

Dr. DUPADU CHAKRADHAR

Associate Professor,
Department of Mechanical Engineering,
Indian Institute of Technology, Palakkad,
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Employment Details:

Employer	Position Held	Department/Stream	Date of Joining	Date of Leaving
Indian Institute of Technology, Palakkad	Associate Professor	Mechanical Engineering	24-11-2021	Presently working
Indian Institute of Technology, Palakkad	Assistant Professor	Mechanical Engineering	19-07-2017	23-11-2021
National Institute of Technology Karnataka, Surathkal	Assistant Professor	Mechanical Engineering	27-11-2012	18-07-2017
Crompton Greaves Limited, Global R&D Centre, Mumbai	Senior Technology Executive	Analytics Centre	18-10-2010	26-11-2012
Sreenidhi Institute of Science and Technology, Hyderabad	Assistant Professor	Mechanical Engineering	12-10-2006	18-07-2007

Academic Background:

University	Degree	Year	Field of Specialization
National Institute of Technology Warangal, India	Ph.D.	2007-2012	Electrochemical Machining (Non Traditional Machining)
National Institute of Technology Warangal, India	M. Tech.	2004-2006	Advanced Manufacturing Processes
Sri Krishnadevaraya University, Anantapur, India	B. Tech.	2000-2004	Mechanical Engineering

Research areas of interest:

Non Traditional Machining Processes
Sustainable Machining
Artificial Intelligence in Manufacturing

Academic responsibilities at Indian Institute of Technology Palakkad:

Responsibility	Academic year / Duration
Stream coordinator [M. Tech. (Manufacturing and Materials Engineering)]	(2019-2020); (2020-2021)
Stream coordinator [B. Tech. (Mechanical Engineering)]	(2018-2019)
Chairperson of Coordination Committee (Centre Facility for Materials and Manufacturing Engineering)	Since 18 th June 2019
Chairperson (SC/ST/PwD cell of IIT Palakkad)	Since 27th November 2021
Member (Board of Academic Courses)	January 2018 to September 2021
Member (Local Purchase Committee)	Since November 2017
Member (Senate of IIT Palakkad)	June 2019 to September 2021
Member (Board of Industry Collaboration and Sponsored Research)	Since 27th November 2021

Department level assignments at National Institute of Technology Karnataka Surathkal:

Responsibility	Academic year / Duration
Member - Department Under Graduate Committee (DUGC)	(2015 -2016)
Member - Time Table Committee	(2013-2014); (2014-2015) (2015-2016); (2016-2017)

Professional membership:

- ❖ Life member of *The Indian Institute of Metals* (Membership No: 56013).

International conference organized:

As a joint secretary organized an International Conference on Advances in Manufacturing and Materials Engineering (ICAMME – 2014) during 27th to 29th March 2014 at NITK Surathkal, Mangalore.

All the papers presented in the conference are published in *Procedia Materials Science*, Volume 5, Pages 1-2654 (2014) (<http://www.sciencedirect.com/science/journal/22118128/5>)

Edited by Narendranath S, Ramesh M R, **Chakradhar D**, Doddamani M R and Srikanth Bontha.

Ongoing research projects at IIT Palakkad:

Project title: "Performance evaluation of a cryogenic coolant through a modified tool holder in machining of Inconel 625 alloy"

Status : *Ongoing*
 Award type : Early Career Research Award.
 Reference No : ECR/2017/000883
 Budget : Rs. 14,83,160
 Funding agency : Science and Engineering Research Board,
 Department of Science and Technology, Govt. of India.

Details of Ph.D. Supervision:

