



## Apurbba Kumar Sharma, Ph.D.

**Full Professor, Mechanical and Industrial Engineering  
Joint Faculty and Head, Department of Design  
Indian Institute of Technology Roorkee  
Roorkee – 247 667 | India.**



### ... about

**Apurbba Kumar Sharma** is a Full Professor in the Mechanical and Industrial Engineering Department, and currently Head of the Department of Design in Indian Institute of Technology Roorkee, Roorkee–247667, Uttarakhand, 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, 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–**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 in the Department of Mechanical and Industrial Engineering and currently the Head of the Department of Design at IIT Roorkee, India. 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. 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 **140 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, 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 **NINETEEN** PhD programs and FIVE others are in-progress. He has also supervised Fifty-Five Master's Dissertations and Thirty-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.                     | <b>Apurbba Kumar Sharma</b><br>R. Krishnamurthy   | <b>Indian Patent No. 199106</b><br>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><br>M S Srinath<br>Dr Pradeep Kumar   | <b>Indian Patent No. 309058</b><br>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><br>Dheeraj Gupta   | <b>Indian Patent No. 306568</b><br>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><br>Rajesha S<br>G Venkatesh<br>Dr Pradeep Kumar   | <b>Indian Patent No. 283675</b><br>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><br>Dr Pradeep Kumar<br>Rajesha S  | <b>Indian Patent No. 358173</b><br>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> ,<br>Date: 23.03.2023 (IIT Roorkee and DAE, Govt. of India)<br>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><br>Radha Raman Mishra<br>Mohit Choudhury<br>Saurabh Puri                                  | <b>Indian Patent No.521301</b> ,<br>Date: 07.03.2024<br>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,<br>Manjot Singh Cheema<br>and <b>Apurbba Kumar Sharma</b>   | <b>Indian Patent No. 483135</b> ,<br>Date: 15.12.2023.<br>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><br>Nitesh Arora<br>Prabh Pal Singh<br>Seerha  | <b>Indian Patent No. 540147. Date: 30.05.2024.</b><br>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<br><b>Apurbba Kumar Sharma</b><br>Radha Raman Mishra<br>Thanga Raj Chelliah                           | <b>Indian Patent No. 459108</b> ,<br>Date: 16/10/2023.<br>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><br>Pavej  | Application No.: 202311041299, June 16, 2023.  | A novel apparatus to fabricate directionally solidified metallic casts using microwave energy.   |

## Fellowship/Scholarship Awarded

- A.** International  
**DAAD Research Fellowship** under Faculty Exchange Programme 2011, Federal Republic of Germany.
- B.** National  
**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 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:

- |    |   |   |           |
|----|---|---|-----------|
| 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 33)*

| Sl No | Patent        | Total     | Present Status |            |
|-------|---------------|-----------|----------------|------------|
|       |               |           | Granted        | Registered |
| 1.    | Indian Patent | <b>11</b> | 10             | 01         |

  

| Sl No | Journal / Conference      | Total      | Present Status |                     |
|-------|---------------------------|------------|----------------|---------------------|
|       |                           |            | Published      | In-press / Accepted |
| 2.    | Journal Papers            | <b>145</b> | 145            | --                  |
| 3.    | International Conferences | <b>116</b> | --             | --                  |
| 4.    | National Conferences      | <b>35</b>  | --             | --                  |

## Publication Metrics

|    |  |               |
|----|--|---------------|
| 1. | Citations (Google Scholar, as on January 10, 2025)   | <b>6,877</b>  |
| 2. | h-index (Google Scholar)                             | <b>46</b>     |
| 3. | i10-index (Google Scholar)                           | <b>106</b>    |
| 4. | Reads Score (Research Gate, as on December 03, 2024) | <b>84,122</b> |
| 5. | Citation (Research Gate, as on December 03, 2024)    | <b>6,371</b>  |

## Contribution in McGraw-Hill Education HB (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 Future Opportunities | Recent Advances in Mechanical Engineering (pp.517-529)  | Naik, T.P., Rana, R.S., Singh, I. and Apurbba Kumar Sharma               | 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> )          |
| 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 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 ( <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> )                 |
| 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 ( <a href="https://doi.org/10.1007/978-981-97-2772-8_4">https://doi.org/10.1007/978-981-97-2772-8_4</a> ) |
| 15. | Application of Microwave-Metal Discharge for Metallic Material Removal                                      | Application of Microwave-Metal Discharge for Metallic Material Removal (pp. 138-153) / Composites Science and Technology series | Pranjal Gupta, Apurbba Kumar Sharma, and Inderdeep Singh                 | Springer Nature, Singapore, 2024 ( <a href="https://doi.org/10.1007/978-981-97-2772-8_7">https://doi.org/10.1007/978-981-97-2772-8_7</a> ) |
| 16. | Recent Advancements in Mechanical Engineering   | Recent Advancements in Mechanical Engineering Select Proceedings of ICRAME 2022   | T. S. Sudarshan, Apurbba Kumar Sharma, R. D. Misra, P. K. Patowari       | Springer Singapore ( <a href="https://doi.org/10.1007/978-981-97-0900-7">https://doi.org/10.1007/978-981-97-0900-7</a> ) 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, Governing Body, TIDES (Technology Innovation and Development of Entrepreneurship Society), IIT Roorkee: July 01, 2024 – date.
4. Chairman, Institute Academic Program Committee, IIT Roorkee: April 01, 2021 to March 31, 2024.
5. Chairman, Institute Research Committee, IIT Roorkee: April 01, 2021 to March 31, 2024.
6. Chairman, Postgraduate Curriculum Review Committee (PCRC), IIT Roorkee: June, 2023 to January, 2024.
7. Chairman, Undergraduate Curriculum Review Committee (UCRC), IIT Roorkee: April, 2021 – March, 2023.
8. Chairman, Institute Research Day Committee: January 2022 to March 2024.
9. Coordinator, Design Innovation Center, IIT Roorkee: August, 2018 to March 31, 2021.
10. Member, Advisory Committee, TIDES, Business Incubator, IIT Roorkee: March, 2017 onwards.
11. Associate Dean, Academic Studies: July 19, 2013 – April 26, 2017.
12. Member, Senate, IIT Roorkee: July 19, 2013 – April 26, 2017 and December 22, 2018 onwards.
13. Member, Executive Committee on Senate (ECS), IIT Roorkee: April 2021 – March 2024 and July, 2013 – April, 2017.
14. Member, Institute Research Committee (IRC): July, 2020 – April, 2021; April, 2024 – date.
15. Member, Institute Academic Program Committee (IAPC): July, 2013 – April, 2017; April, 2024 – date.
16. Member, Academic Restructuring Committee, IIT Roorkee, 2013.
17. Member Secretary, Post Graduate Programme Review Committee, 2013.
18. Chairman, Institute Academic Performance Evaluation Committee, IIT Roorkee : February, 2013 – April 26, 2017.
19. Chairman, Departmental Research Committee (DRC), May, 2020 – April, 2021.
20. Member, Intellectual Property Right Cell, IIT Roorkee, 2012 onwards.
21. Member, Department Faculty Assessment Committee (DFAC), MIED, January 2019 – December 2020.
22. Member (External), Department Faculty Assessment Committee (DFAC), Polymer & Process Engineering, July 2019 – June, 2021.
23. Member (External), Department Faculty Search Committee (DFSC), MMED & DOMS, July 2019 – June, 2021.
24. Member, Department Administrative Committee (DAC), MIED, July 2014 – February, 2016. August, 2019 – June, 2021.
25. Member, Departmental Academic Studies Committee (DASC), MIED, July 2012 – June 2014.
26. External Member, Board of Studies for Mechanical Engineering, Graphic Era Hill University, Dehradun, Uttarakhand.
27. 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: Fulbright Specialist Program (FSP)</i> | USD 3,100.00+<br>INR<br>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 (UAAFAM) 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 (ASTEAC), Silpukhuri, Guwahati–781 003.                                    | 6000.00                             | Completed         |



## Representation in International Committee

1. Member, Scientific Committee, IX<sup>th</sup> International Samsonov Conference “Materials Science of Refractory Compounds” (MSRC-2024), May 27-30, 2024, Kyiv, Ukraine.

