CURRICULUM VITAE

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EDUCATION

2017-2021	Ph.D. in School of Mechanical and Materials Engineering Indian Institute of Technology Mandi, Himachal Pradesh, India
2014-2016	M.Tech. in Manufacturing Technology (CGPA: 8.52 with distinction) Dr. B.R. Ambedkar National Institute of Technology Jalandhar, Punjab, India
2009-2013	B.Tech. in Mechanical Engineering (Marks: 75.12% with honors) Noida Institute of Engineering and Technology, Greater Noida, Uttar Pradesh, India

WORK EXPERIENCES

- Postdoctoral fellow at BDDC, University of Guelph, Canada **(18 May 2022 to 30 June 2023)**
- Assistant Professor in the Department of Mechanical Engineering at Chandigarh University, Punjab, India. **(25 Oct 2021 to 28 Feb 2022)**

RESEARCH SKILLS & INTERESTS

- **Composites manufacturing**: Compression molding, microwave-assisted curing, vacuum bagging, extrusion and injection molding
- **Mechanical testing**: Static and dynamic UTM, impact testing, hardness testing, and DMA
- **Other testings**: Wear test, environmental degradation test, flammability test, and electrical conductivity test
- **Machining**: Abrasive water jet machining and laser machining
- **Materials characterizations**: TGA, DSC, FTIR, SEM, XRD, CHNS
- **Software**: CATIA (Part & Drawing), COMSOL (Radio Frequency), Digimat (MF&FE), Design-Expert (Full factorial, Taguchi and RSM)**,** SOLIDWORKS (Part & Drawing)
- **Miscellaneous**: Plastic waste recycling, biomass pyrolysis

ACHIEVEMENTS/RECOGNITIONS

- Guest Editor of **"Special Issue on High-Performance Lightweight Materials and Structures: Advanced Processing Techniques and Performance Evaluation"** in *International Journal on Interactive Design and Manufacturing (IJIDeM)*, Springer.
- Section Editor of **Polymer Processing and Engineering** in *Journal of Polymer Science and Engineering*, EnPress.
- **Patent** filed "Method for manufacturing thermoplastic composite from microwave-assisted compression moulding", Indian Patent Office. (Application No.: 202011008147; Filed: February 26, 2020; **Status: Examination report received**)
- Made substantial contributions in establishing **"Composite Design and Manufacturing Lab"** at IIT Mandi.
- Published work "Development and mechanical characterization of microwave-cured *thermoplastic* based natural fiber reinforced composites" appreciated in national newspapers and LinkedIn.
- Appreciated for teaching assistantship in National Workshop.
- Author survey award from Taylor & Francis Impact Assessment of the Earth & Environmental Sciences, 2020.
- M.Tech. & Ph.D. Fellowship, MHRD, Government of India.
- Qualified in GATE 2013, 2014, 2015.

COURSE TAUGHT/ASSISTED

- Manufacturing Engineering

- Smart Materials and MEMS
- Product Realization
- Marketing and Project Management
- Machine Design

PROJECT EXPERIENCES

- Written a project proposal on "green flame-retardant polymer composites for automobile and electronics industries" funded by **Ontario Ministry of Agriculture, Food and Rural Affairs,** Gov of Ontario, Canada.
- Development of carbon fiber reinforced polymer composites using microwave curing; funded by **AR&DB-DRDO**, India.
- Development, characterizations and mathematical modeling of microwave cured porous composites for biomedical applications; funded by **IIT Mandi**, India.

TEAMWORK EXPERIENCES

- Exploring UL-94 flammability behavior of composites manufactured from different biocarbons and engineering plastics.
- **Lead editor** in book titled ***"Composite Materials Processing Using Microwave Heating Technology",*** Springer, 2023".
- Lead the work related to utilization of forest and plastic wastes project, published in ***Journal of Polymer Research,*** Springer.
- Lead the **patent filing** process**.**
- Supervised **M.Tech. students** to execute their projects for the fulfilment of the thesis.
- Involved in **four book chapters** writing project and worked as lead and corresponding author.
- Worked as a **lead team member** for completion of B.Tech. project.

