

Curriculum Vitae



Dr. Pawan Kumar Singh

(Associate Professor)

Department of Mechanical Engineering
Indian Institute of Technology (ISM), Dhanbad
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Research Interests

Heat Transfer enhancement, Nanofluids, Microfluidics, Thermal management, Thin film evaporation, Heat Pipe

Education

Ph.D. (Specialization: Mechanical Engineering)-CGPA-8.75

Indian Institute of Technology Madras, India (January 2006-May 2011)

Thesis Title: Hydrodynamic and Thermal Transport in Nanofluids Inside Microchannels

Supervisors: Prof. Sarit Kumar Das & prof. T. Sundararajan

(Thesis submitted: October 2010; Thesis defense: May 2011, PhD. Awarded: July 2011)

M. Tech. (Specialization: Thermal Engineering) CGPA-8.68

Indian Institute of Technology Madras, India (September 2001-January 2003)

Supervisor: Prof. M. Govardhan

B. E. (Mechanical Engineering)-75%

Madan Mohan Malaviya Govt Engineering College, Gorakhpur, India

(July 1997- June 2001)

Employment

Position held	Employer	Duration
Associate Professor	IIT (ISM) Dhanbad	April 2022-present
Assistant Professor	IIT (ISM) Dhanbad	Aug 2015-March 2022
Research Fellow	National University of Singapore	Nov 2012- Jul 2015
Post-Doctoral researcher	Masdar Institute of Science and Technology, Abu Dhabi	Apr 2010- June 2012
Lecturer	GNIT, Greater Noida	Feb 2003- Nov 2005

Awards / Recognitions

- ❖ ASEM_DUO fellowship 2019 for exchange programme with University of Lisbon, Portugal
- ❖ **Received International Travel Grant from** IIT Madras for presenting a paper in 2009 MNHMT conference at Shanghai, China.
- ❖ NUS Postdoctoral Fellowship at NUS-2012,
- ❖ Masdar Institute Postdoctoral Fellowship-2010
- ❖ MHRD fellowship for PhD-2006
- ❖ AIR-105 GATE (Mechanical Engineering) with 98.70 percentile in 2001
- ❖ Received **Institute Fellowship** during M. Tech. at IIT Madras.
- ❖ Approx. 3100 citation with h index 20

R & D Projects:

Sl. No.	Project Title	Amount in Rs. (Lakh)	Role	Funding agency	Duration	Status
1.	<i>Investigation of Heat Transfer Enhancement In Some Novel Geometries Using Nanofluids For Electronic Cooling Application</i>	33.22	PI	DST (SERB)	2016-2020 (42 Months) Sanction Date:27.09.2016	Completed
2.	<i>To Augment the Research Facilities In The Department</i>	192	Co-PI	DST	5 Years Sanction date: 14.03.2019	Ongoing
3.	<i>Effect of Nanofluids On Performance of Heat Pipe</i>	9.6	PI	Institute FRS Scheme	2016-2019 (36 Months) Sanction date:22.04.2016	Completed
4.	<i>Heat Transfer Performance of a Novel Composite Heat Sink</i>	2.0	PI	TEQIP-II	2016-2017 (6 Months)- 25.11.2016	Completed
5.	<i>Study of two phase flow</i>	0.5	PI	SERB	June 2021-present	Completed
6.	<i>Investigation of thermofluidic characteristic of nanofluid-cooled microchannels</i>	0.5	PI	SERB	June 2021-present	Completed
7.	<i>Evaluation of an evaporating nanofluid meniscus for improved performance of Heat Pipes</i>	33.7	PI	DST (SERB)-	December 2021	Ongoing
8.	<i>Measurement of evaporating thin film thickness in microchannels</i>	0.6	PI	SERB	Jun 2022-Dec 2022	Completed

List of Publications as on 21.01.2025

Book :

1. Yan Fan, Poh Seng Lee, **Pawan Kumar Singh**, Yong Jiun Lee, “**Thermal Transport in Oblique Finned Micro/Minichannels: Simulation, Experiment and Analysis**, Springer Briefs in Thermal Engineering and Applied Science, 2015.

