Madhu H.C

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Education

	Degree	Year	Institute	Specialization
1	Ph.D.	2019	Indian Institute of Science, Bangalore	Mechanical Engineering
2	Master of Technology	2006	National Institute of Engineering, Mysore	Production Engineering
3	Bachelor of Engineering	2004	Bangalore Institute of Technology, Bangalore	Mechanical Engineering

Professional Experience

	Date (from-to)	Designation	Organization
1	01-01-2011 to Present	Assistant Professor	Siddaganga Institute of Technology, Tumkur
2	03-08-2009 to 31-12-2010	Lecturer	Siddaganga Institute of Technology, Tumkur
3	01-01-2008 to 31-07-2009	Senior Engineer (QA)	L.G. Electronics India Pvt. Ltd., Pune
4	06-07-2006 to 31-12-2007	Engineer (QA)	L.G. Electronics India Pvt. Ltd., Pune

Positions held

- Institute Project Monitoring Committee
- Innovation & Intellectual Property Development
- Member of Dept Academic Affairs committee
- Member of Curriculum Design committee
- Member of Technical Seminal Evaluation Committee
- Major Project Coordinator

- CNC-IOT lab coordinator
- Robotics and Automation Lab Coordinator
- NBA Criteria 7 coordinator

Affiliations of Professional organizations

NIL

Awards and Honors

- Productivity Award (1st half of 2008) at L.G. Electronics, Pune.
- Successfully completed Six-Sigma project on R-22 leakage in AC, 2009.
- Best Presented Paper, Sustainable Materials Processing and Manufacturing (SMPM) University of Johannesburg, South Africa, 2017
- Best Paper Award, Conference on Industrial and Manufacturing Systems, Dr. B R Ambedkar National Institute of Technology (NIT), Jalandhar, 2021

Courses Taught

Undergraduate Courses

- Strength of Materials
- Automatic Control Engineering
- Operations Research
- Non-Traditional Machining
- Industrial Hydraulics and Pneumatics
- Finite Element Methods
- Industrial Robotics
- Computational Methods in Engineering
  Vibration and Control Systems
- Robotics and automation

Postgraduate Courses

- Mechanical Behaviour of Materials
- Joining of Materials

Research Guidance

Sl. no	Name of the Scholar	Title	Year of completion
		NIL	

Research Areas

- Friction Stir Processing
- Sustainable Manufacturing
- Additive Manufacturing
- Polymer-Derived Ceramics

Sponsored Projects

Ongoing Projects:

Title: "Multifunctional Polymer Research and Training Center for Recyclability, Additive Manufacturing, and Material Innovation."
Funding Agency: TE Connectivity Bangalore
Amount: Rs. 93.1 lakhs
Duration: Jan 2025 - Present
Role: Principal Investigator

Completed Projects:

1. Title: "Fatigue life prediction methodology for additively manufactured high-temperature nickel alloys with process-structure property correlations."
   Funding Agency: DST-SERB
   Amount: Rs. 18.3 lakhs
   Duration: Dec 2020 - Present
   Role: Principal Investigator

Publications

Journals

- S. Dixit, H. C. Madhu, S. V. Kailas, and K. Chattopadhyay, "Role of insert material on process loads during FSW," Int. J. Adv. Manuf. Technol., vol. 91, no. 9, pp. 3427–3435, 2017.
- S. S. Mani Prabu, H. C. Madhu, C. S. Perugu, K. Akash, P. Ajay Kumar, S. V. Kailas, M. Anbarasu, and I. A. Palani, "Microstructure, mechanical properties and shape memory behaviour of friction stir welded nitinol," Mater. Sci. Eng. A, vol. 693, Suppl. C, pp. 233–236, 2017.
- H. C. Madhu, P. Ajay Kumar, C. S. Perugu, and S. V. Kailas, "Microstructure and Mechanical Properties of Friction Stir Process Derived Al-TiO_2

Nanocomposite," J. Mater. Eng. Perform., vol. 27, no. 3, pp. 1318–1326, 2018.