## 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.

## Research Guidance

### [A] Ph. D. Thesis Supervision (19 + 05)

| Sl. | Title/Area of research  | Name of scholar                                      | Co supervisor         | Status                     |
|-----|---|--|-----------------------|----------------------------|
| 1.  | Microwave Synthesis of waste materials  | <b>Garima Raghav</b><br>(Jul, 2023 – )               | --                    | In-progress                |
| 2.  | Design and development of biodegradable medical test kit  | <b>Raj Kumar</b><br>(Jul, 2022 – )                   | Prof. Inderdeep Singh | In-progress                |
| 3.  | Investigation on Mechanism of Microwave Drilling  | <b>Pranjal Gupta</b><br>(Jul, 2019 – )               | Prof. Inderdeep Singh | In-progress                |
| 4.  | Fusion Welding of Natural Fiber based Thermoplastic Composites                                  | <b>Ram Singh</b><br>(Jan, 2019 – Jun, 2023)          | Prof. Inderdeep Singh | Defended<br>(Jul 17, 2023) |
| 5.  | Microwave sintering of nanostructured tribo-materials   | <b>Chintam Suresh</b><br>(Jan, 2019 – )              | --                    | In-progress                |
| 6.  | Microwave Processing of Sustainable Natural Fiber Reinforced Thermoplastic Composites           | <b>Tejas P. Naik</b><br>(Jan, 2019 – Dec, 2023)      | Prof. Inderdeep Singh | Defended<br>(May 06, 2024) |
| 7.  | Investigations on solidification during in-situ microwave casting of metallic materials         | <b>Parvej</b><br>(Jul, 2018 – Nov, 2024)             | --                    | Defended<br>(Nov 26, 2024) |
| 8.  | Development of Biodegradable Composites through Microwave Sintering for Orthopedic Applications | <b>Shivani Gupta</b><br>(Jul, 2017 – May, 2024)      | --                    | Defended<br>(Jul 08, 2024) |
| 9.  | Microwave drilling of metallic materials  | <b>Anurag Singh</b><br>(Jan, 2017 – )                | --                    | Submitted                  |
| 10. | Microwave drilling of metal-based materials   | <b>Gaurav Kumar</b><br>(July, 2015 – Sep, 2020)      | --                    | Defended<br>(Oct 15, 2020) |
| 11. | Development of microchannels by micro-USM on silicon wafer for heat transfer applications       | <b>Dungali Sreehari</b><br>(Jan, 2015 – April, 2019) | --                    | Defended<br>(Jun 28, 2019) |
| 12. | Modeling of carbon compliant supply chain network for tyre remanufacturing industry             | <b>Lokesh Saxena</b><br>(Mar, 2015 – Nov, 2018)      | Dr. P K Jain          | Defended<br>(Dec 12, 2018) |

|     |   |   |                   |                             |
|-----|---|---|-------------------|-----------------------------|
| 13. | Investigations on in-situ microwave casting of metallic materials                   | <b>Radha Raman Mishra</b><br>(July, 2014 – Aug., 2018)  | --                | Defended<br>(Aug 16, 2018)  |
| 14. | Performance analysis of ECDM process while machining glass and alumina              | <b>Mudimallana Goud</b><br>(July, 2013 - Dec, 2016)     | --                | Defended<br>(Dec 12, 2016)  |
| 15. | Development of nano structured wear resistant surfaces through microwave cladding   | <b>Sunny Zafar</b><br>(July, 2013 – Aug, 2016)          | --                | Defended<br>(Aug 12, 2016)  |
| 16. | Investigations on Microwave drilling of Characteristically different materials      | <b>Nitin Kumar Lautre</b><br>(July, 2012 – Sept, 2015)  | Dr. Pradeep Kumar | Defended<br>(Sept 20, 2016) |
| 17. | Performance Analysis of Ultrasonic Assisted Abrasive Flow Machining Process         | <b>Gudipadu Venkatesh</b><br>(Jan, 2012 – May, 2015)    | Dr. Pradeep Kumar | Defended<br>(Sept 11, 2015) |
| 18. | An Ultrasonic Micro Machining Approach to Fabricate Microchannels on Glass          | <b>Manjot Singh Cheema</b><br>(July, 2011 – June, 2015) | Dr. Akshay Divedi | Defended<br>(Sept 08, 2015) |
| 19. | Fusion Joining of Advanced Materials using Microwave Hybrid Heating                 | <b>Amit Bansal</b><br>(July, 2011 – Dec, 2014)          | Dr. Pradeep Kumar | Defended<br>(May 04, 2015)  |
| 20. | Investigations on performance enhancement of ECDM process while machining glass     | <b>C. S. Jawalkar</b><br>(July, 2010 – July, 2013)      | Dr. Pradeep Kumar | Defended<br>(Jan 31, 2014)  |
| 21. | Some Studies on Development of Microchannels Using Micro Ultrasonic Machining       | <b>Vivek Jain</b><br>(July, 2010 – April, 2012)         | Dr. Pradeep Kumar | Defended<br>(June 09, 2012) |
| 22. | Microwave Cladding of Metal-based Materials and their Characterisation              | <b>Dheeraj Gupta</b><br>(Jan, 2009 – Jan, 2012)         | --                | Defended<br>(May 22, 2012)  |
| 23. | Joining and Characterisation of Metallic Materials through Microwave Hybrid Heating | <b>M S Srinath</b><br>(July, 2008 – May, 2011)          | Dr. Pradeep Kumar | Defended<br>(Oct. 17, 2011) |
| 24. | Some Studies to Enhance the Capabilities of Abrasive Flow Machining Process         | <b>Rajेश S</b><br>(July, 2008 – Feb, 2011)              | Dr. Pradeep Kumar | Defended<br>(May 27, 2011)  |

## [B] Masters Thesis Supervision (Total : 55 + 01)

| Sl. | Title /Area of research  | Name of scholar                                     | Co supervisor       | Status                   |
|-----|--|---|---------------------|--------------------------|
| 1.  | A Digital Twin Approach for Factory Optimization   | <b>Nakul Tiwari</b>                                 | --                  | In-progress<br>(2024-25) |
| 2.  | A Digital Twin Approach for Factory Optimization Using Discrete Event Simulation (Des) Tools and Industry 4.0 Techniques | <b>Chaudhari Mohammad<br/>Tarique Mohammad Arif</b> | --                  | Awarded<br>(2023-24)     |
| 3.  | Exploring Operations Optimisation techniques using Digital Twin  | <b>Anant Om</b>                                     | --                  | Awarded<br>(2023-24)     |
| 4.  | Studies on Microwave Cladding  | <b>Nikita Rai</b>                                   | --                  | Awarded<br>(2022-23)     |
| 5.  | Fabrication of High Aspect Ratio Microchannels on Borosilicate Glass using Micro-USM Process                             | <b>Sebin Zavier</b>                                 | --                  | Awarded<br>(2021–22)     |
| 6.  | Microwave curing of green composites   | <b>Zorawar Rana</b>                                 | Dr. Inderdeep Singh | Awarded<br>(2019–20)     |
| 7.  | Experimental Studies on directional solidification in microwave casting  | <b>Vishal Manav</b>                                 | --                  | Awarded<br>(2018–19)     |

|     |   |                                  |                     |                   |
|-----|---|----------------------------------|---------------------|-------------------|
| 8.  | Microwave joining of nitronic steel   | <b>Shivani</b>                   | Dr. Navneet Arora   | Awarded (2018–19) |
| 9.  | Microwave casting of Mg-based alloy   | <b>Jitendra Yadav</b>            | --                  | Awarded (2017–18) |
| 10. | Sintering of magnesium metal matrix composite by microwave energy                                 | <b>Sakshi Jaiswal</b>            | --                  | Awarded (2017–19) |
| 11. | A Novel design of musical flute with continuous output frequency                                  | <b>Dhruv Narayan</b>             | Dr. Akshay Dvivedi  | Awarded (2016–17) |
| 12. | An ultrasonic micromachining approach for fabrication of micromoulds                              | <b>Rohit Kumar</b>               | Dr. Akshay Dvivedi  | Awarded (2016–17) |
| 13. | Joining of pipes by Microwave Energy  | <b>Dheerendra Gamit</b>          | --                  | Awarded (2015–16) |
| 14. | Studies on Machining of Composite Material using ECDM Process                                     | <b>Debabrata Naskar</b>          | Dr. Akshay Dvivedi  | Awarded (2015–16) |
| 15. | Study of Concentrator in Microwave Machining of Materials   | <b>Parvej</b>                    | --                  | Awarded (2015–16) |
| 16. | Machining of Silicon Wafers using Ultrasonic Machining  | <b>Shailesh Kumar Gupta</b>      | --                  | Awarded (2015–16) |
| 17. | Microwave curing of Natural fiber reinforced PMCs   | <b>Gaurav Kumar</b>              | Dr. Inderdeep Singh | Awarded (2015–16) |
| 18. | Machining of hard to cut materials using ECDM   | <b>Sachin Baghel</b>             | Dr. Inderdeep Singh | Awarded (2014–15) |
| 19. | Comparative Analysis of Polymer Matrix Composites Processed by Microwaves and Compression Molding | <b>Prag Sharma</b>               | Dr. Inderdeep Singh | Awarded (2014–15) |
| 20. | Parametric Investigations on Electrochemical Discharge Form Machining                             | <b>Khandelwal Gaurav Prakash</b> | Dr. Akshay Dvivedi  | Awarded (2014–15) |
| 21. | Some Studies on Weldability Aspects of Nitronic Steels  | <b>Naveen Kumar</b>              | Dr. Navneet Arora   | Awarded (2014–15) |
| 22. | Fabrication of closed microchannel using USM  | <b>Saurav Acharya</b>            | --                  | Awarded (2013–14) |
| 23. | Processing of industrial wastes using microwaves  | <b>Vaibhav Bist</b>              | Dr. Pradeep Kumar   | Awarded (2013–14) |
| 24. | Machining of Al-alloy using USM   | <b>Dungali Sreehari</b>          | Dr. Akshay Dvivedi  | Awarded (2013–14) |
| 25. | Microwave joining of MMCs   | <b>Jeevan Bist</b>               | Dr. Akshay Dvivedi  | Awarded (2013–14) |
| 26. | Some studies in Rotary ECDM   | <b>Faraz Ansari</b>              | Dr. D B Karunakar   | Awarded (2013–14) |
| 27. | Investigation on effect of process parameters for enhancing capabilities of micro USM             | <b>Sunil Kumar Maddeshia</b>     | Dr. Pradeep Kumar   | Awarded (2012–13) |
| 28. | Investigation on Finishing of External surfaces using abrasive Flow Machining                     | <b>Tarlochan Singh</b>           | Dr. Akshay Dvivedi  | Awarded (2012–13) |
| 29. | Characterisation of MMCs developed using different moulding materials                             | <b>Ramesh Babu Ningala</b>       | Dr. P K Jha         | Awarded (2012–13) |
| 30. | Investigations on dry-sliding and erosion wear of microwave induced wear resistant surfaces       | <b>Sunny Zafar</b>               | Dr. Navneet Arora   | Awarded (2012–13) |
| 31. | Development and characterisation of sustainable polymeric composites using microwaves             | <b>Mali Akshay Atul</b>          | Dr. Inderdeep Singh | Awarded (2012–13) |
| 32. | Studies on Fabrication of Microchannels   | <b>Saurabh Swain</b>             | Dr. Pradeep Kumar   | Awarded (2011–12) |
| 33. | Modeling and simulation of Ultrasonic Assisted AFM process  | <b>Gaurav Arora</b>              | Dr. Pradeep Kumar   | Awarded (2011–12) |
| 34. | Modeling and simulation of Microwave Joining process  | <b>John George Tito</b>          | Dr. Pradeep Kumar   | Awarded (2011–12) |