Patent:

1. A SYSTEM FOR MEASURING THICKNESS OF FLAT AND OBLIQUE FILM OF POLAR LIQUID AND NANOFLUID, Indian Patent Application No. **202331006061** dated **31.01.2023** in the name of **Indian Institute of Technology (Indian School of Mines), Dhanbad-Applied**
2. AN IMPROVED MICRO-CHANNEL HEAT SINK DEVICE WITH CURVED SECTION FOR EFFICIENT COOLING OF ELECTRONIC DEVICES, Indian Patent Application No. **202331032045** dated **05.05.2023** in the name of **Indian Institute of Technology (Indian School of Mines), Dhanbad-Applied**

Journals Papers:

2024

1. Motilal Chavhan, Pawan Kumar Singh, Enhancing heat pipe performance through hybrid wick structures: Balancing pore size and permeability, Applied Thermal Engineering 256 (2024) 124079, <https://doi.org/10.1016/j.applthermaleng.2024.124079>
2. Saumya Singh , Ankit Kumar, Soubhik Kumar Bhaumik, Pawan Singh & Subramanian Narayanan, Thickness Profile Measurements of Acoustic Induced Maneuvering of Thin Film Evaporation, Heat Transfer Engineering (Accepted)
3. Dilip Singh Naruka, Ritesh Dwivedi, and Pawan Kumar Singh (2024), Experimental Investigation to Elucidate the Temporal Effect of Nanofluids on the Thermal Performance of Heat Pipes, Heat Transfer Engineering, [DOI:10.1080/01457632.2024.2325278](https://doi.org/10.1080/01457632.2024.2325278)
4. Meet Naik, Saumya Singh, Pawan Kumar Singh, An experimental and numerical investigation of thermofluidic properties on the novel curved microchannel heat sink with slotted section, Applied Thermal Engineering, Volume 243, 15 April 2024, 122493, [DOI:10.1016/j.applthermaleng.2024.122493](https://doi.org/10.1016/j.applthermaleng.2024.122493)
5. Ritesh Kumar, Badyanath Tiwary, Pawan Kumar Singh, Parametric Influence on the Thermofluidic Characteristics of the Branched Wavy Heat Sink, *J. Thermal Sci. Eng. Appl.* Apr 2024, 16(4): 041004 (12 pages), <https://doi.org/10.1115/1.4064596>

6. K. Gopi Kannan , K.R. Suresh Kumar, R. Dhivagar, S. Sathyanarayanan, Pawan Kumar Singh , Dheeraj Kumar, S. Kalaiselvam, Experimental analysis of the storage of thermal power by a thermosyphon amalgamated nanophase change material in thermal management systems (2024), Journal of Energy Storage, Volume 92, 1 July 2024, 112183
7. Gopi Kannan K.;Dhivagar R.;Singh P.K.;Nandhakumar E., Synergistic effect of stearic acid/bismuth oxychloride/cupric oxide for thermal storage applications: preparation, stability, rheological and thermophysical analysis, Physica Scripta, **Volume 99, Year 2024**, DOI:10.1088/1402-4896/ad49e2
8. Singh G.;Singh P.K.;Saxena A.;Kumar N.;Singh D.B., Investigation of conical passive solar still by incorporating energy metrics, efficiency, and sensitivity analyses for sustainable solar distillation, Journal of Cleaner Production, **Volume 434, Year 2024**, DOI:10.1016/j.jclepro.2023.139949