- H. C. Madhu and S. V. Kailas, "Fabrication of localised aluminium foam by a novel polymeric blowing agent," Mater. Charact., vol. 142, pp. 340–351, 2018.
- S. S. Mani Prabu, H. C. Madhu, C. S. Perugu, K. Akash, R. Mithun, P. P. Ajay Kumar, S. V. Kailas, M. Anbarasu, and I. A. Palani, "Shape memory effect, temperature distribution and mechanical properties of friction stir welded nitinol," J. Alloys Compd., vol. 776, pp. 334–345, 2019.
- P. Ajay Kumar, H. C. Madhu, A. Pariyar, C. S. Perugu, S. V. Kailas, U. Garg, and P. Rohatgi, "Friction stir processing of squeeze cast A356 with surface compacted graphene nanoplatelets (GNPs) for the synthesis of metal matrix composites," Mater. Sci. Eng. A, vol. 769, 2020.
- S. S. Mani Prabu, C. S. Perugu, H. C. Madhu, A. Jangde, S. Khan, J. S., M. Manikandan, P. Ajay Kumar, S. V. Kailas, and I. A. Palani, "Exploring the Functional and Corrosion Behavior of Friction Stir Welded NiTi Shape Memory Alloy," J. Manuf. Process., vol. 47, pp. 119–128, 2019.
- H. C. Madhu, V. Edachery, K. P. Lijesh, C. S. Perugu, and S. V. Kailas, "Fabrication of Wear-Resistant Ti_3AlC_2/Al_3Ti Hybrid Aluminum Composites by Friction Stir Processing," Metall. Mater. Trans. A, vol. 51, no. 8, pp. 4086–4099, 2020.
- S. M. Prabu, C. S. Perugu, A. Jangde, H. C. Madhu, M. Manikandan, M. D. Joshi, S. S. Hosmani, P. A. Kumar, S. V. Kailas, and I. A. Palani, "Investigations on the influence of surface mechanical attrition treatment on the corrosion behaviour of friction stir welded NiTi shape memory alloy," Surf. Coat. Technol., vol. 402, p. 126495, 2020.
- C. S. Perugu, K. K. Verma, H. C. Madhu, and P. P. Pambannan, "Microstructural and Texture Evolution of Hot-Rolled TA32 Alloy and Its Effect on Tensile Properties," JOM, vol. 73, pp. 1428–1439, 2021.
- A. John, V. Edachery, M. Agilan, A. Rajendran, S. Mathiyalagan, H. C. Madhu, and S. V. Kailas, "Influence of Sliding-Friction Induced Strain Hardening on the Tribological Behavior of Friction Stir Processed AA2219 Alloy," Tribol. Online, vol. 17, no. 1, pp. 9–18, 2022.
- K. S. A. Kumar, H. Rajneesh, and H. C. Madhu, "Effect of SiC nano particles on grain stability of friction stir processed AA7075," Mater. Today: Proc., vol. 27, pp. 2586–2590, 2020.
- H. C. Madhu and S. V. Kailas, "Exploring damping behavior of novel polymer-derived aluminum alloy foam," Mater. Lett., 2023, Art. no. 135758.
- H. C. Madhu and V. Sampath, "Influence of Laser Power on Microstructure and Mechanical Behaviour of Laser Powder Bed Fusion IN718 After Heat-Treatment," J. Mater. Eng. Perform., 2024, pp. 1–11.

Conference Proceedings

- M. M. Furqan, S. Balasa, S. R. Hegde, S. Sandyat, H. C. Madhu, and U. Makam, "Design and analysis of a drag sail to de-orbit low earth orbit satellites," in Proc. Int. Astronautical Congress (IAC), Toronto, Canada, 2014.
- M. Sumandev, P. Bedar, H. C. Madhu, and K. G. N., "Effect of cooled EGR on performance and emission characteristics of diesel engine: An experimental investigation," in Proc. Int. Conf. Mech. Eng. (ICME), Bangalore, India, 2014.
- H. C. Madhu and S. V. Kailas, "In-situ aluminothermal reduction synthesis of Ti_3AlC_2 aluminium composite by friction stir processing," in Proc. Int. Conf. Sustainable Materials and Manufacturing (SMPM), Kruger National Park, South Africa, 2017, pp. 157–162.
- H. C. Madhu, S. V. Kailas, and T. S. Srivatsan, "Synthesis of an aluminum composite using friction stir processing and resultant mechanical response," in Proc. 25th Int. Conf. Processing and Fabrication of Advanced Materials (PFAM-XXV), Univ. of Auckland, Auckland, New Zealand, 2017.
- H. C. Madhu, C. S. Perugu, and S. V. Kailas, "Grain refinement and thermal stability of friction stir processed AZ31 alloy," in Proc. Int. Conf. Advanced Materials and Processes (ADMAT), Thiruvananthapuram, India, 2017.
- S. V. Kailas and H. C. Madhu, "Development of polymer derived ceramic based aluminium foam through friction stir processing," Keynote Talk, in Int. Conf. Friction Based Processes (ICFP), Osaka, Japan, Nov. 2017.
- S. S. Mani Prabu, H. C. Madhu, C. S. Perugu, K. Akash, P. A. Kumar, S. V. Kailas, M. Anbarasu, and I. A. Palani, "Friction stir welding of nitinol: Microstructure, mechanical and shape memory properties," in Proc. ADMAT, Thiruvananthapuram, India, 2017.
- V. Edachery, H. C. Madhu, V. N. L., and S. V. Kailas, "On effect of friction stir processing passes on tribological behaviour of Al–TiO_2 nano composites," in Proc. ICAMPS, Thiruvananthapuram, India, 2018.
- S. V. Kailas and H. C. Madhu, "Quest for high-strength high-ductility materials," Plenary Talk, in Sustainable Materials Processing and Manufacturing (SMPM), South Africa, Mar. 2019.
- K. S. A. Kumar, H. Rajneesh, and H. C. Madhu, "Effect of SiC nanoparticles on grain stability of friction stir processed AA7075," in Proc. Int. Conf. Materials and Manufacturing Methods (3M-2019), Trichy, India, 2019.
- S. S. Mani Prabu, H. C. Madhu, C. S. Perugu, K. Akash, A. Kumar, S. V. Kailas, M. Anbarasu, and I. A. Palani, "Realization of friction stir welding of NiTi shape memory alloy towards functional applications," in Proc. Shape Memory and Superelastic Technology Conf. (SMST), Konstanz, Germany, May 2019.
- A. Kumar and H. C. Madhu, "Experimental investigations on effect of tool welding speed on microstructure and tensile properties of FSW dissimilar joints reinforced with SiC nanoparticles," in Proc. Int. Conf. Industrial and