|     |   |                                   |                     |                   |
|-----|---|-----------------------------------|---------------------|-------------------|
| 35. | Development of Green Composites using Microwave energy  | <b>Sabir Ali</b>                  | Dr. Inderdeep Singh | Awarded (2011–12) |
| 36. | Characterisation of sustainable composites  | <b>Anil Sharma</b>                | Dr. Inderdeep Singh | Awarded (2011–12) |
| 37. | Finishing of EDMed Inconel 718 Surface through Abrasive Flow Machining  | <b>Pramod Kumar Patnaik</b>       | Dr. Pradeep Kumar   | Awarded (2010–11) |
| 38. | Experimental Investigation of Various Process Parameters While Machining Glass Through Micro- USM                 | <b>Vineet Chak</b>                | Dr. Pradeep Kumar   | Awarded (2010–11) |
| 39. | Modeling and Simulation of Microwave Metal Interaction and its Validation   | <b>P. Suryanarayana Murthy</b>    | Dr. Pradeep Kumar   | Awarded (2010–11) |
| 40. | 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) |
| 41. | Development of New Polymer Media for Abrasive Flow Machining  | <b>G Venkatesh</b>                | Dr. Pradeep Kumar   | Awarded (2009–10) |
| 42. | 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) |
| 43. | Theoretical Studies on the Material Grain Development during Severe Plastic Deformation (SPD) Process             | <b>Venkata Subbarayudu Pesala</b> | --                  | Awarded (2009–10) |
| 44. | Behaviour of Closed-Cell Aluminium Foam under Impact Loading as Energy Absorber                                   | <b>Vaidya Sudarshan Vishnurao</b> | Dr. Inderdeep Singh | Awarded (2009–10) |
| 45. | 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) |
| 46. | Numerical Simulation of ballistic impact on polymer matrix composite material                                     | <b>Sunil Kumar</b>                | Dr. Inderdeep Singh | Awarded (2008-09) |
| 47. | Maintenance prevention Design and equipment planning for OEE implementation                                       | <b>Sanjit Singh</b>               | Dr. Dinesh Kumar    | Awarded (2008-09) |
| 48. | Electrochemical honing of helical gears   | <b>Joy Prakash Mishra</b>         | Dr. N. K. Jain      | Awarded (2008-09) |
| 49. | FE analysis of honeycomb structures   | <b>Milind Gharge</b>              | Dr. Inderdeep Singh | Awarded (2008-09) |
| 50. | Numerical simulation of low velocity and Ballistic impact on polymer composite Laminated structures               | <b>Durga Shankar Gupta</b>        | Dr. Inderdeep Singh | Awarded (2007-08) |
| 51. | Design and analysis of Insertion mechanism and trajectory control for in-vivo robot for stomach biopsy            | <b>Sreenath Reddy</b>             | Dr. P. M. Pathak    | Awarded (2007-08) |
| 52. | Development of Electrochemical Honing for finish machining of spur gears  | <b>Ramlal Naik</b>                | Dr. N. K. Jain      | Awarded (2007-08) |
| 53. | Maintenance strategy selection  | <b>Uday Devekar</b>               | Dr. Dinesh Kumar    | Awarded (2007-08) |
| 54. | Modeling and dynamic analysis of biocompatible robotic arm  | <b>Chandekar Bhupendra Gopal</b>  | Dr. P. M. Pathak    | Awarded (2006-07) |
| 55. | Diamond grinding of Thermal spray deposits  | <b>L. Deshpandulal</b>            | --                  | Awarded (2006-07) |
| 56. | 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: 39 + 02)**

| Sl. | Degree                                 | Title of Dissertation   | Name of student  | Co supervisor         | Year    |
|-----|--|---|--|-----------------------|---------|
| 1.  | B.Tech.<br>(Indl. &<br>Prod.<br>Engg.) | Computational analysis of heat affected zone in microwave drilling  | <b>Amratansh Shrivastava<br/>Bhawna<br/>Sarika</b>                             | --                    | 2024-25 |
| 2.  | -do-                                   | Production line performance to reduce manufacturing failures  | <b>Raman Bansal<br/>Shreyansh Singh<br/>Tanishq Agarwal</b>                    | --                    | 2024-25 |
| 3.  | -do-                                   | A model for locating EV charging station in India   | <b>Manshi Madhushree<br/>Mitali Borkar<br/>Parag Garg</b>                      | --                    | 2022-23 |
| 4.  | B.Tech.<br>(Mech.<br>Engg.)            | Development of a proctoring tool using machine learning   | <b>Samarth Koolwal<br/>Sankalp Choudhary<br/>Shukshi Raj</b>                   | --                    | 2021-22 |
| 5.  | -do-                                   | Development of an assisting device for differently able person  | <b>Keshvam<br/>Nikhil Mittal<br/>Piyush Jadiya</b>                             | --                    | 2020-21 |
| 6.  | -do-                                   | Development of AR-based virtual laboratory  | <b>Ayush Dixit<br/>Vibhanshu Sharma<br/>Vivek Chand</b>                        | --                    | 2020-21 |
| 7.  | -do-                                   | Joining of composite materials using various techniques   | <b>Yagya Narayan<br/>Satya Prakash</b>   | Prof. Inderdeep Singh | 2019-20 |
| 8.  | -do-                                   | Development of data-driven heuristic/ metaheuristic for real-life multi-product production network planning | <b>Anant Vashisth</b>  | --                    | 2018–19 |
| 9.  | -do-                                   | Development of Data-Driven Productivity Enhancement Pipeline.   | <b>Raut Ankush Chandrakant<br/>Saurabh Shubham<br/>Hitendra Pal Singh Rao</b>  | --                    | 2018–19 |
| 10. | B.Tech.<br>(Mech.E<br>ngg.)            | Quality analysis of food grains using image processing  | <b>Praful Anand<br/>Anand Kumar<br/>Roopkishor Singh</b>                       | --                    | 2017–18 |
| 11. | B.Tech.<br>(Indl. &<br>Prod.<br>Engg.) | Study of food & grocery supply chain in Indian context  | <b>Hingar Rahul Brajesh<br/>Palash Choudhary<br/>Patel Rushi B. Kumar</b>      | --                    | 2017–18 |
| 12. | -do-                                   | Experimental studies for determining feasibility of microwave drilling in metals                            | <b>D. Roshan<br/>Ujjwal Gahlot<br/>Siddhant Sharma<br/>Manish Kumar Jangir</b> | --                    | 2017–18 |
| 13. | -do-                                   | Development of a customer-bid based model for pricing cab fare.   | <b>Apurv Maheshwari<br/>Utkarsh Narayan<br/>Yash Gupta</b>                     | --                    | 2016–17 |
| 14. | -do-                                   | Analysis of Manufacturing Systems using Predictive Decision Model   | <b>Tanmay Jain<br/>Nikhil Guria<br/>Diksha Meena</b>                           | --                    | 2015–16 |
| 15. | -do-                                   | Analysis of Facilities in the MIED, IIT Roorkee   | <b>Varun<br/>Pallav Jain</b>   | --                    | 2015–16 |
| 16. | -do-                                   | DSS for Site Selection  | <b>Ashish Taneja<br/>Mohit Hemrajani<br/>Rohit Pathak</b>                      | --                    | 2014–15 |
| 17. | -do-                                   | Processing of Materials with Microwaves for Joining Applications  | <b>Akash Chaudhury<br/>Mahipat Shahi<br/>Rahul Jain</b>                        | --                    | 2014–15 |

