <b>Apurbba Kumar Sharma</b> , Comparative analysis of drilled and molded holes in short natural fiber reinforced composites, <i>Proc IMechE Part L: J Materials: Design and Applications</i> (2023), 1–11. DOI: 10.1177/14644207231191618
8.	Ram Singh Rana, Inderdeep Singh, <b>Apurbba Kumar Sharma</b> , Ultrasonic welding of banana fiber based HDPE composites with energy directors, <i>Composite Structures</i> 320 (2023). <a href="https://doi.org/10.1016/j.compstruct.2023.117222">https://doi.org/10.1016/j.compstruct.2023.117222</a> .
9.	Ram Singh Rana, Inderdeep Singh, <b>Apurbba Kumar Sharma</b> , 2023, Ultrasonic welding of printed/molded sustainable polymer specimens with energy directors, <i>Ultrasonics</i> , <b>134</b> . doi.org/10.1016/j.ultras.2023.107078
10.	Pranjal Gupta, Anurag Singh, <b>Apurbba Kumar Sharma</b> , Inderdeep Singh, 2023, Influence of liquid dielectric medium on microwave-metal discharge-based drilling of AISI 304 stainless steel. <i>Applied Physics A</i> , 129:150, <a href="https://doi.org/10.1007/s00339-023-06441-3">https://doi.org/10.1007/s00339-023-06441-3</a>
11.	Rana, R. S., Kumar, J., Singh, Y., Naik, T. P., Singh, I., & <b>Sharma, A. K.</b> (2022). Ultrasonic welding of banana/bagasse based polypropylene composites. <i>Journal of Natural Fibers</i> , 1-16. <a href="https://doi.org/10.1080/15440478.2022.2133054">https://doi.org/10.1080/15440478.2022.2133054</a>

12.	Naik, T.P., Gairola, S., Singh, I. and <b>Sharma, Apurbba Kumar</b> , 2022. Microwave Hybrid Heating for Moulding of Sisal/Jute/HDPE Composites. <i>Journal of Natural Fibers</i> , pp.1-15. <a href="https://doi.org/10.1080/15440478.2022.2100553">https://doi.org/10.1080/15440478.2022.2100553</a>
13.	Naik, T.P., Singh, I. and <b>Sharma, Apurbba Kumar</b> , 2022. Processing of polymer matrix composites using microwave energy: A review. <i>Composites Part A: Applied Science and Manufacturing</i> , p.106870. <a href="https://doi.org/10.1016/j.compositesa.2022.106870">https://doi.org/10.1016/j.compositesa.2022.106870</a>
14.	Bhupinder Singh, Ruslan M. Karimbaev, <b>Apurbba Kumar Sharma</b> , 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, <i>Surface &amp; Coatings Technology</i> , 428 (2021) 127893, DOI: <a href="https://doi.org/10.1016/j.surfcoat.2021.127893">https://doi.org/10.1016/j.surfcoat.2021.127893</a>
15.	G Kumar, RR Mishra, Apurbba Kumar Sharma, On finite element analysis of material removal rate in microwave drilling of borosilicate glass, <i>Materials Today: Proceedings</i> , 41 (2021), 759-764. <a href="https://doi.org/10.1016/j.matpr.2020.08.407">https://doi.org/10.1016/j.matpr.2020.08.407</a>
16.	Radha Raman Mishra, <b>Apurbba Kumar Sharma</b> , Effect of input microwave power and insulation on microstructure and tensile properties of cast Al 7039 alloy produced at 2.45 GHz. <i>Journal of Microwave Power and Electromagnetic Energy</i> . DOI: 10.1080/08327823.2020.1838049. pp. 312-329, 2020.
17.	Shivani Bhandari, Shivani Gupta, Radha Raman Mishra, <b>Apurbba Kumar Sharma</b> , Navneet Arora, On Microstructural and Mechanical Properties of 21-4-N Nitronic Steel Joint Developed using Microwave Energy, <i>Journal of Micromanufacturing</i> , 6 (1), 2023, pp. 12-18. <a href="https://doi.org/10.1177/25165984211033427">https://doi.org/10.1177/25165984211033427</a> .
18.	Gupta, S., Sharma, A.K. Microstructure and Microhardness of Mg/SiC Metal Matrix Composites Developed by Microwave Sintering. <i>J. Inst. Eng. India Ser. C</i> <b>103</b> , 63–68 (2022). <a href="https://doi.org/10.1007/s40032-020-00636-w">https://doi.org/10.1007/s40032-020-00636-w</a>
19.	Singh, A., <b>Sharma, Apurbba Kumar</b> On microwave drilling of metal-based materials at 2.45 GHz. <i>Appl. Phys. A</i> <b>126</b> , 822 (2020). <a href="https://doi.org/10.1007/s00339-020-03994-5">https://doi.org/10.1007/s00339-020-03994-5</a>
20.	Gaurav Kumar, Radha Raman Mishra, <b>Apurbba Kumar Sharma</b> , On defect minimization during microwave drilling of borosilicate glass at 2.45 GHz using flowing dielectric and optimized input power. <i>Transactions of the ASME: Journal of Thermal Science and Engineering Applications</i> . 031021-2 / Vol. 13, JUNE 2021. <a href="https://doi.org/10.1115/1.4048667">https://doi.org/10.1115/1.4048667</a>
21.	Chandrashekhar Jawalkar, <b>Apurbba Kumar Sharma</b> , Pradeep Kumar, Innovations in Electro Chemical Discharge Machining process through Electrolyte Stirring and Tool Rotations, <i>International Journal of Machining and Machinability of Materials</i> , 22(6), 487-503 (2020). ( <a href="https://doi.org/10.1504/IJMMM.2020.111354">https://doi.org/10.1504/IJMMM.2020.111354</a> )
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