PROFESSIONAL MEMBERSHIP

- International Association of Engineers (IAENG:301459)

PUBLICATIONS (https://scholar.google.co.in/citations?user=yHZziwkAAAAJ&hl=en)

[A] Summary of Publications

S.No.	Category	Total	Present Status		
			Published	In-press	Under review
1.	Books	1	0	0	1
2.	Journals	16	16	0	0
3.	Conference Proceedings	7	4	-	-
4.	Book Chapters	5	4	-	1

[B] Book Publication

1**. Manoj Kumar Singh**, Gaurav Arora, Sunny Zafar, Sanjay Mavinkere Rangappa and Suchart Siengchin; ***Composite Materials Processing Using Microwave Heating Technology,*** Springer, 2023. **(Submitted)**

[C] Journal Publications

S.No.	Total: 17
	2023
17.	**Manoj Kumar Singh,** Arturo Rodriguez-Uribe, Neelima Tripathi, Alper Kiziltas, Shawn Prevoir, Amar K. Mohanty, Manjusri Misra*; Comparative study of different biocarbon-based recycled polycarbonate sustainable composites for electronics and electric vehicle parts application aspect, ***Composites Part B: Engineering***, (Under Review), **(IF:13.1)**
16.	**Manoj Kumar Singh,** Amar K. Mohanty, Manjusri Misra*; Upcycling of waste polyolefins in natural fiber and sustainable filler-based biocomposites: A study on recent developments and future perspectives, ***Composites Part B: Engineering***, 2023, 110852. **(IF:13.1)**
	2022
15.	**Manoj Kumar Singh*,** Renu Tewari, Sunny Zafar, Sanjay Mavinkere Rangappa and Suchart Siengchin; A comprehensive review of various factors for application feasibility of natural fiber-reinforced polymer composites, ***Results in Materials,*** 2023, 17. **(Cite score: 4.7)**
14.	**Manoj Kumar Singh*,** Sunny Zafar, Sanjay Mavinkere Rangappa and Suchart Siengchin; Mechanical performance study of kenaf/HDPE composite for structural applications under wet or outdoor environments, ***Journal of Natural Fibers,*** 2022, 1-16. **(IF: 3.507)**

13.	**Manoj Kumar Singh*,** Sunny Zafar, Sanjay Mavinkere Rangappa and Suchart Siengchin, Influence of microwave power and HDPE blend ratio on thermal and mechanical properties of kenaf reinforced PLLA/HDPE blended composites, ***Journal of Polymer Research,*** 2022, 29(7),1-11. **(IF: 2.8)**
2021	
12.	Renu Tewari, **Manoj Kumar Singh*,** and Sunny Zafar; Utilization of forest and plastic wastes for composite manufacturing using microwave-assisted compression molding for low load applications, ***Journal of Polymer Research,*** 2021, 28, 409. **(IF: 2.8)**
11.	**Manoj Kumar Singh** and Sunny Zafar*; Wettability, absorption and degradation behavior of microwave-assisted compression molded kenaf/HDPE composite tank under various environments, ***Polymer Degradation and Stability,*** 2021, 185, 109500. **(IF: 5.9)**
10.	Gaurav Arora, **Manoj Kumar Singh,** Himanshu Pathak* and Sunny Zafar; Micro-scale analysis of HA-PLLA bio-composites: Effect of the interpenetration of voids on mechanical properties. ***Materials Today Communications,*** 2021, 28, 102568. **(IF: 3.8)**
9.	Nishant Verma, **Manoj Kumar Singh,** Sunny Zafar* and Himanshu Pathak; Comparative study of in-situ temperature measurement during microwave-assisted compression-molding and conventionally compression-molding process. ***CIRP Journal of Manufacturing Science and Technology,*** 2021, 35, 336-345. **(IF: 4.8)**
2020	
8.	**Manoj Kumar Singh*,** Rejeev Trehan and Ajay Gupta; Application of Grey approach to enhance the surface properties during AWJ machining of marine grade Inconel, ***Advances in Materials and Processing Technologies,*** 2020. doi: 10.1080/2374068X.2020.1785206. **(Cite score: 2.7)**
7.	**Manoj Kumar Singh** and Sunny Zafar*; Abrasive wear mechanism of microwave-assisted compression molded kenaf/HDPE composite, ***Journal of Tribology-Transactions of the ASME,*** 2020, 142(10), 101702. **(IF: 2.5)**
6.	**Manoj Kumar Singh** and Sunny Zafar*; Effect of layering sequence on mechanical properties of woven kenaf/jute fabric hybrid laminated microwave processed composites, ***Journal of Industrial Textiles,*** 2020. 51(2S) 2731S–2752S. **(IF: 3.2)**
5.	Renu Tewari, **Manoj Kumar Singh**, Sunny Zafar* and Satvasheel Powar; Parametric optimization of laser drilling of microwave processed kenaf/HDPE composite, ***Polymers and polymer composites,*** 2020, 29(3), 176-187. **(IF: 2.1)**
2019	
4.	**Manoj Kumar Singh**, Sunny Zafar* and Mohammad Talha; Development and characterisation of poly-L-lactide based foams fabricated through microwave assisted compression moulding, ***Journal of Cellular Plastics,*** 2019, 55(5), 523- 541. **(IF: 2.5)**
3.	**Manoj Kumar Singh** and Sunny Zafar*; Development and mechanical characterisation of microwave cured thermoplastic based natural fibre reinforced composites, ***Journal of Thermoplastic Composite Materials,*** 2019, 32, 1427-1442. **(IF: 3.027)**
2018	
2.	**Manoj Kumar Singh** and Sunny Zafar*; Influence of microwave power on mechanical properties of microwave-cured polyethylene/coir composites, ***Journal of Natural Fibers,*** 2018,17(6): 845-860. **(IF: 3.507)**
2015	
1.	**Manoj Kumar Singh***, Durgesh Chauhan, Monu Gupta and Ankit Diwedi; Optimization of Process Parameters of Aluminum Alloy (Al-6082 T-6) Machined on CNC Lathe Machine for Low Surface Roughness, ***Journal of Material Sciences & Engineering,*** 2015 4(202), 2169-0022.

