CURRICULUM VITAE

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Area of specialization: Manufacturing Engineering

Current areas of research: Non-traditional micro-machining, Hybrid micro-machining, Wire arc additive manufacturing.

Education:

Post Doctorate from Politecnico di Torino, Italy

PhD from IIT Kharagpur

M. Tech. (Manufacturing Process Engineering.), IIT Kharagpur,

B.E. (Production Engineering), Government College of Technology, Coimbatore.

Thesis guided: PhD-15 nos (10 full time and 05 part time), PG-20 Nos., UG-25 nos

Publications: SCI journal: 70, Conference: 25 and book chapter: 05

Patents: (Granted 03, Filed: 01)

1. An on line measurement of tool diameter in micro-ECM/micro-EDM, **Patent number: 327068.**
2. A spindle assembly for micro-ECM/micro-EDM, **Patent number: 303292.**
3. Micro-Electrochemical Discharge Machine (μ-ECDM), Apparatus and Method Thereof, **Patent number: 371654.**
4. Collet Assembly of a Electrochemical Spark Machining Apparatus, and a Method for Manufacturing, Patent filed
5. Electric arc-based smoothening of wire arc additive manufactured (WAAM) components: processes and thereof, Patent application no: 202431002351

Machine tools developed:

1. Industrial grade Micro-ECDM setup was developed and installed at DRDL Hyderabad for shop floor use.

2. Abrasive water jet cutting setup for disintegration of composite canisters was developed and installed at DRDL Hyderabad.
3. Laboratory scale setups : Micro-EDM, micro-ECM, micro-ECDM, micro-USM conducting UG and PG labs

Externally funded R& D projects:

1. 3D printing of overhang structures through different metal transfer strategies using wire arc additive manufacturing process, DST(SERB)(384)/2022-2023/999/MECH, **24.97 lakhs, 03 years, PI, ongoing.**

2. 3D Printing of Engineering Components through cold Spray Technique, CSIR(39)/2023-2024/1038/MECH, **13.5 lakhs, 03 years, PI, ongoing.**

3. Design, development and establishment of vibration assisted wire electrical discharge turning for aerospace materials to achieve better surface integrity, DRDO(DRDL)(20)/2022-2023/931/MECH, **31.05 lakhs, 03 years, PI, Ongoing.**

4. Establishment of hybrid micro machining technology using µ-ECM and µ-EDM processes for Aerospace Materials., DRDO(7)/2016-17/494/MECH.ENGG**, 59.28 Lakhs, 03 years, PI, completed.**

5. Formability study of Ti-6AI-4V alloy and its surface characterization, DRDO(DRDL)(16)/2020-2021/725/MECH.ENGG., **9.83 lakhs, 02 years, PI, completed**.

6. Study, investigation and development of machining parameters of FRP Composites using a Laser to maintain better surface integrity, DRDL Hyderabad, **9.77lakhs. 02 years, PI, completed.**

7. Design, development and supply of special purpose equipment for cutting of composite hardware, DRDO(DRDL)(14)/2020-2021/714/MECH.ENGG., **39.62 lakhs, 02 years, Co-PI, Completed.**

New laboratory developed for UG and PG:

1. Laser processing of material laboratory: 500W fiber laser welding station, CO_2 laser cutting setup (for PG practical)

2. Micro-Engineering Laboratory: Micro-EDM, Micro-ultrasonic machining setup, Micro-ECM, Micro-ECDM (UG/PG labs)

Administrative Responsibility:

1. **Professor in-charge Central workshop** from August-2018 to 13th October, 2023. New major machines added to workshop during the tenure:

Sl. No.	Name of the machine tools	Quantity
1	Semi-automatic lathe, make -HMT	04
2	Milling-make HMT,	03 (01-in process)
3	CNC Vertical Machine Center, Make-ACE micromatic	01
4	Gang drilling machine	01
5	Induction heating and brazing setup, Make : Microtech	01
6	TIG and MIG welding machine	03 (TIG-01, MIG-02)
7	Power press (150 ton)	01
8	Plasma Arc Cutting Machine Make- Dinesh Scientific Mode No. DS-Pas-100	01
9	CNC Wire Cut EDM Machine	01
10	Induction Melting Furnace	01
11	CNC lathe	01 (in process)
12	3D printing machines for polymers (UG labs)	05 (in process)

2. **Chairman,** central furniture purchase committee till 13th October, 2023.
3. **Convener**, for selection of visiting faculty for Deptt. of Mechanical Engineering, 2018.
4. **Convener and Chairman** of examination moderation board for M.Tech, Mechanical Engg., and specialization: Manufacturing Engineering. 2015-2018.
5. **Faculty Coordinator in the National event:** National Robotics Championship (NRC) 2013-2014 conducted at ISM Dhanbad. Nearly 250 students have participated.
6. **Coordinator of M.Tech Manufacturing** Engineering from the year 2015-2018.
7. **In-charge for summer training** for the third year students in the year-2012-13.
8. **Timetable In-charge** for Deptt. Of Mechanical Engineering, Academic years 2013-14, 2014-15 and 2015-16.
9. **Treasurer** in BASANT-2011 and 2012

Expert/invited lecture delivered:

1. Micro-machining using electro chemical sparks: a modern approach, name of the program: One Week Online Faculty Development Program On Emerging Trends and Recent Advancement in Mechanical Engineering date: 29.08.2023, Abacus Institute of Engineering and Management, Kolkata

2. Recent Trends in Unconventional Machining for Aerospace Industries, DRDL Hyderabad, Date 12/10/2022.
3. Topic: An overview of metal 3D printing using DMLS, Name of the program: ATAL Faculty Development Program on 3D-Printing and Design for Academician and Entrepreneurs, Organized by: Mechanical Engineering Deptt. SR University, Warangal, Date: 22/06/2021.
4. Topic: Unconventional Micro-machining: Opportunities and Challenges, Name of the program: One week faculty development program on "Recent Advancement in Mechanical Engineering", Organized by: Department of Mechanical Engineering, Government College of Engineering, Keonjhar, Orissa, date: 12/10/2020.
5. Topic: Non-conventional Micro-machining: Opportunities and Challenges, Manufacturing Applications of Micromachining with emphasis on Make in India Organized by: Department of Mechanical Engineering, R.M.K College of Engineering and Technology, Date: 14/12/2020.
6. Micro machining: possibilities and challenges, TEQIP-II, Cambridge Institute of Technology, Ranchi, 19th February, 2016.
7. Micro machining: possibilities and challenges, TEQIP-II, National Institute of Technology Patna, 9th March 2016.
8. Topic: Micro machining research at ISM Dhanbad, Organization: Defence Research and Development Laboratory (DRDL), Hyderabad, 8th October, 2015.
9. Topic: Micromachining : Opportunities and challenges, at Department of Applied Science and Technology (DISAT), Politecnico Di Torino, Italy during 21st February-2014

Awards/honors received:

1) European High Commission fellowship (Erasmus Mundus Action2-India4U) for pursuing Post Doctorate, year-2014.
2) Outstanding reviewer for the journal of Materials and manufacturing process, Year-2014.

Short courses/ workshop attended:

- Attended workshop on "MEMS TECHNOLOGY AND APPLICATIONS" organized by CEERI, Pilani under NPMASS program. (14th July to 23rd July 2010).
- Attended Short-term program under QIP on "Micro-Machining" organized by Indian

  Institute of Technology, Kanpur. (31st March to 5th April 2014).

- Two Week comprehensive training of CNC machines in MTAB Industries, Chennai, 2011.