2023

9. K Gopi Kannan, KR Suresh Kumar, R Dhivagar, S Sathyanarayanan, R Parameshwaran, Pawan Kumar Singh , An experimental study on heat power stored by thermal dissipation in electronic components using thermosyphon integrated hybrid nanocomposite phase change material, Journal of Energy Storage, Volume 72, Part D, 30 November 2023, 108630, <https://doi.org/10.1016/j.est.2023.108630-Q2>
10. Gajendra Singh, Pawan Kumar Singh, Abhishek Saxena, Ritvik Dobriyal, Navneet Kumar & Desh Bandhu Singh, Exergo-enviro-economic and yearly productivity analyses of conical passive solar still for sustainable solar distillation, Environmental Science and Pollution Research (Accepted) <https://doi.org/10.1007/s11356-023-29519-0-Q2>
11. S. Singh, P.K. Singh, S.K.Bhaumik, Magnetic-field induced flattening of evaporating ferro-nanofluid meniscus for enhanced cooling, International Journal of Heat and Mass Transfer, **Volume 218**, January 2024, 124785, DOI:10.1016/j.ijheatmasstransfer.2023.124785- Q1
12. Sakshi Tyagi, Pawan Kumar Singh, Arun Kumar Tiwari , Advancements in Performance of Zinc Oxide/Carbon Quantum Dots based Photovoltaic Trigeneration System using Genetic Algorithm and Particle Swarm Optimization, Sustainable Energy Technologies and Assessments, **Volume 60**, December 2023, 103501, <https://doi.org/10.1016/j.seta.2023.103501-Q3>
13. S. Singh, P.K. Singh, S.K.Bhaumik, Experimental investigation of thickness profile in an extended meniscus of thin film evaporation using reflectometry, Experimental Thermal and Fluid Science, **Volume 151**, 1 February 2024, 111069, <https://doi.org/10.1016/j.expthermflusci.2023.111069.-Q1>

2022

14. Sakshi Tyagi, Pawan Kumar Singh, Arun KumarTiwari (2022) Photovoltaic Parameter Extraction and Optimisation of ZnO/GO based Hybrid Solar Trigeneration System using SCAPS 1D, *Energy for Sustainable Development*, Volume 70, October 2022, Pages 205-224, <https://doi.org/10.1016/j.esd.2022.08.001>, IF-5.655, Q1
15. Badyanath Tiwary, Ritesh Kumar, Pawan Kumar Singh (2022) Influence of oblique angle variations on the thermo-hydraulic characteristics of the oblique fin heat sink with Al₂O₃ water nanofluid, *Numerical Heat Transfer, Part A: Applications* (Accepted), <https://doi.org/10.1080/10407782.2022.2107839>, IF-2.569, Q1
16. Ritesh Dwivedi and Pawan Singh (2022) **Thin Film Evaporation: New insights with Nanofluid Inclusion and Component of the Electrostatic Interactions"** *Physics of Fluids* 34, 102005 ; <https://doi.org/10.1063/5.0117978>. IF-4.980, Q1
17. Ritesh Dwivedi, Saumya Singh and Pawan Singh (2022) Effect of Nanofluid and Electrostatic Disjoining Pressure on Heat Transfer from an Evaporating Meniscus, *Heat Transfer Engineering*, Volume 44, Number 19, 28 October 2023, pp. 1733-1746(14), <https://doi.org/10.1080/01457632.2022.2148344>, IF-2.431, Q2

2021

18. Ritesh Kumar, Badyanath Tiwary, Pawan Kumar Singh (2021)Thermofluidic Analysis of Al₂O₃-water nanofluid cooled branched wavy heat sink, , *Applied Thermal Engineering* (Accepted)-Q1
19. Devendra Yadav, Dilip Singh Naruka & Pawan Kumar Singh (2021), The insight flow characteristics of concentrated MWCNT in water base fluid: experimental study and ANN modelling, *Heat and Mass Transfer* (Accepted). -Q2
20. Badyanath Tiwary, Ritesh Kumar, Pawan Kumar Singh (2021), Thermofluidic characteristic of a nanofluid-cooled oblique fin heat sink: An experimental and numerical investigation, *International Journal of Thermal Sciences*, Volume 171, January 2022, 107214-Q1
21. Sakshi Tyagi, Pawan Kumar Singh, Arun Kumar Tiwari, Pritam Pain (2021), Optimization and Comparison of Photovoltaic Parameters of Zinc Oxide (ZnO)/Graphene Oxide (GO) and Zinc Oxide (ZnO)/Carbon Quantum Dots (CQDs) Hybrid solar cell using Firefly Algorithm for application in Solar Trigeneration System in Commercial Buildings, *Sustainable Energy Technologies and Assessments*, Volume 47, October 2021, 101357.-Q2