Number of PhD students completed : 7
Number of PhD students ongoing : 2

S. No.	Name of Student	Reg. Year and Institute Details	Thesis Title	Other Supervisor(s) (if any)	Year /Status
1	Venkatesh G	2012, NITK Surathkal	Experimental Investigation on Thermally Assisted Machining of Inconel 718 Superalloy	-	2017, PhD Awarded
2	Sachin Kumar	2012, NITK Surathkal	Studies on Friction Stir Welding Characteristics Of Aa6061/Sic/Fly Ash Hybrid Metal Matrix Composites	Prof. S. Narendranath	2020, PhD Awarded
3	Priyaranjan Sharma	2013, NITK Surathkal	Evaluation of Wedm Performance Characteristics of Inconel 706 for Turbine Disc Profile Application	Prof. S. Narendranath	2017, PhD Awarded
4	Sivaiah P	2014, NITK Surathkal	Machinability Studies on 17-4 Ph Stainless Steel Under Cryogenic Cooling Environment	-	2017, PhD Awarded
5	Vinay Varghese	2015, NITK Surathkal	Studies on End Milling Of Maraging Steel Using Cryogenic Treated And Pvd Coated Cemented Carbide Inserts Under Dry, Wet and Cryogenic Environments	Dr. M.R Ramesh	2019, PhD Awarded
6	Sachin B	2016, NITK Surathkal	Experimental Investigations on Diamond Burnishing of 17-4 Ph Stainless Steel Under Sustainable Cooling Environments	Prof. S. Narendranath	2019, PhD Awarded
7	Rakesh R P	2017, IIT Palakkad	Experimental Investigation on Cryogenic Machining of Inconel 625 Superalloy	-	Ongoing
8	Abhilash P M	2017, IIT Palakkad	Development of a Condition Monitoring and Process Control System for Wire Electric Discharge Machining	-	2021, PhD Awarded
9	Sameer Kumar Anand	2021, IIT Palakkad	Experimental Investigation on the Improvement of Performance in Wire Electric Discharge Machining	-	Ongoing

Details of supervision of M. Tech. projects at IIT Palakkad:

S. No.	Name of Student	Roll number	Thesis Title / Project area	Year of completion/ Status
1	Akshay Mahida	131902010	Multi-objective Optimization of Turning Process for Inconel 625 under MWCNT based MQL using Grey Relational Analysis	2021, Completed
2	Deepank Rahi	131902003	Simulation, Modelling and Analysis of Temperature Profiles during Wire Electrical Discharge Machining	2021, Completed
3	Sumit Kumar	131902017	Automation and Control Technology in Modular Production System of Joining Station	2021, Completed
4	Virendra Kumar Dubey	132002016	Machinability Studies of 17-4ph Stainless Steel under Sustainable Cooling Environment	Ongoing
5	Ashish Tandan	132002004	Condition monitoring of Wire EDM of Inconel 718	Ongoing
6	Abhishek Kharwar	132002003	Maintenance of Solar Panel at Module Level with Sensor	Ongoing

Details of published book chapters:

1. Sharma P., & Chakradhar D. (2021). Advancements in electrochemical machining. In *Advanced Machining and Finishing* (pp. 375-396). Elsevier.

Publications in Journals:

1. Abhilash, P. M., & Chakradhar, D. (2021). Machine-vision-based electrode wear analysis for closed loop wire EDM process control. *Advances in Manufacturing*, 1-12. <https://doi.org/10.1007/s40436-021-00373-y>
2. Abhilash, P. M., & Chakradhar, D. (2021). Wire EDM failure prediction and process control based on sensor fusion and pulse train analysis. *The International Journal of Advanced Manufacturing Technology*, 1-15. <https://doi.org/10.1007/s00170-021-07974-8>
3. Rakesh, P. R., & Chakradhar, D. (2021). Investigation on the Effect of Graphene Nano-cutting Fluid Minimum Quantity Lubrication on the Machining Performance of Inconel 625. *Arabian Journal for Science and Engineering*, 1-15. <https://doi.org/10.1007/s13369-021-06299-8>
4. Abhilash, P. M., & Chakradhar, D. (2021). Multi-response Optimization of Wire EDM of Inconel 718 Using a Hybrid Entropy Weighted GRA-TOPSIS Method. *Process Integration and Optimization for Sustainability*, 1-12. <https://doi.org/10.1007/s41660-021-00202-6>
5. Abhilash P. M., & Chakradhar D. (2021). Failure detection and control for wire EDM process using multiple sensors. *CIRP Journal of Manufacturing Science and Technology*, 33, 315-326. <https://doi.org/10.1016/j.cirpj.2021.04.009>
6. Abhilash P. M., & Chakradhar D. (2021). Sustainability improvement of WEDM process by analysing and classifying wire rupture using kernel-based naive Bayes classifier. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 43(2), 1-9. <https://doi.org/10.1007/s40430-021-02805-z>
7. Abhilash P. M., & Chakradhar D. (2021). Image processing algorithm for detection, quantification and classification of microdefects in wire electric discharge machined precision finish cut surfaces. *Journal of Micromanufacturing*, 25165984211015410. <https://doi.org/10.1177/25165984211015410>
8. Abhilash P. M., & Chakradhar D. (2020). ANFIS modelling of mean gap voltage variation to predict wire breakages during wire EDM of Inconel 718. *CIRP Journal of Manufacturing Science and Technology*, 31, 153-164. <https://doi.org/10.1016/j.cirpj.2020.10.007>