|     |                     |   |   |                     |         |
|-----|---------------------|---|---|---------------------|---------|
| 18. | - Do -              | Characterisation of microwave cast.   | <b>Revti Raman<br/>Suman Kumar Suman<br/>Manu Mrinal</b>  | --                  | 2013–14 |
| 19. | - Do -              | Development of microwave casting.   | <b>Mohit Chaudhary<br/>Sourabh Puri</b>   | --                  | 2012–13 |
| 20. | - Do -              | Characterisation of microwave sintered mechanical elements.   | <b>Abhay Jain<br/>Anuj Gang<br/>Bhartendu Sirohi</b>  | --                  | 2012–13 |
| 21. | - Do -              | Microwave processing of green composites  | <b>Aniket Modi<br/>Himanshu Sharma</b>  | Dr. Inderdeep Singh | 2012–13 |
| 22. | - Do -              | Development and characterisation of Microwave cladding of Inconel on stainless steel.               | <b>Archana Singh<br/>Manisha Rana</b>   | --                  | 2011–12 |
| 23. | - Do -              | Modeling and Simulation of Hybrid Abrasive Flow Machining (AFM)                                     | <b>Prateek Rai</b>  | --                  | 2010–11 |
| 24. | - Do -              | Automation of motion control system for Micro USM   | <b>Anant Saxena<br/>Lalit Mohan Singh Meena<br/>Lokesh Gulati<br/>Manoj Meena</b>                 | --                  | 2010–11 |
| 25. | - Do -              | Design and Fabrication of Abrasive Jet Machine with emphasis on Nozzle Design                       | <b>Rohit Srivastava Sharwan<br/>Ram Kumhar<br/>Shashank Shekhar</b>                               | --                  | 2009–10 |
| 26. | - Do -              | Development of Copper Coating on Graphite using Microwave Field                                     | <b>Anshul Meshram<br/>Sameer Kumar Mandal<br/>Satya Pal Singh</b>                                 | --                  | 2009–10 |
| 27. | - Do -              | Assessment of HAZ in EDMed surface  | <b>Samrat Maji<br/>Tuhin Harit<br/>Rohitash Kumar (M.E.)</b>                                      | --                  | 2008-09 |
| 28. | - Do -              | Index of Agility in Indian Two-Wheeler Manufacturing Industry                                       | <b>V. Chabra,<br/>V. Jain</b>   | --                  | 2006-07 |
| 29. | - Do -              | Fabrication and Testing of thin CFRP  | <b>Kumar Pritom<br/>S. Sharma<br/>A. Agarwal</b>  | Dr. I. Singh        | 2006-07 |
| 30. | B. E. (Mech. Engg.) | Adaptive Slicing for Effective Rapid Prototyping  | <b>S. Mohan<br/>N. Chakravarthy<br/>B. Das</b>  | --                  | 2005    |
| 31. | - Do -              | PC-Based Automatic Check Gate Operation System  | <b>D. Nath<br/>P.P. Bora<br/>P.P. Dutta</b>   | --                  | 2005    |
| 32. | - Do -              | Design of a Bamboo Shoot Peeling Cutter   | <b>Indra Mohan Das<br/>Ekbal Hussain Prodhani<br/>Saurabh Bikas Borah<br/>Pallab Kumar Kalita</b> | Dr. Plabon Kakoti   | 2005    |
| 33. | - Do -              | A Study on Rapid Prototyping Processes With Special Emphasis on Three-Dimensional Deposition Method | <b>B. Goswami<br/>B. Sharma<br/>P. P. Maut</b>  | --                  | 2004    |
| 34. | - Do -              | Study of CNC Systems and development of a CNC Integrated Software                                   | <b>K. Churanjit<br/>B. Gogoi<br/>A. Chakraborty</b>   | --                  | 2004    |
| 35. | - Do -              | Design and Fabrication of a Low Cost Solar Electric Hybrid Dryer for Mushroom                       | <b>Rajib Kr. Singh</b>  | --                  | 1999    |
| 36. | - Do -              | Design and Fabrication of a Mechanised Device for Surface Finishing                                 | <b>A. K. Sharma<br/>M. K. Agarwal</b>   | --                  | 1998    |

|     |        |  |   |                 |      |
|-----|--------|--|---|-----------------|------|
| 37. | - Do - | Design and Fabrication of a Walking Robot  | <b>Rana Saikia</b>  | --              | 1998 |
| 38. | - Do - | Development of a Computerised Parts coding System : A Group Technology Approach                            | <b>I. Haque<br/>D. Singh<br/>T. Deka<br/>Agha J. Khan</b> | --              | 1997 |
| 39. | - Do - | Microstructure Study of a few Common Mechanical Elements Subjected to Dynamic Thermal Load                 | <b>J. Devi<br/>L. Rajkhowa</b>                            | --              | 1997 |
| 40. | - Do - | Robotic Engineering : An Overview with Solution of Direct Kinematics Problem involved in Robot Manipulator | <b>Mohan K. Taye<br/>B. Deka<br/>P. Deori</b>             | Dr S M Hazarika | 1994 |
| 41. | - Do - | Design Considerations of an Orifice Meter  | <b>D. Chetri</b>  | --              | 1993 |

## Ph. D. Examiner

| Sl. | Title of the Thesis   | Name of scholar<br>(Date of Exam)                         | Thesis Advisor(s)                     | Institute/ University     |
|-----|---|---|---------------------------------------|---------------------------|
| 1.  | Machinability analysis of carbide tools during the sustainable machining of Inconel Alloy X-750   | Mr. Manjeet Singh<br>(07.10.2024)                         | Dr. Neeraj Sharma                     | MMU, Mulana               |
| 2.  | Investigation on iron-based composite through microwave hybrid heating  | Jatinder Pal<br>(13.9.2024)                               | Dr. Dheeraj Gupta<br>Dr. T P Singh    | Thapar Institute, Patiala |
| 3.  | Condition Monitoring for System Health Prediction and Tool Quality Assessment during Ultrasonic Machining of Inconel 718  | Mr. Mehdi Mehtab<br>Mirad<br>(30.07.24)                   | Dr. Bipul Das                         | NIT Silchar               |
| 4.  | Development of Data-Driven Digital Twin for Sustainable Grinding Process  | Kalpana K<br>(09.07.2024)                                 | Dr. Arunachalam                       | IIT Madras                |
| 5.  | Multi-axial forging of aa6082/b4cp nanocomposite developed through ultrasonic assisted stir casting   | Srijan Prabhakar<br>(09.4.2024)                           | Dr. D Ravikumar<br>Dr. S Aravindan    | IIT Delhi                 |
| 6.  | Modelling and analysis of machining performance and surface integrity in spot cooled vibration assisted turning of Ti6AL4V alloy                                  | Mr. Gamidi Kartheek<br>(18.03.2024)                       | Dr. P. Vamsi Krishna                  | NIT Warangal              |
| 7.  | Investigation of mechanical and metallurgical properties of double-sided friction stir welded joints of aluminium and magnesium alloys                            | Mr Ankit Thakur<br>(01.02.2024)                           | Dr. Varun Sharma<br>Dr. S.S Bhadauria | NIT Jalandhar             |
| 8.  | Electrophoretic deposited graphene coatings on titanium and nickel-titanium alloys for enhanced corrosion and wear resistance with anti-bacterial characteristics | Madhusmita Mallick<br>(Thesis evaluated in July, 2023)    | Dr. N. Arunachalam                    | IIT Madras                |
| 9.  | An Experimental Analysis on Conventional and Abrasive Water Jet Drilling Behaviour of Graphene Based Fiber Reinforced Polymer Composites                          | Mr. Raju Kumar Thakur<br>(Thesis evaluated in June, 2023) | Dr. Kalyan Kumar<br>Singh             | IIT-ISM, Dhanbad          |
| 10. | Thermo mechanical characterization  | Ravi Kumar Nagula   | Dr. K. Vijaya Kumar                   | Jawaharlal Nehru          |