2020

22. Dilip Singh Naruka, Ritesh Dwivedi & Pawan Kumar Singh (2020), Experimental investigation of heat pipe: performance evaluation for different fluids, *Experimental Heat Transfer* (Accepted), <https://doi.org/10.1080/08916152.2020.1713254-Q1>
23. Devendra Yadav, Ritesh Kumar, Badyanath Tiwary, Pawan Kumar Singh (2020), Rheological characteristics of CeO₂, Al₂O₃ and their hybrid mixture in ethylene glycol base fluid in the wide range of temperature and concentration, *Journal of Thermal Analysis and Calorimetry*, **143**, 1003–1019, <https://doi.org/10.1007/s10973-020-09863-w-Q2>
24. Desh Bandhu Singh, Gajendra Singh, Navneet Kumar, Pawan Kumar Singh, Akhileshwar Nirala, Rajeev Kumar (2020), Effect of mass flow rate on energy payback time of single slope solar desalination unit coupled with N identical compound parabolic concentrator collectors, *Materials today: proceedings*, Volume 28, Part 4, 2020, Pages 2551-2556. <https://doi.org/10.1016/j.matpr.2020.05.137>
25. Ritesh Kumar, Badyanath Tiwary, Pawan Kumar Singh (2020) Influence of secondary pass location on thermo-fluidic characteristic on the novel air-cooled branched wavy minichannel heat sink: A comprehensive numerical and experimental analysis, *Applied Thermal Engineering*, Volume 182, 5 January 2021, 115994. <https://doi.org/10.1016/j.applthermaleng.2020.115994.-Q1>
26. Ritesh Dwivedi, Sukumar Pati & Pawan K. Singh (2020), Combined effects of wall slip and nanofluid on interfacial transport from a thin-film evaporating meniscus in a microfluidic channel, *Microfluidics and Nanofluidics* **volume 24**, Article number: 84 (2020) <https://doi.org/10.1007/s10404-020-02390-y-Q2>

2019

27. Ritesh Dwivedi & **Pawan Kumar Singh** (2019) Numerical analysis of an evaporating thin film region: Enticing influence of nanofluid, *Numerical Heat Transfer, Part A: Applications*, 75:1, 56-70, DOI: 10.1080/10407782.2018.1562745. -Q1 when published.
28. Sanjeev Kumar & **Pawan Kumar Singh**, (2019), Effects of Flow Inlet Angle on Flow Maldistribution and Thermal Performance of Water Cooled Mini-channel Heatsink, *International Journal of Thermal Sciences*, Volume 138, April 2019, Pages 504-511. doi: <https://doi.org/10.1016/j.ijthermalsci.2019.01.014-Q1>
29. Sanjeev Kumar, Mithun Sarkar, **Pawan Kumar Singh**, Poh Seng Lee, (2019), Study of thermal and hydraulic performance of air cooled minichannel heatsink with novel geometries, *International Communications in Heat and Mass Transfer* 103 (2019) 31–42, doi: <https://doi.org/10.1016/j.icheatmasstransfer.2019.02.008.-Q1>