9. Abhilash P. M., & **Chakradhar D.** (2020). Surface integrity comparison of wire electric discharge machined Inconel 718 surfaces at different machining stabilities. *Procedia CIRP*, 87, 228-233.
<https://doi.org/10.1016/j.procir.2020.02.037>
10. Abhilash P. M., & **Chakradhar D.** (2020). Prediction and analysis of process failures by ANN classification during wire-EDM of Inconel 718. *Advances in Manufacturing*, 8(4), 519-536.
<https://doi.org/10.1007/s40436-020-00327-w>
11. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2021). Precision manufacturing of turbine wheel slots by trim-offset approach of WEDM. *Precision Engineering*, 71, 293-303.
<https://doi.org/10.1016/j.precisioneng.2021.03.018>
12. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2021). Measurement of WEDM performance characteristics of aero-engine alloy using RSM-based TLBO algorithm. *Measurement*, 179, 109483.
<https://doi.org/10.1016/j.measurement.2021.109483>
13. Sachinkumar, **Chakradhar, D.**, & Narendranath, S. (2021). Analysis of the Effect of Friction Stir Welding Parameters on Characteristics of AA6061 Composites using Response Surface Methodology. *Transactions of the Indian Institute of Metals*, 1-17. <https://doi.org/10.1007/s12666-021-02214-9>
14. Sivaiah, P., & **Chakradhar, D.** (2020). Identifying the effectiveness of manner of cryogenic coolant supply in different cryogenic cooling techniques in turning process—a review. *Machining Science and Technology*, 24(6), 948-999. <https://doi.org/10.1080/10910344.2020.1815039>
15. Sachinkumar, Narendranath, S., and **D. Chakradhar.** "Characterization and Evaluation of Joint Properties of FSWed AA6061/SiC/FA Hybrid AMCs Using Different Tool Pin Profiles." *Transactions of the Indian Institute of Metals* 73, no. 9 (2020): 2269-2279. <https://doi.org/10.1007/s12666-020-02035-2>
16. Sachin, B., Narendranath, S., & **Chakradhar, D.** (2020). Application of desirability approach to optimize the control factors in cryogenic diamond burnishing. *Arabian Journal for Science and Engineering*, 45(2), 1305-1317. <https://doi.org/10.1007/s13369-019-04326-3>
17. Varghese, V., Ramesh, M. R., & **Chakradhar, D.** (2019). Experimental investigation of cryogenic end milling on maraging steel using cryogenically treated tungsten carbide-cobalt inserts. *The International Journal of Advanced Manufacturing Technology*, 105(5), 2001-2019.
<https://doi.org/10.1007/s00170-019-04387-6>
18. Narendranath, S., & **Chakradhar, D.** (2019). Microstructure, hardness and tensile properties of friction stir welded aluminum matrix composite reinforced with SiC and fly ash. *Silicon*, 11(6), 2557-2565.
<https://doi.org/10.1007/s12633-018-0044-5>
19. Sachin, B., Narendranath, S., & **Chakradhar, D.** (2019). Enhancement of surface integrity by cryogenic diamond burnishing toward the improved functional performance of the components. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 41(10), 1-13.
<https://doi.org/10.1007/s40430-019-1918-1>
20. Varghese, V., Akhil, K., Ramesh, M. R., & **Chakradhar, D.** (2019). Investigation on the performance of AlCrN and AlTiN coated cemented carbide inserts during end milling of maraging steel under dry, wet and cryogenic environments. *Journal of Manufacturing Processes*, 43, 136-144.
<https://doi.org/10.1016/j.jmapro.2019.05.021>
21. Sachin, B., Narendranath, S., & **Chakradhar, D.** (2019). Selection of optimal process parameters in sustainable diamond burnishing of 17-4 PH stainless steel. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 41(5), 1-12. <https://doi.org/10.1007/s40430-019-1726-7>
22. Sivaiah, P., & **Chakradhar, D.** (2019). Performance improvement of cryogenic turning process during machining of 17-4 PH stainless steel using multi objective optimization techniques. *Measurement*, 136, 326-336. <https://doi.org/10.1016/j.measurement.2018.12.094>
23. Sachin, B., Narendranath, S., & **Chakradhar, D.** (2019). Effect of working parameters on the surface integrity in cryogenic diamond burnishing of 17-4 PH stainless steel with a novel diamond burnishing tool. *Journal of Manufacturing Processes*, 38, 564-571. <https://doi.org/10.1016/j.jmapro.2019.01.051>
24. Sivaiah, P., & **Chakradhar, D.** (2019). Modeling and optimization of sustainable manufacturing process in machining of 17-4 PH stainless steel. *Measurement*, 134, 142-152.
<https://doi.org/10.1016/j.measurement.2018.10.067>