|     |  |  |   |   |
|-----|--|--|---|---|
|     | of Hybrid aluminium alloy metal matrix composites  | (Thesis evaluated in May, 2023)                      | Reddy                                     | Technological University (JNTU), Kukatpally, Hyderabad      |
| 11. | Experimental Investigation and Analysis of Optimised Zwitterionic Surfactant Based ENi-P-nanoTiO <sub>2</sub> Coatings on AH36 Steel for Naval Applications. | R. Anthoni Sagaya Selvan (04.05.2023)                | Dr. Dineshsingh G. Thakur                 | Defence Institute of Advanced Technology, Deemed University |
| 12. | Study of performance characteristics in electrochemical Surface grinding of hybrid metal matrix composite  | Dhruv Kant Rahi (28.03.2023)                         | Dr. Avanish Kumar Dubey                   | MNNIT Allahabad   |
| 13. | Design Optimization and Performance Analysis of 3D Printed Polymer Matrix Composite Gears  | Mrs. Megha Anand S A (27.02.2023)                    | Dr. Y. Arun Kumar<br>Dr. M. S. Srinath    | VTU, Belagavi   |
| 14. | Design and performance study of CO <sub>2</sub> based vortex tube cooling system in turning of Ti-6Al-4V   | Khirod Kumar Mahapatro (28.11.2022)                  | Dr. P. Vamsi Krishna                      | NIT Warangal  |
| 15. | Effect of tool pin geometry on microstructure and mechanical properties of friction stir welded aa2050-t84 al-li alloy plates                                | Mr. Sanjeev Kumar (18.11.2022)                       | Dr. Barnik Saha Roy                       | NIT Agartala  |
| 16. | Grindability studies on a multiphase steel processed through hot rolling followed by newly developed two step air cooling                                    | Hari Srinivasa Rao Magham (29.03.2022)               | Dr. Vijayaraghavan<br>Dr. N. Arunachalam  | IIT Madras  |
| 17. | Performance enhancement of ECDM process using adaptive tool feed system  | Mr. Viveksheel Rajput (10.03.2022)                   | Dr. Mudimallana Goud                      | PEC University, Chandigarh                                  |
| 18. | Numerical analysis on contact mechanism of an impact damper under base excitation  | Sri Vinayaravi R. (Thesis evaluated, December, 2021) | --  | Kerala University   |
| 19. | A Computational and experimental investigation on the feasibility of transesterified Bio-oils as a dielectric for sustainable electrical discharge machining | Mr. Shirsendu Das (03.12.2021)                       | Dr Swarup Paul<br>Dr. Biswanath Doloi     | NIT Agartala  |
| 20. | Parametric influence on surface integrity of Ti6Al4V alloy in Ultrasonic Vibration Assisted Turning  | D. Venkata Sivareddy (30.09.2021)                    | Dr. A. Venu Gopal<br>Dr. P. Vamsi Krishna | NIT Warangal  |
| 21. | Thermo-mechanical Properties of Polymer CNT Composites: Experimental and Multi-scale Modelling Approach  | Mr. Gaurav Arora (13.09.2021)                        | Dr. Himanshu Pathak                       | IIT Mandi   |
| 22. | Synthesis, Characterization and Applications of Zinc-SiC based Metal Ceramic Composites  | Mr. Amrendra Rai (29.08.2021)                        | Dr. Vinay Kumar Singh                     | IIT-BHU, Varanasi   |
| 23. | Investigation on machined micro-features and generated nanoparticles using micro-electro chemical discharge machining process                                | Ms. Bindu Madhavi (11.08.2021)                       | Dr. Somasekhar Hiremath                   | IIT Madras  |
| 24. | Studies on maximum pressure rise in solid propellant rocket motor  | Mr. Balesh Ropia (30.04. 2021)                       | Dr. Dineshsingh G. Thakur                 | Defence Institute of Advanced Technology, Deemed University |
| 25. | Incremental Forming of Friction Stir Processed Wrought Aluminium Alloy   | Jacob John (25.03.2021)                              | Dr. M.B Kiran<br>Dr. S.P Shanmuganatan    | VTU, Belgaum  |



|     |   |   |   |   |
|-----|---|---|---|---|
| 26. | Investigation on tribological behavior of atmospheric plasma and high velocity Oxy-fuel sprayed WC-Cr <sub>3</sub> C <sub>2</sub> -Ni coatings on SS 316L | Mr. Digvijay Gajanan Bhosale<br>(Thesis evaluated, March, 2021) | Dr. W. S. Rathod                                  | V J T I<br>Veermata Jijabai Technological Institute, Mumbai, Maharashtra                              |
| 27. | Micro Electrical Discharge Milling and its Parametric Study   | Siddhartha Kar<br>(11.01.2021)                                  | Dr. Promod Kumar Patowari                         | NIT Silchar   |
| 28. | Experimental Investigations of Through-holes Formation in Glass by Electrochemical Discharge Machining  | Mr. Arab Julfekar M. Mastan<br>(14.10.2020)                     | Dr. Pradeep Dixit                                 | IIT Bombay  |
| 29. | Experimental Investigation of Micro-milling of Aerospace Materials  | Ms. Padmaja Tripathy<br>(29.06.2020)                            | Dr. K. P. Maity                                   | NIT Rourkela, Rourkela-769008, Odisha   |
| 30. | Study of Mechanical and Tribological Characteristics of as-cast and extruded Al-SiCp Metal Matrix Composites  | Mr. Mohanakumara K. C.<br>(16.06.2020)                          | Dr. Ajith Prasad S. L.                            | VTU, Belagavi, Karnataka  |
| 31. | Prediction of single point cutting tool wear with cutting force signals using artificial neural networks  | Mr. S. K. Thangarasu<br>(09.06. 2020)                           | Dr. S. Shankar                                    | Anna University, TN   |
| 32. | Analysis of Shrinkage and Distortion in Thin Walled Complex Geometrical Investment Casting  | Ms. Sangita Nitin Bansode<br>(24.12.2019)                       | Dr. V. M. Phalle                                  | Veermata Jijabai Technological Institute (VJTI), Central Technological Institute, Mumbai, Maharashtra |
| 33. | Investigation on the Performance of Cellulose Filled Polyester Hybrid Composite Reinforced with Treated Acacia and Cactus Fibers                          | Sakthi Vadivel K<br>(25.11.2019)                                | Dr. P. Govindasamy                                | Anna University, TN   |
| 34. | Mechanical and Tribological Properties of AA6061-2SiCp-xGr Hybrid Nanocomposites Fabricated Through Ultrasonically Assisted Stir Casting Method           | Mr. A Prasad Reddy<br>(13.11.2019)                              | Dr. P. Vamsi Krishna & Dr. Rao                    | NIT Warangal, Telengana   |
| 35. | Experimental and Numerical Study of Laser Surface Alloying of High Entropy Alloy  | Mr. Anas Ahmed Siddiqui<br>(Thesis evaluated, October, 2019)    | --  | MNNIT, Allahabad.   |
| 36. | Experimental Investigations for Dimensional Accuracy and Surface Finish in Single Point Incremental Forming Process                                       | Mr. Narinder Kumar<br>(28.09.2019)                              | Dr. R. M. Belokar                                 | PEC University of Technology Chandigarh   |
| 37. | Investigations on Machinability Characteristics of Spring Steel Using Optimization Techniques   | Mr. Vasu M.<br>(16.09.2019)                                     | Dr. Shivananda Nayaka                             | NITK, Surathkal, Manglore   |
| 38. | Thermal analysis of dental implant guides fabricated by rapid prototyping   | Varun Arora<br>(02.04.2019)                                     | Dr. Sanjeev Kumar<br>Dr. Praveen Kalra            | PEC University of Technology Chandigarh, India  |
| 39. | Dynamic analysis of flexible tubes conveying fluids subjected to external excitation  | Mr. Unnikrishnan M.<br>(Thesis evaluated, 2018)                 | Dr. Jayaraj Kochupillai                           | Kerala University, College of Engg., Thiruvananthapuram   |
| 40. | Investigation into the Extrusion Honing Process Performance   | Devadath V R<br>(04.12.2018)                                    | Dr. H. P. Raju (PESCE, Mandya)                    | VTU, Belgaum  |
| 41. | Investigations on Capability Enhancement in Computer Numeric Control Machining Centers  | Mr. Kuldeep Verma<br>(29.09.2018)                               | Dr. R. M. Belokar                                 | PEC University of Technology Chandigarh, India  |
| 42. | Experimental Investigation on Tribological and Machining Behavior of Aluminum Hybrid Metal Matrix   | Kumar M<br>(27.08.2018)   | Dr. Megalingam Murugan (Benari Amman Institute of | Anna University, TN   |