[D] Conference Proceedings

S.No.	**Total: 07**
2022	
7.	**Manoj Kumar Singh*,** Gaurav Arora, Renu Tewari, Sunny Zafar, Himanshu Pathak and Anuj Kumar Sehgal, Effect of pine cone filler particle size and treatment on the performance of recycled thermoplastics reinforced wood composites, ***Materials Today: Proceedings***, 2022, 62, 7358-7363. **(Cite score: 3.2)**
2020	
6.	**Manoj Kumar Singh***, Nishant Verma, Nayan Pundhir, Sunny Zafar, Himanshu Pathak, Optimization of Microwave Power and Reinforcement in Microwave-Cured Coir/HDPE Composites, ***Advances in Mechanical Engineering,*** 2020, 159-170. **(Cite score: 0.55)**
2019	
5.	**Manoj Kumar Singh***, Sunny Zafar, and Mohammad Talha; Development of porous bio-composites through microwave curing for bone tissue engineering, ***Materials Today: Proceedings***, 2019, 18, 731-739. **(Cite score: 3.2)**
4.	**Manoj Kumar Singh***, Nishant Verma and Sunny Zafar, Optimization of process parameters of microwave processed PLLA/coir composites for enhanced mechanical behaviour, ***Journal of Physics: Conference Series,*** 2019, 1240, 1p. 012038. **(Cite score: 0.7)**

3.	**Manoj Kumar Singh*** and Sunny Zafar, Tribological characteristics of microwave processed kenaf/HDPE composites under dry sliding wear, ***Proceedings of the 22nd International Conference on Composite Materials 2019 (ICCM 2019),*** Melbourne Convention and Exhibition Centre (MCEC), Melbourne, Australia, August 2019.
2.	Renu Tewari, **Manoj Kumar Singh** and Sunny Zafar*, Application of laser energy for hole drilling in microwave fabricated kenaf/polypropylene composites, ***Proceedings of the International Conference on Innovative Applied Energy (IAPE 2019),*** University of Oxford, Oxford, United Kingdom, March 2019.
	2017
1.	**Manoj Kumar Singh**, Nayan Pundhir, Sunny Zafar* and Himanshu Pathak; Development of Green Polymer Composites through Microwave Energy, ***Proceedings of the International Conference on Composite Materials and Structures (ICCMS 2017),*** IIT Hyderabad, Hyderabad, India, December 2017.

[E] Book Chapters

S.No.	Total: 05
	2023
5.	Gaurav Arora, **Manoj Kumar Singh*. "**Introduction to microwave heating and its applications in the composite industry". ***Composite Materials Processing Using Microwave Heating Technology.*** Springer, 2023. **(Submitted)**
	2021
4.	**Manoj Kumar Singh,** Nishant Verma, Rajeev Kumar, Sunny Zafar* and Himanshu Pathak. "Microwave Processing of Polymer Composites." ***Handbooks on Advanced Manufacturing: Advanced Welding and Deforming.*** Elsevier, 2021. 351-377.
3.	Sunny Zafar*, Nishant Verma, **Manoj Kumar Singh** and Himanshu Pathak. Advances in the processing of composites biomaterials for bone grafting and other biomedical applications, ***Encyclopedia of Materials: Plastics and Polymers.*** Elsevier, 4, 614-634, 2022.
	2020
2.	**Manoj Kumar Singh**, Nishant Verma and Sunny Zafar*. "Conventional Processing of Polymer Matrix Composites." ***Lightweight Polymer Composite Structures.*** CRC Press, 2020. 21-66.
1.	Nishant Verma, **Manoj Kumar Singh** and Sunny Zafar. "Development of Porous Bio-Nano-Composites Using Microwave Processing." ***Biofibers and Biopolymers for Biocomposites.*** Springer, 2020. 209-228.