25. Sivaiah, P., & **Chakradhar, D.** (2019). The effectiveness of a novel cryogenic cooling approach on turning performance characteristics during machining of 17-4 PH stainless steel material. *Silicon*, 11(1), 25-38. <https://doi.org/10.1007/s12633-018-9875-3>
26. Varghese, V., Ramesh, M. R., & **Chakradhar, D.** (2019). Influence of deep cryogenic treatment on performance of cemented carbide (WC-Co) inserts during dry end milling of maraging steel. *Journal of Manufacturing Processes*, 37, 242-250. <https://doi.org/10.1016/j.jmapro.2018.11.030>
27. Varghese, V., Ramesh, M. R., & **Chakradhar, D.** (2018). Experimental investigation and optimization of machining parameters for sustainable machining. *Materials and Manufacturing Processes*, 33(16), 1782-1792. <https://doi.org/10.1080/10426914.2018.1476760>
28. Sivaiah, P., & **Chakradhar, D.** (2018). Analysis and modeling of cryogenic turning operation using response surface methodology. *Silicon*, 10(6), 2751-2768. <https://doi.org/10.1007/s12633-018-9816-1>
29. Sivaiah, P., & **Chakradhar, D.** (2018). Multi performance characteristics optimization in cryogenic turning of 17-4 PH stainless steel using Taguchi coupled grey relational analysis. *Advances in Materials and Processing Technologies*, 4(3), 431-447. <https://doi.org/10.1080/2374068X.2018.1452132>
30. Sivaiah, P., & **Chakradhar, D.** (2018). Effect of cryogenic coolant on turning performance characteristics during machining of 17-4 PH stainless steel: A comparison with MQL, wet, dry machining. *CIRP Journal of Manufacturing Science and Technology*, 21, 86-96. <https://doi.org/10.1016/j.cirpj.2018.02.004>
31. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2018). Analysis and optimization of WEDM performance characteristics of Inconel 706 for aerospace application. *Silicon*, 10(3), 921-930. <https://doi.org/10.1007/s12633-017-9549-6>
32. Sivaiah, P., & **Chakradhar, D.** (2018). Comparative evaluations of machining performance during turning of 17-4 PH stainless steel under cryogenic and wet machining conditions. *Machining Science and Technology*, 22(1), 147-162. <https://doi.org/10.1080/10910344.2017.1337129>
33. Sivaiah, P., & **Chakradhar, D.** (2017). Machinability studies on 17-4 PH stainless steel under cryogenic cooling environment. *Materials and Manufacturing Processes*, 32(15), 1775-1788. <https://doi.org/10.1080/10426914.2017.1339317>
34. Venkatesh, G., & **Chakradhar, D.** (2017). Influence of thermally assisted machining parameters on the machinability of Inconel 718 superalloy. *Silicon*, 9(6), 867-877. <https://doi.org/10.1007/s12633-017-9568-3>
35. Sivaiah, P., & **Chakradhar, D.** (2017). Influence of cryogenic coolant on turning performance characteristics: A comparison with wet machining. *Materials and Manufacturing Processes*, 32(13), 1475-1485. <https://doi.org/10.1080/10426914.2016.1269920>
36. Sivaiah, P., & **Chakradhar, D.** (2017). Multi-objective optimisation of cryogenic turning process using Taguchi-based grey relational analysis. *International Journal of Machining and Machinability of Materials*, 19(4), 297-312. <https://doi.org/10.1504/IJMMM.2017.086161>
37. Ganta, V., Sagar, K. S., & **Chakradhar, D.** (2017). Multi objective optimisation of thermally enhanced machining parameters of Inconel 718 using grey relational analysis. *International Journal of Machining and Machinability of Materials*, 19(1), 57-75. <https://doi.org/10.1504/IJMMM.2017.081189>
38. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2016). Effect of wire diameter on surface integrity of wire electrical discharge machined Inconel 706 for gas turbine application. *Journal of Manufacturing Processes*, 24, 170-178. <https://doi.org/10.1016/j.jmapro.2016.09.001>
39. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2016). Effect of wire material on productivity and surface integrity of WEDM-processed Inconel 706 for aircraft application. *Journal of Materials Engineering and Performance*, 25(9), 3672-3681. <https://doi.org/10.1007/s11665-016-2216-z>
40. Sharma, P., **Chakradhar, D.**, & Narendranath, S. (2015). Evaluation of WEDM performance characteristics of Inconel 706 for turbine disk application. *Materials & Design*, 88, 558-566. <https://doi.org/10.1016/j.matdes.2015.09.036>