30. Sanjeev Kumar, Pawan Kumar Singh (2019) A Novel Approach to Manage Temperature Non-Uniformity in Minichannel Heat Sink by Using Intentional Flow Maldistribution, Applied Thermal Engineering, Volume 163, 25 December 2019, 114403.-Q1
 31. Badyanath Tiwary, Ritesh Kumar, Poh Seng Lee & **Pawan Kumar Singh** (2019) , **Numerical investigation of thermal and hydraulic performance in novel oblique geometry using nanofluid**, Numerical Heat Transfer, Part A: Applications, Volume 76, 2019 - Issue 7, DOI: 10.1080/10407782.2019.1642076.- Q1 when published.
 32. Shitanshu Sapre, Kapil Pareek, Rupesh Rohan, **Pawan Kumar Singh** (2019), H₂ refueling assessment of composite storage tank for fuel cell vehicle, International Journal of Hydrogen Energy Volume 44, Issue 42, 3 September 2019, Pages 23699-23707. -Q2
 33. Shitanshu Sapre, Kapil Pareek, Rupesh Rohan, **Pawan Kumar Singh (2019)**, Investigation of compressed hydrogen refueling process of 60 L type IV tank used in fuel cell vehicles, Energy Storage (Accepted). <https://doi.org/10.1002/est2.91>
 34. Devendra Yadav, Prabhat Dansena, Subrata Kumar Ghosh, **Pawan Kumar Singh (2019)**, A Unique Multilayer Perceptron Model (ANN) for Different Oxide/EG 2 Nanofluid's Viscosity from the Experimental Study, Physica A: Statistical Mechanics and its Applications (Accepted) DOI: <https://doi.org/10.1016/j.physa.2019.124030>- Q2 when published
- 2018**
35. **Pawan K. Singh** , Dilip Singh Naruka, Lee Poh Seng (2018), Numerical Investigation Of Flow And Heat Transfer Of Nanofluids In A Wavy Microchannel, International Journal of Energy for a Clean Environment, Volume 19, 2018 Issue 1-2, **pages 19-35**,
- 2017**
36. Ong LJY, Chong LH, Jin L, **Singh P.K.**, Lee PS, Yu H, Ananthanarayanan A, Leo HL, Toh YC (2017) A Pump-Free Microfluidic 3D Perfusion Platform For The Efficient Differentiation Of Human Hepatocyte-Like Cells. *Biotechnology and Bioengineering*, 2017 Oct;114(10):2360-2370. doi: 10.1002/bit.26341. Epub 2017 Jun 27.-Q1
- 2016**
37. Mou N, Yong Jiun Lee, **Pawan K Singh**, Saif Khan, Lee Poh Seng (2016) Investigations on the Influence of Flow Migration on Flow and Heat Transfer in Oblique Fin Microchannel Array. ASME- J Heat Transfer, Oct 2016, 138(10): 102403 (13 pages) <https://doi.org/10.1115/1.4033540> -Q2
 38. Zhong Lin Chiam, Poh Seng lee, **Pawan K. Singh**, Mou Nasi (2016), Investigation of Fluid Flow and Heat Transfer in Wavy Micro-Channels with Alternating Secondary Branches, Int. J. Heat and Mass Transfer, Volume 101, October 2016, Pages 1316-1330.-Q1