PROJECT/INTERNSHIP

- M.Tech. project from **IIT Kanpur** (March 2016). Topic- "Investigation of process parameters for improvement of surface roughness & MRR on abrasive water jet machine for Inconel 625".
- B.Tech. project from **IIT Delhi** (Feb 2013). Topic- "Optimization of Process Parameters of Aluminum Alloy (Al-6082 T-6) Machined on CNC Lathe Machine for Low Surface Roughness".
- Summer training from **BSN Industries Pvt. Ltd.**, Noida (June to July, 2012). Topic- "Crankshaft manufacturing".
- Six weeks summer training on CATIA from **CETPA Infotech Pvt. Ltd.**, Lucknow (June to August, 2011).

WORKSHOPS/SEMINARS/CONFERENCES

- Attended a one-day workshop on **"Sustainable Composites: Making Electric Vehicles Lighter & Safer"** organized by *BDDC*, University of Guelph, Ontario, Canada, 29 September 2022.
- Attended **"Faculty Development Programme on Implementation of National Education Policy 2020: Role of Faculty in Higher Education Institutions"** organized by Chandigarh University, India, 20-24 December 2021.
- Presented a paper at international conference **"AFTMME"** organized by *IIT Ropar*, India, 9-11 December 2021.
- Attended a workshop on "**Additive Manufacturing: Current Trends and Prospects Towards Developing AM Research"** organized by *IIT Kanpur*, India, 22-26 August 2021.
- Attended a workshop on "**Manufacturing: Hindsight to Foresight**" organized by *BITS Pilani*, India, 16-20 July 2021.
- Presented a poster at international conference **"22nd ICCM"** held at *MCEC*, Melbourne, Australia, 11-16 August 2019.
- Presented a paper at international conference **"NFEST 2019"** organized by *NIT Kurukshetra*, India, 18-22 February 2019.
- Presented a paper at international conference **"IC-RIDME"** organized by *NIT Meghalaya*, India, 8-10 November 2018.
- Attended a workshop on "**Technical Writing**" organized by the Teaching and Learning Committee at *IIT Mandi*, India, 13-14 October 2018.
- Attended a workshop on "**Microwave Processing of Materials: Challenges and Opportunities**" at *IIT Roorkee*, India, 22-23 May 2018.
- Attended a one-day workshop on "**Effective Teaching and Learning**" organized by the Teaching and Learning Committee at *IIT Mandi*, India, 28 April 2018.

- Attended a national workshop on "**Composite Materials in Engineering Applications: Design and Manufacturing Perspective**" at *IIT Mandi*, India, 15-19 January 2018.
- Presented a paper at international conference **"ICN3I"** organized by *IIT Roorkee*, India, 6-8 December 2017.
- Attended one-week short term course on "**CAD-CAM and Pro/E software**" at *NIT Jalandhar*, India, 22-26 September 2014.
- Attended National Seminar on "**Advanced manufacturing processes**" sponsored by AICTE at *Noida Institute of Engineering and Technology*, Greater Noida, India, 20-21 February 2010.

POSITIONS OF RESPONSIBILITY

- Managed weekly functions organized by ***ISKCON,*** Kamand, Mandi, Himachal Pradesh, India, 2017-2021.
- Volunteered in **"National Workshop on Advanced Composites for Aerospace: Design, Manufacturing and Condition Monitoring Perspective"** at *IIT Mandi*, India, 11-15 February 2020.
- Volunteered in **"4th International & 19th National Conference on Machines and Mechanisms"** at *IIT Mandi*, India, 5-7 December 2019.
- Volunteered in **"4th International Conference on Production and Industrial Engineering (CPIE-2016)"** at *NIT Jalandhar*, India, 19-21 December 2016.

EXTRACURRICULAR ACTIVITIES

- Presented posters in "**Research Fair Anusandhan 2018 & 2019**" at *IIT Mandi*, India.
- Participated in **inter-hostel badminton tournament** at *IIT Mandi*, India, 2019.
- Participated and appreciated in the "**book distribution marathon 2013"** organized by *ISKCON New Delhi*, India.

REFEREES

Dr. Manusri Misra, Professor & Tier 1 Canada Research Chair (CRC) in Sustainable Biocomposites
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