Publications in International conference Proceedings:

1. **D. Chakradhar**, A. Venu Gopal, "Design and optimization of process parameters in electrochemical machining of Inconel 625 alloy using Taguchi method", 16th International Symposium on Electromachining (ISEM - XVI), Shanghai, China, 2010, Pages 373 - 377.
2. **D. Chakradhar**, A. Venu Gopal, " Experimental study and parameter design of electrochemical machining of EN-31 steel using Taguchi method", 3rd International and 24th AIMTDR Conference, Andhra University, Visakhapatnam, India, 2010, Pages 1175 - 1180.
3. Venkatesh Ganta, **D. Chakradhar**, "An Experimental Investigation of Hot Machining Performance Parameters using Oxy-Acetylene gas setup" 5th International & 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014), IIT Guwahati, India, 2014, Pages 370 (1-6).
4. Venkatesh Ganta, **D. Chakradhar**, "Parametric optimization in hot turning of Inconel 718 alloy using Taguchi method", 4th INTERNATIONAL ENGINEERING SYMPOSIUM (IES 2015), Kumamoto University, Japan, 2015, Pages M-3-7-(1-5).
5. Priyaranjan Sharma, **D. Chakradhar**, Narendranath S "Modeling and optimization of WEDM performance attributes OF Inconel 706 super alloy using RSM- based PSO approach", 9th International Conference on Materials Technologies and modeling (MMT-2016), Ariel University, Israel, 2016, Volume 1, Pages 181-194.
6. Venkatesh Ganta, **D. Chakradhar**, "Multi Objective Optimization of Hot Machining of 15-5PH Stainless Steel Using Grey Relation Analysis" Procedia Materials Science (Elsevier), Volume 5, 2014, Pages 1810–1818
7. Sachinkumar, Narendranath S, **Chakradhar D**, "Study on microstructure and tensile properties of fly ash AMCs welded by FSW", AIP Conference Proceedings, 2018.
<https://doi.org/10.1063/1.5029694>
8. Sachinkumar, Narendranath S, **Chakradhar D**, "Effect of FSW on microstructure and hardness of AA6061/SiC/fly ash MMCs", Materials Today: Proceedings, 2018.
<https://doi.org/10.1016/j.matpr.2018.06.113>
9. Varghese, V., **Chakradhar, D.**, Ramesh, M.R., "Micro-mechanical characterization and wear performance of TiAlN/NbN PVD coated carbide inserts during End milling of AISI 304 Austenitic Stainless Steel", Materials Today: Proceedings, 2018. <https://doi.org/10.1016/j.matpr.2018.02.270>
10. Sachin B, Narendranath S, **Chakradhar D**, "Effect of cryogenic diamond burnishing on residual stress and microhardness of 17-4 PH stainless steel", Materials Today: Proceedings, 2018.
<https://doi.org/10.1016/j.matpr.2018.06.179>

PERSONAL PROFILE:

Name : Dr. D. CHAKRADHAR
Father's Name : Dr. D. Punyasehsudu
Sex : Male
Marital status : Married
Languages known : Telugu, Hindi, English.

Dr. CHAKRADHAR DUPADU