2015 and before

39. Ali, M., **Singh, P.**, Tesfai, W. and Shatilla, Y., “An Experimental Study of Heat Pipe Performance Using Nanofluids,” *Int. J. of Green Energy*, 2015 (12), 225-229.-Q4
40. Yong Jiun Lee, **Pawan K. Singh**, Poh Seng Lee, “Fluid Flow and Heat Transfer Investigations on Enhanced Microchannel Heat Sink using Oblique Fins with Parametric Study, *Int. J. Heat and Mass Transfer*, Volume 81, February 2015, Pages 325–336.-Q1
41. Kalpana Sarojini K G; Manoj Siva V; **Pawan K Singh**; Pradeep T and Sarit K. Das; Electrical conductivity of metallic and ceramic nanofluids, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Volume 417, 20 January 2013, Pages 39–46(2012). -Q2
42. **Waka Tesfai, Pawan K. Singh**; Youssef Shatilla, Muhammad Iqbal, Ahmed A. Abdala, Rheology and Microstructure of Dilute Graphene Oxide suspension, *J. Nanoparticle Research*, vol15:1989 (2013)-Q1.
43. **Pawan K. Singh**, P.V. Harikrishna, T. Sundararajan, S.K. Das, “Experimental and numerical investigation into the hydrodynamics of nanofluids in microchannels”, *Experimental Thermal & Fluid Sciences*, Volume 42, October 2012, Pages 174–186-Q1.
44. Waka Tesfai, **Pawan K. Singh**, Salim Masharqah, Matteo Cheisa, Youssef Shatilla, “Effect of Temperature on Turbulent and Laminar Flow Efficacy Analysis of Nanofluids” *Journal of Applied Physics*. **111**, 064319 (2012)-Q1.
45. Waka Tesfai, Pawan K. Singh, Salim J. S. Masharqa, Tewfik Souier, Matteo Chiesa, and Youssef Shatilla, “Investigating the effect of suspensions nanostructure on the thermophysical properties of nanofluids”, *J. Appl. Phys.* **112**, 114315 (2012)-Q1.
46. **Pawan K. Singh**, P.V. Harikrishna, T. Sundararajan, S.K. Das, “Experimental and numerical investigation into the heat transfer study of nanofluids in microchannel”, *ASME- J. of Heat Transfer*. Volume 133, issue 12, December 2011. (In top 10 most downloaded papers in J. heat transfer in Oct 2011-December 2011).-Q1.
47. Soujit Sen Gupta, V. Manoj Siva, Sreenath Krishnan, T. S. Sreeprasad, Pawan K. Singh, T. Pradeep, and Sarit K. Das, Thermal Conductivity enhancement of nanofluids containing Graphene nanosheets, “*J. Appl. Phys.* **110**, 084302 (2011)-Q1.
48. **Pawan K. Singh**, KB Anoop, H. Patel, T. Sundararajan, T. Pradeep, S.K. Das “Anomalous Size Dependent Rheological Behavior of Alumina Based Nanofluids” *Int. J. of Micro-Nano Scale Transport*, Volume 1, Number 2 / June 2010, pp. 179-188.
49. **Pawan K. Singh**, K.B. Anoop, T. Sundararajan, S.K. Das, “Entropy generation due to flow and heat transfer in Nanofluids”, *Int. J. Heat and Mass Transfer*, Volume 53, Issues 21-22, October 2010, pp. 4757-4767-Q1.

50. J. Buongiorno, DC Venerus,....., **Pawan K. Singh**, H. Patel, S.K. Das., T. Sundararajan, "A Benchmark Study on the Thermal Conductivity of Nanofluids- (INPBE)" - J. Appl. Physics., 106, 094312 (2009) Q1.