Manufacturing Systems (CIMS 2020), Dr. B. R. Ambedkar NIT, Jalandhar, India, Jun. 2020.

- H. C. Madhu, A. Kumar, G. Ganesh, P. J. S. Puneeth, and R. H. M. Ramesh, "On influence of friction coefficient and processing temperature on equal channel angular pressing (ECAP) of AA1100: Johnson–Cook plasticity model approach," in Proc. CIMS-2021, Dr. B. R. Ambedkar NIT, Jalandhar, India, Nov. 2021.
- S. M. Sreekrishna, K. B. Gowda, and H. C. Madhu, "Synthesizing of polymer derived ceramic foams and its applications – A review," in Proc. ICRTIME-2022, Govt. Engineering College, K. R. Pet, Mandya, India, Mar. 2022.
- S. Jeevan and H. C. Madhu, "Ceramic foams for melt filtration: Structure, properties and effects on alloy – A review," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.
- H. S. Warhadakar and H. C. Madhu, "Effect of pyrolysis temperature on ceramic yield, porous structure and mechanical properties," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.
- S. Y. A. Sudeep, H. S. Shawn, H. S. Shivashankar, and H. C. Madhu, "Optimization of disc brake using dual calliper," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.
- K. R. Gopi, K. S. A. Kumar, and H. C. Madhu, "Effect of ECAP on magnesium alloys – A comprehensive review," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.
- H. C. Madhu, K. S. A. Kumar, K. R. Gopi, G. Ganesh, P. J. S. Puneeth, and R. H. M. Ramesh, "Numerical simulation of equal channel angular pressing (ECAP) using Johnson–Cook plasticity model to study the effect of channel angle and friction coefficient on AA1100," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.
- A. K. L. Gowda, J. Anand Kumar, K. N. Bharath Gowda, T. Krishna Kumar, and H. C. Madhu, "High temperature corrosion of additively manufactured superalloy," in Proc. ICRDME-2022, Siddaganga Inst. of Technology, Tumkur, India, Jun. 2022.

Book Chapters

- KSA Kumar, H Rajneesh, HC Madhu, Experimental Investigations on Effect of Tool Welding Speed on Microstructure and Tensile Properties of FSW Dissimilar Joints Reinforced with Sic Nanoparticles, Modern Manufacturing Systems, 231-244

Editor/ Reviewer of Journal

- Nature-Scientific Report

- Materials & Design
- Material Letters
- Advances in Materials & Processing Technologies
- Materials Performance and Characterization
- International Journal on Interactive Design and Manufacturing
- Materials Physics and Mechanics
- International Journal of Electrochemical Science
- International Journal of Lightweight Materials and Manufacture

Patents

- Area Specific Metallic Foams by Friction Stir Processing and Madhu H C 201943052360 Patent No: 459908 India Granted Satish Kailas V 17/10/23
- Area Specific Metallic Foams by Friction Stir Processing and Madhu H C 2017410122351 Patent No: 356494 India Granted Satish Kailas V 12/09/19
- Synthesis of Polymer-Derived Ceramic Foams, Composites, and Particles Using Inorganic Powder Shielding Madhu H C, Kiran B, Hrithik Warhadaka, Jeevan S, Sreekrishna M, Filed Application No : 202441060834, 12/08/2024 India

Invited Lectures, talks and workshops

- “Advanced Nano Materials, Nano Fabrication Techniques & Devices” from 10th -14th August 2020, BMS Institute of Technology, Bangalore
- “Additive Manufacturing of Superalloys”, 24 Feb 2022, Sri Sai Ram Engineering College, Chennai