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|     | Composites for Automobile Brake Rotor Application  |  | Technology)   |  |
| 43. | 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   |
| 44. | 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   |
| 45. | 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   |
| 46. | 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) & Dr. K. G. Krishna Rao (JNTU) | Jawaharlal Nehru Technological University, Hyderabad   |
| 47. | 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  |
| 48. | Improving the surface properties of superalloys by electrical discharge machining process.   | Anoop Kumar Singh (24.09.2015)               | Dr. Sanjiv Kumar<br>Dr. V P Singh                                   | PEC University of Technology Chandigarh, India   |
| 49. | 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   |
| 50. | A Study on Tribological Behaviour of Composite Materials   | Sudarashanrao K (26.08.2015)                 | Dr. Y S Varadarajan (NIE, Mysuru)                                   | VTU, Belgaum   |
| 51. | 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  |
| 52. | Parametric Investigations in ECDM  | S. Sathisha (07.11.2014)                     | Dr. Somashekhar Hiremath (IITM)                                     | VTU, Belgaum   |
| 53. | 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)                       |
| 54. | Analysis of Bidirectional Fiber Reinforced Composites  | V V Sridhara Raju (Thesis Evaluated)         | Dr. V Bala Krishna Murthy<br>Dr. J. Suresh Kumar                    | JNTU, Hyderabad  |
| 55. | Analysis of composite laminated plates using higher order theories with zig-zag function   | T. Dharma Raju (Thesis Evaluated)            | Dr. V Bala Krishna Murthy<br>Dr. J. Suresh Kumar                    | JNTU, Hyderabad  |
| 56. | 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  |
| 57. | Some investigations into Cylindrical Electrochemical Abrasive Machining Process  | Judal Kesarabhai Bhikhabhai (29.08.2013)     | Professor Vinod Yadava  | NIT, Allahabad.  |
| 58. | 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) |

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| 59. | Optimal path planning for mobile robots in off-line & on-line situations                                | P. Raja<br>(02.10.2012)            | Dr. S. Pugazhenth    | SASTRA University,<br>Thanjavur, Tamil Nadu –<br>613 401, India |
| 60. | Optimization of operation sequencing in computer aided process planning using hybrid S-GENSAT algorithm | Nallakumarasamy G.<br>(03.01.2012) | Dr. P. S. Srinivasan | Anna University,<br>Chennai, Tamil Nadu –<br>613 401, India     |
| 61. | Optimization of work piece location and machining parameters for hexapod machine tool                   | S. Muruganandam<br>(21.09.2009)    | Dr. S. Pugazhenth    | SASTRA University,<br>Thanjavur, Tamil Nadu –<br>613 401, India |

## 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. Journal of Alloys and Compounds (Elsevier)
7. Applied Surface Science (Elsevier)
8. Journal of Manufacturing Processes (SME)
9. Journal of Tribology (ASME)
10. International Journal of Metalcasting (Springer, American Foundrymen Society, USA)
11. International Journal of Polymer Analysis and Characterization (Taylor & Francis)
12. Ceramics International (Elsevier)
13. Tribology International (Elsevier)
14. Tribology Transactions (Taylor & Francis)
15. Tribology Letters (Springer)
16. Precision Engineering (Elsevier)
17. Physica Scripta (IOP Publishing)
18. Journal of Testing and Evaluation (ASTM)
19. Kovové Materiály – Metallic Materials
20. Surface Engineering (Taylor & Francis)
21. Proceedings of the IMechE Part B: Journal of Engineering Manufacture (Sage)
22. Proceedings of the IMechE Part E: Journal of Process Mechanical Engg. (Sage)
23. Journal of Composite Materials (Sage)
24. Journal of Thermoplastic Composite Materials (Sage)
25. International Journal of Advanced Manufacturing Technology (Springer)
26. Surface & Coatings Technology (Elsevier)
27. Indian Journal of Engineering & Material Sciences (NISCAIR)
28. Sadhna (Springer)
29. 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 22<sup>nd</sup> **AIMTDR** Conference held at IIT Roorkee, 2006

## Other International Recognition

**A. Member, International Scientific Committee**

1. IX<sup>th</sup> INTERNATIONAL SAMSONOV CONFERENCE “MATERIALS SCIENCE OF REFRACTORY COMPOUNDS” (MSRC-2024), Kyiv, Ukraine (May 27-30, 2024).

**B. Who's Who**

1. Selected as one of the Biographees of The Marquis **Who's Who in the World** 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 **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

| 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). |

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|----|---|---|----------------------------------|--|
| 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 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, <b>UAE</b>  |
| 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> |

## 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             |

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| 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

| SI | Title of the Lecture   | Programme  | Year           | Institution                            |
|----|--|--|----------------|--|
| 1. | Manufacturing, Economy, Collaboration and Beyond: Some Thoughts  | <b>Chief Guest Talk</b> in the 2 <sup>nd</sup> International Conference on Emerging Materials, Smart Manufacturing & Computational Intelligence, July 18-19, 2024                              | July 18, 2024  | Chitkara University, Chandigarh, India |
| 2. | Microwave assisted treatment of natural fibers for fabrication of sustainable Sisal/HDPE composites: A resource efficient approach | <b>Invited Talk</b> in the International Conference on Composites Design, Processing, Manufacturing and Health Monitoring, June 20-21, 2024  | June 20, 2024  | IIT Mandi, India                       |
| 3. | Microwave cladding: a novel technique for development of nanostructured wear resistant surfaces                                    | <b>Keynote Talk</b> (Symposium: Films and Coatings) in the IX <sup>th</sup> INTERNATIONAL SAMSONOV CONFERENCE "MATERIALS SCIENCE OF REFRACTORY COMPOUNDS" (MSRC-2024), May 27-30, 2024         | May 30, 2024   | MSRC-2024 Kyiv, Ukraine                |
| 4. | Microwaves in Manuf.: Fundamentals, Resource Efficiency, Potential Applications and Challenges                                     | <b>Chief Guest Talk</b> in the <b>KARYASHALA</b> (High-End Research Training Programme) for Current Trends and Future Aspects on Microwave Processing of Metallic Materials, 18-20 March, 2024 | March 18, 2024 | NIT Warangal, Telengana, India         |
| 5. | UAAF: A novel finishing process for difficult to machine objects   | TEQIP-III sponsored STC on "Recent Advancements in Micromanufacturing"   | Nov. 24, 2020  | NIT Uttarakhand, Srinagar              |

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| 6.  | 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                                      |
| 7.  | 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                        |
| 8.  | Design Thinking Approach to Development of Medical Devices                                 | ATAL FDP on Design Thinking for Innovative Medical Devices  | Sept. 23, 2020      | Malaviya NIT, Jaipur   |
| 9.  | Microwave Energy – Applications in Manufacturing   | STC on "Green Technologies for Sustainable Growth"  | Sept. 15, 2020      | NIT Meghalaya, Shillong  |
| 10. | Drilling of Materials using Microwave Energy   | STC on "Green Technologies for Sustainable Growth"  | Sept. 15, 2020      | NIT Meghalaya, Shillong  |
| 11. | Applying Design Thinking: Bad Design to Good Design  | ATAL FDP on Design Thinking   | Sept. 11, 2020      | Oriental Institute of Engg. & Tech., Bhopal                    |
| 12. | Material Genomics: some thoughts from processing perspectives                              | TEQIP-III sponsored STC on "Contemporary Material Technologies"   | Sept. 09, 2020      | NIT Jalandhar  |
| 13. | Green Tribology – some thoughts  | TEQIP-III sponsored FDP on Advances in Green Tribology  | May 06, 2019        | Moradabad Institute of Technology, Moradabad.                  |
| 14. | Green Tribology – towards solutions  | TEQIP-III sponsored FDP on Advances in Green Tribology  | May 06, 2019        | Moradabad Institute of Technology, Moradabad.                  |
| 15. | 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 |
| 16. | 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>                               |
| 17. | 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                                    |
| 18. | Microwave joining of metallic pipes: challenges and achievements                           | Keynote Address, 1 <sup>st</sup> National Conf. on Advances in Welding Technology– NAWT 2018  | September 18, 2018  | NIET, Greater Noida  |
| 19. | Intellectual Property Right: Importance and Steps  | Expert Lecture  | July 20, 2018       | Uttaranchal University, Dehradun                               |
| 20. | Micromachining – challenges and achievements: some results from IIT Roorkee                | Expert Lecture  | July 03, 2018       | ABES College of Engineering, Noida                             |
| 21. | Nanometric WC-based Microwave Clad for Wear Applications                                   | TEQIP-III sponsored FDP on Advances in Surface Engineering  | May 02, 2018        | Delhi Technical University, Delhi                              |
| 22. | 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                        |
| 23. | Quality in Research Publications   | Expert Lecture in the TEQIP Program   | February 17, 2018   | Malnad College of Engg. (MCE), Hasan                           |
| 24. | Hybrid Machining - Implementations and Results   | Expert Lecture in the TEQIP Program   | February 16, 2018   | Malnad College of Engg. (MCE), Hasan                           |