Publication in Peer reviewed Conferences

1. **Pawan K. Singh**, KB Anoop, H. Patel, T. Sundararajan, T. Pradeep, SK Das, "Anomalous Size Dependent Rheological Behavior of Alumina Based Nanofluids", 2nd Micro and Nano Flows Conference, West London, UK, 1-2 September 2009.
2. **Pawan K. Singh and M. Govardhan**, "Unsteady flow behind an axial compressor", The AEESEAP International Conference 2005, Engineering a Better Environment for Mankind", Kuala Lumpur, Malaysia, June 7-9, 2005.
3. **Pawan K. Singh**, T. Sundararajan, SK Das, "Hydrodynamic Study of nanofluid in Microchannel", ASME 2009 Micro/nanoscale Heat and Mass Transfer International Conference December 18-21, 2009, Shanghai, China.
4. **Pawan K. Singh**, KB Anoop, T. Sundararajan, SK Das, "Entropy generation due to flow and heat transfer in Nanofluids", 20th National and 9th ISHMT-ASME Heat and Mass Transfer Conference, IIT Bombay, India, January 4-6, 2010.
5. **Pawan K. Singh**, T. Sundararajan, SK Das, "Numerical Simulation of Flow of Nanofluids in Microchannel", ASME international conference on Heat Transfer, IHTC14, Washington DC, USA, 8th – 13th August, 2010.
6. **Pawan K. Singh**, Nouman Ahmed, S.K. Das, Youssef Shatilla, "Exergy analysis of nanofluids in microchannel" Proceeding of ASME 2011 9th International Conference on Nanochannels Microchannels, and Minichannels, ICNMM2011, Edmonton, Canada, June 19-22, 2011.
7. Nouman Ahmed, Pawan K. Singh, Isam Janajreh, Youssef Shatilla, "simulation of flow inside heat pipe: sensitivity study, conditions and configuration", Proceedings of ASME 2011 5th International Conference on Energy Sustainability & 9th Fuel Cell Science, Engineering and Technology Conference ESFuelCell2011 August 7-10, 2011, Washington, DC, USA.
8. **Waka Tesfai, Pawan K. Singh**, Salim J.S. Masharqah, Matteo Cheisa, Youssef Shatilla, "Rheological study of Y₂O₃ nanofluids" Proceedings of the **ASME 2011 International Mechanical Engineering Congress & Exposition**, IMECE 2011, November 11-17, 2011, Denver, Colorado.
9. **Pawan K. Singh, Nouman Ahmed, Mohd. Ibrahim Ali**, Youssef Shatilla, "Numerical analysis of nanofluids in heat pipe" Proceedings of the **ASME 2011 International Mechanical Engineering Congress & Exposition**, IMECE 2011, November 11-17, 2011, Denver, Colorado.
10. Salim J.S. Masharqah, **Waka Tesfai, Pawan K. Singh**, Matteo Cheisa, Youssef Shatilla, "Thermal Conductivity behavior of Y₂O₃ nanofluids" Proceedings of the **ASME 2012 3rd Micro/Nanoscale Heat and Mass Transfer International Conference MNHMT 2012**, March 3-6, 2012, Atlanta, Georgia.

11. Mohamed I Ali, **Pawan K. Singh**, Waka Tesfai, Youssef Shatilla, "An experimental study of heat pipe performance using nanofluids", "Proceeding of Int conference on Applied energy ICAE 2012, Jul 5-8, 2012, Suzhou, China.
12. **Pawan K. Singh**, Samuel Tan, C. J Teo, P.S. Lee, "Flow and Heat transfer in branched wavy microchannels", Proceedings of the **ASME 2013 4th Micro/Nanoscale Heat and Mass Transfer International Conference MNHMT** 2013, December 11-14, 2013, Hong Kong, China.
13. Dilip Singh Naruka, **Pawan K. Singh**, "Effect of Brownian motion on Thermal Conductivity of Nanofluids", Proceeding of the 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, December 15-17, 2016, MNNITA, Allahabad, U.P., India.
14. Dilip Singh Naruka, **Pawan K. Singh**, Prabhat Dansena, H.E. Patel, " Experimental evaluation and ann modeling of thermal conductivity of Al_2O_3 nanoparticles dispersed in different base fluids", Proceedings of the 24th National and 2nd International ISHMT-ASTFEHeat and Mass Transfer Conference (IHMTTC-2017), December 27-30, 2017, BITS Pilani, Hyderabad, India.
15. Gautam, Dilip Singh Naruka, Ritesh Kumar, **Pawan K. Singh**, " Heat Transfer Performance of a Novel Composite Heat Sink", Proceedings of the 24th National and 2nd International ISHMT-ASTFEHeat and Mass Transfer Conference (IHMTTC-2017), December 27-30, 2017, BITS Pilani, Hyderabad, India.
16. Dilip Singh Naruka, **Pawan K. Singh**, Prabhat Dansena, H.E. Patel, "Thermal conductivity prediction of cuonanofluid using artificial neural network", INCOM18: Proceedings of the 1st International Conference on Mechanical Engineering Jadavpur University Kolkata India January 4 – 6, 2018.
17. Shanti Lata Das, **Pawan K. Singh**, Nitish Sagar, Dilip Singh Naruka, "Analysis Of Heat Transfer And Fluid Flow In Novel Branched Wavy Microchannel Using Nanofluid", Proceedings of the 24th National and 2nd International ISHMT-ASTFEHeat and Mass Transfer Conference (IHMTTC-2017), December 27-30, 2017, BITS Pilani, Hyderabad, India.
18. Devendra Yadav, Ritesh Kumar, Dilip Singh Naruka and **Pawan Kumar Singh**. "Experimental Investigation on Viscosity of the Nanofluids with different Parameters". International Conference on Advances in Thermal Systems, Materials and Design Engineering ATSMDE-2017, VJTI, Mumbai, India, 21-22 December, 2017.
19. Mithun Sarkar, Ritesh Kumar and **Pawan Kumar Singh**. "Numerical investigation of single phase gas flow through Straight, Wavy and Branched Wavy Minichannels". International Conference on Advances in Thermal Systems, Materials and Design Engineering ATSMDE-2017, VJTI, Mumbai, India, 21-22 December, 2017.
20. Sanjeev Kumar, Om P. Pandit, **Pawan.K. Singh** and A.K.Singh." Thermal analysis of stress distribution in the vicinity of underground coal gasification (UCG)"International Conference on Mechanical Engineering Jadavpur University Kolkata India January 4 – 6, 2018.
21. Ritesh Kumar, Nitish Sagar and **Pawan Kumar Singh**. "Heat transfer and fluid flow in oblique finned channel" International Conference on Mechanical Engineering Jadavpur University Kolkata India January 4 – 6, 2018.