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| 25. | What is advance in Advance Manufacturing ?   | Expert Lecture  | February 10, 2018    | NIT Uttarakhand, Srinagar   |
| 26. | 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                                       |
| 27. | 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  |
| 28. | 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  |
| 29. | 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                                       |
| 30. | 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.    |
| 31. | Intellectual Property Right and a few Patents of IIT Roorkee   | Faculty Development Program   | June 01, 2015        | College of Engineering, Pune (CoEP)   |
| 32. | Applications of 2.45 GHz Microwaves in Micro-Drilling  | Faculty Development Program   | June 01, 2015        | College of Engg., Pune (CoEP)   |
| 33. | Processing Challenges of Ceramic Composites and a Newer Processing Route   | Quality Improvement Program for Faculty   | 2015<br>(28.2.2015)  | ITS Engineering College, Greater Noida                                      |
| 34. | 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<br>(13.12.2014) | IIT Guwahati, Guwahati  |
| 35. | Advanced Manufacturing with Special Reference to Hybrid Manufacturing  | Expert Lecture  | 2014<br>(29.11.2014) | Graphic Era Hill University, Dehradun                                       |
| 36. | Microwaves in Material Processing  | Quality Improvement Program for Faculty   | 2014<br>(31.07.2014) | GNDEC, Ludhiana   |
| 37. | Some aspects of Ultrasonic based Micromachining  | Invited lecture under TEQIP   | 2014<br>(05.06.2014) | PEC University, Chandigarh.   |
| 38. | A Green approach to Processing of Green Composites   | Quality Improvement Programme for Faculty   | 2014<br>(14.05.2014) | Noida Institute of Engineering and Technology (NIET), Greater Noida, India. |
| 39. | Processing of metal-based materials using 2.45 GHz microwaves  | International Colloquium Veda-Kolleg 2013   | 2013<br>(20.10.2013) | IIT Roorkee, Roorkee  |
| 40. | Processing of metal-based materials using 2.45 GHz microwaves with applications in joining and cladding                                | Quality Improvement Programme for Faculty   | 2013<br>(18.09.2013) | Indian Institute of Technology Kanpur (IITK), Kanpur.                       |
| 41. | Micromachining: Fundamentals and developments in USM and ECDM based Techniques   | Invited lecture under TEQIP   | 2013<br>(14.09.2013) | PEC University, Chandigarh.   |



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| 42. | Micromachining : Concepts and Enabling Technologies with cases in Fabrication of Microchannels | Expert Lecture in the Faculty development Programme under TEQIP  | 2013<br>(06.06.2013) | PEC University, Chandigarh.  |
| 43. | Microwave Cladding: Challenges, Developments and Possibilities                                 | Quality Improvement Programme for Faculty  | 2013<br>(08.01.2013) | Noida Institute of Engineering and Technology (NIET), Greater Noida, India.            |
| 44. | Micromachining: Developments and Possibilities   | Faculty Development Programme sponsored by Punjab Technical University (PTU)                           | 2013<br>(04.01.2013) | Amritsar College of Technology and Engineering, Amritsar.                              |
| 45. | Advanced Manufacturing: Need, Growth and Applications  | Expert Lecture Series in the Mechanical Engineering Department   | 2011<br>(11.03.2011) | Seth Jai Parkash Mukand Lal Institute of Engg. and Tech. (JMIT), Jamuna Nagar, Haryana |
| 46. | 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<br>(12.11.2010) | Ganapati Institute of Technology & Management, Bilaspur, Haryana, India.               |
| 47. | New Paradigms in Advanced Manufacturing  | Invited Talk Series in the Mechanical Engineering Department   | 2010<br>(29.10.2010) | College of Engineering and Rural Technology, Meerut, India                             |
| 48. | Microwave Processing of Materials – A New Paradigm in Processing of Advanced Materials         | Key Speaker in AICTE sponsored National Seminar on Advanced Manufacturing Processes                    | 2010<br>(21.02.2010) | Noida Institute of Engineering and Technology (NIET), Greater Noida, India.            |
| 49. | Microwave Processing of Materials – A New Paradigm in Processing of Engineering Materials      | Special Talk Series in the Mechanical Engineering Society  | 2009<br>(21.09.2009) | SASTRA University, Thanjavur, TN, India.   |
| 50. | Microwave Processing of Materials – A New Paradigm in Processing of Engineering Materials      | Community Development Programme  | 2008<br>(23.05.2008) | NIT Jalandhar, India.  |
| 51. | Designing Advance Engineering Materials – Ceramics and Ceramic Composites                      | Community Development Programme  | 2008<br>(23.05.2008) | NIT Jalandhar, India.  |

## Special Lecture Delivered

| Sl. | Title of the Lecture   | Colloquium / Course   | Year           | Institution |
|-----|--|---|----------------|-------------|
| 1.  | Leadership, Negotiation, Conflict Resolution, and Work Ethics    | NPTEL Workshop titled " <i>Developing Leadership and Employability through Soft Skills in a Digital Age</i> "   | Nov. 07, 2024  | IIT Roorkee |
| 2.  | 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, Gol, March 26-30, 2024. | March 27, 2024 | IIT Roorkee |
| 3.  | How to file a Patent ?   | IPR Chair, IIT Roorkee webinar "Workshop on Basics of IPR for Beginners"  | May 18, 2020   | IIT Roorkee |

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|-----|---|---|--------------------|--|
| 4.  | Research, Research Methodology and Research Publication   | Research Scholars' Day  | May 16, 2018       | MIED, IIT Roorkee  |
| 5.  | Concurrent Engineering  | FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee | Feb. 10, 2018      | National Institute of Technology (NIT) Uttarakhand, Srinagar |
| 6.  | Group Technology  | -do-  | -do-               | -do-   |
| 7.  | CIM / FMS   | -do-  | Feb. 10, 2018      | -do-   |
| 8.  | Product Design and Manuf.   | -do-  | -do-               | -do-   |
| 9.  | Concurrent Engineering  | FDP on Product Design and Manuf., organized by ICT Academy, IIT Roorkee | Dec. 12, 2017      | Tula's Institute, Dehradun                                   |
| 10. | Group Technology  | -do-  | Dec. 12, 2017      | Tula's Institute, Dehradun                                   |
| 11. | Flexible Manuf. Systems   | -do-  | Dec. 11, 2017      | Tula's Institute, Dehradun                                   |
| 12. | Product Design and Manuf.   | -do-  | Dec. 09, 2017      | Tula's Institute, Dehradun                                   |
| 13. | Manufacturing and Micromachining: Confusions and Concept  | Expert Lecture  | Oct. 03, 2017      | Quantum School of Technology, Roorkee                        |
| 14. | Defect-free Casting through In-situ Microwave Casting   | AICTE Sponsored Short Term Course                                       | July 07, 2017      | IIT Roorkee  |
| 15. | Leadership and Personality Development  | Ishan Vikas Program   | July 01, 2017      | IIT Roorkee  |
| 16. | Knowing Yourself  | Ishan Vikas Program   | June 23, 2016      | IIT Roorkee  |
| 17. | Express Yourself  | Ishan Vikas Program   | June 13, 2015      | IIT Roorkee  |
| 18. | Research Publication  | AICTE Sponsored Short Term Course                                       | June 19, 2015      | IIT Roorkee  |
| 19. | Resource Generation and Research Funding  | AICTE Sponsored Short Term Course                                       | June 17, 2015      | IIT Roorkee  |
| 20. | Quality in Research   | AICTE Sponsored Short Term Course                                       | June 16, 2015      | IIT Roorkee  |
| 21. | Research and Doing Research   | AICTE Sponsored Short Term Course                                       | June 16, 2015      | IIT Roorkee  |
| 22. | Microwave Processing of Materials   | AICTE Sponsored Short Term Course                                       | July 08, 2014      | IIT Roorkee  |
| 23. | Microwave Joining of Materials  | One-Day QIP Workshop  | June 20, 2014      | IIT Roorkee, Roorkee   |
| 24. | Significance of Microwaves in Material Processing   | One-Day QIP Workshop  | June 20, 2014      | IIT Roorkee, Roorkee   |
| 25. | Advanced Manufacturing with Special Reference to Hybrid Manufacturing                                   | Expert Lecture  | November 29, 2014  | Graphic Era Hill University, Dehradun                        |
| 26. | Processing of metal-based materials using 2.45 GHz microwaves   | International Colloquium Veda-Kolleg 2013                               | October 20, 2013   | IIT Roorkee, Roorkee   |
| 27. | 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         |
| 28. | Micromachining: Fundamentals and developments in USM and ECDM based Techniques                          | Invited lecture under TEQIP   | September 09, 2013 | PEC University, Chandigarh                                   |
| 29. | A State-of-the-art in Finish Machining : Concepts and Technologies                                      | AICTE Sponsored Short Term Course                                       | September 02, 2013 | IIT Roorkee  |
| 30. | Micromachining: Concepts and Enabling Technologies with cases   | Faculty Development Programme under TEQIP                               | June 06, 2013      | PEC University, Chandigarh                                   |

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|-----|--|-----------------------------------|-----------------------------|--|
|     | in Fabrication of Microchannels  |                                   |                             |  |
| 31. | Enabling Micromachining Technologies in Fabrication of Microchannels   | QIP-sponsored Workshop            | 13 March, 2013              | I.I.T. Roorkee   |
| 32. | Microwave Heating Approach to Processing of Green Composites   | QIP-sponsored Workshop            | 09 March, 2013              | I.I.T. Roorkee   |
| 33. | Manufacturing Excellence and Quality   | AICTE Sponsored Short Term Course | 09 July, 2012               | I.I.T. Roorkee   |
| 34. | Advanced Material Removal Processes – I  | AICTE Sponsored Short Term Course | 13 July, 2012               | I.I.T. Roorkee   |
| 35. | Advanced Material Removal Processes – II   | AICTE Sponsored Short Term Course | 13 July, 2012               | I.I.T. Roorkee   |
| 36. | Developments in Surface Finishing Technologies   | QIP-sponsored Workshop            | Feb 19, 2012                | I.I.T. Roorkee   |
| 37. | 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, <b>Germany</b> |
| 38. | Developments in Materials Research and Emergence of Micromachining   | AICTE Sponsored Short Term Course | 14 <sup>th</sup> June, 2010 | I.I.T. Roorkee   |
| 39. | Processing of Ceramic composites   | AICTE Sponsored Short Term Course | 15 <sup>th</sup> June, 2010 | I.I.T. Roorkee   |
| 40. | Materials Processing using Electromagnetic Energy  | AICTE Sponsored Short Term Course | 18 <sup>th</sup> June, 2010 | I.I.T. Roorkee   |
| 41. | Materials and Metallurgical Characterisation Techniques : An Overview  | Continuing Education Programme    | 25 <sup>th</sup> May, 2010  | I.I.T. Roorkee   |
| 42. | Quality in Design and Manufacturing  | QIP Sponsored Short Term Course   | 2008                        | I.I.T. Roorkee   |
| 43. | Mechanical and metallurgical aspects in controlling abrasion and erosion wear  | Continuing Education Programme    | 2008                        | I.I.T. Roorkee   |
| 44. | Plasma spraying and microwave glazing for performance enhancement  | Continuing Education Programme    | 2008                        | I.I.T. Roorkee   |
| 45. | Characterisation of engineered surfaces  | Continuing Education Program      | 2008                        | I.I.T. Roorkee   |
| 46. | Characterisation of engineered surfaces  | Continuing Education Program      | 2007                        | I.I.T. Roorkee   |
| 47. | Plasma spray deposits in controlling erosion wear  | Continuing Education Programme    | 2007                        | I.I.T. Roorkee   |
| 48. | An Overview of Composite Materials   | QIP Sponsored Short Term Course   | 2006                        | I.I.T. Roorkee   |
| 49. | Processing of Ceramic Composites   | QIP Sponsored Short Term Course   | 2006                        | I.I.T. Roorkee   |
| 50. | Ceramics and Ceramic Composites  | QIP Sponsored Short Term Course   | 2004                        | I.I.T. Guwahati  |
| 51. | 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. Tech./Pre-Ph.D.)**

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

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

Computer Numerical Control

## DETAILS OF RESEARCH PUBLICATIONS

(Name: Dr. Apurbba Kumar Sharma)

### List of Patents

#### Indian Patent (Granted: 10, Filed: 01)

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. (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.)

## List of Publications

### A. Journal (Total = 145)

1. 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>
2. Parvej, **Apurbba Kumar Sharma\***, On tailored microstructure in AA 2024 alloy during in-situ microwave casting. *Materialia*, 38 (2024), [doi.org/10.1016/j.mtla.2024.102244](https://doi.org/10.1016/j.mtla.2024.102244)
3. Chintam Suresh Kumar, **Apurbba Kumar Sharma**, Ostap Zgalat-Lozynskiy, Andrey V. Ragulya, On Mechanical and Tribological Behaviour of Microwave Sintered TiN – 5 wt% Al<sub>2</sub>O<sub>3</sub> – 5 wt% Y<sub>2</sub>O<sub>3</sub> Nanocomposite. *Powder Technology*, 447 (2024), 1–16. DOI: <https://doi.org/10.1016/j.powtec.2024.120196>
4. 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
5. 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>
6. 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>
7. Chintam Suresh Kumar, **Apurbba Kumar Sharma**, Zgalat-lozynskiy 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>
8. 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>
9. 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>
10. 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>.
11. 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>.
12. 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>.
13. 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.
14. 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>.
15. 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

16. 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>.
17. 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](https://doi.org/10.1016/j.ultras.2023.107078)
18. 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>
19. 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>
20. 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>
21. 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>
22. 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>
23. 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>
24. 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.
25. 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>.
26. 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>
27. 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>
28. 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>
29. 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>)
30. 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>)
31. **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>)

32. 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>)
33. 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.ijthermalsci.2019.106067>)
34. 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>)
35. 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](https://doi.org/10.1088/2053-1591/ab3299))
36. **Apurbba Kumar Sharma** and Radha Raman Mishra, Challenges in microwave processing of bulk metallic materials and recent developments, *AMPERE Newsletter*, **96**, 2018, 7-15.
37. Lautre, N., Sharma, A., Kumar, P., and Das, S., Experimental Evaluation of a Microwave Drilling Process in Perspex, *Journal of Testing and Evaluation*, <https://doi.org/10.1520/JTE20180103>.
38. 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](https://doi.org/10.1007/s10853-018-2771-9))
39. Lokesh Kumar Saxena, Pramod Kumar Jain, **Apurbba Kumar Sharma**, A fuzzy goal programme with carbon tax policy for Brownfield Tyre remanufacturing strategic supply chain planning, *Journal of Cleaner Production*, **198**, 2018, 738-753. ([doi.org/10.1016/j.jclepro.2018.07.005](https://doi.org/10.1016/j.jclepro.2018.07.005))
40. Radha Raman Mishra and **Apurbba Kumar Sharma**, Multi-Physics Simulation of In-Situ Microwave Casting of 7039 Al Alloy inside Different Applicators and Cast Microstructure, *Proc IMechE Part E: J Process Mechanical Engineering*, **233** (3), 617–629. ([doi.org/10.1177/0954408918781479](https://doi.org/10.1177/0954408918781479)).
41. Gaurav Kumar, **Apurbba Kumar Sharma**, Role of dielectric fluid and concentrator material in microwave drilling of borosilicate glass, *Journal of Manufacturing Processes*, **33**, 2018, 184–193, (<https://doi.org/10.1016/j.jmapro.2018.05.010>).
42. Dungali Sreehari, **Apurbba Kumar Sharma**, On form accuracy and surface roughness in micro-ultrasonic machining of silicon microchannels *Precision Engineering*, 2018, (<https://doi.org/10.1016/j.precisioneng.2018.04.014>)
43. **Apurbba Kumar Sharma** and Radha Raman Mishra, Role of particle size in microwave processing of metallic material systems, *Journal of Materials Science and Technology*, 2017, 1-15, (DOI: 10.1080/02670836.2017.1412043).
44. Lokesh Kumar Saxena, Pramod Kumar Jain and **Apurbba Kumar Sharma**, Tactical supply chain planning for tyre remanufacturing considering carbon tax policy, *The International Journal of Advanced Manufacturing Technology*, 2018, (<https://doi.org/10.1007/s00170-018-1972-3>).
45. Radha Raman Mishra and **Apurbba Kumar Sharma**, Effect of solidification environment on microstructure and indentation hardness of Al-Zn-Mg alloy casts developed using microwave heating, *International Journal of Metalcasting*, **12**(2), 2018, 370–382. (<https://doi.org/10.1007/s40962-017-0176-1>).
46. Radha Raman Mishra and **Apurbba Kumar Sharma**, Effect of susceptor and mold material on microstructure of in-situ microwave casts of Al-Zn-Mg alloy, *Materials and Design*, **131**, 2017, 428-440. (DOI: 10.1016/j.matdes. 2017.06.038)
47. Dheerendra Gamit, Radha Raman Mishra and **Apurbba Kumar Sharma**, “Joining of mild steel pipes using microwave hybrid heating at 2.45 GHz and joint characterisation”, *Journal of Manufacturing Processes*, **27**, 2017, 158-168. (<https://doi.org/10.1016/j.jmapro.2017.04.028>).
48. Sunny Zafar and **Apurbba Kumar Sharma**, “Microstructure and mechanical properties of microwave post processed Ni coating”. *Journal of Materials Engineering and Performance*, 2017. (DOI:10.1007/s11665-017-2540-y), (IMPACT FACTOR: 1.094 (2015)).



49. Goud, M. and **Apurbba Kumar Sharma**, "On performance studies during micromachining of quartz glass using electrochemical discharge machining", *Journal of Mechanical Science and Technology*, **31** (3), 2017, 1365-1372. (DOI: 10.1007/s12206-017-0236-8). (IMPACT FACTOR: 0.761 (2015))
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