22. Sanjeev Kumar and **Pawan Kumar Singh** “ Numerical study to investigate flow maldistribution in minichannel heat sink with modified inlet/outlet arrangement” Fifth International Conference on Computational Methods for Thermal Problems THERMACOMP2018, Indian Institute of Science, Bangalore, INDIA, July 9-11, 2018.
23. Ritesh Dwivedi and **Pawan Kumar Singh** “Decisive influence of nanofluid on thin evaporating meniscus”. **23rd International Conference THERMOPHYSICS 2018** in Smolenice, Slovakia (7th – 9th Nov, 2018). *AIP Conference Proceedings* (Vol. 1988, No. 1, p. 020043). DOI: <https://doi.org/10.1063/1.5047637>.
24. Devendra Yadav, **Ritesh Kumar** and Pawan Kumar Singh; Experimental Investigation on Rheology Property of MWCNT-Al₂O₃/Water Hybrid Nanofluid; *International Conference on Thermophysics 2018*; Smolenice, Slovakia; 7-9 Nov 2018. DOI: <https://doi.org/10.1063/1.5047636>.
25. Badyanath Tiwary, Ritesh Kumar, and **Pawan Kumar Singh**. "Heat Transfer Enhancement in Oblique Finned Channel." In *Advances in Fluid and Thermal Engineering*, pp. 157-167. Springer, Singapore, 2019. https://doi.org/10.1007/978-981-13-6416-7_15.
26. Sanjeev Kumar, Ritesh Dwivedi, and **Pawan Kumar Singh**. "Effect of Flow Maldistribution on Thermal Performance of Water-Cooled Minichannel Heat Sink." In *Advances in Fluid and Thermal Engineering*, pp. 43-52. Springer, Singapore, 2019. https://doi.org/10.1007/978-981-13-6416-7_5.
27. Badyanath Tiwary, Ritesh Kumar and **Pawan Kumar Singh**, “Effect of Varying Oblique Angles on Heat Transfer Enhancement in Oblique Channel”, *International Conference on Recent Innovations & Developments in Mechanical Engineering (IC-RIDME 2018)* NIT Meghalaya, Shillong, India, November 8 – 10, 2018.
28. Ritesh Kumar, Badyanath Tiwary and **Pawan Kumar Singh**, “Parametric Study Of Wavy Microchannel Using Nanofluid”, *International Conference on Recent Innovations & Developments in Mechanical Engineering (IC-RIDME 2018)*, NIT Meghalaya, Shillong, India, November 8 – 10, 2018.
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30. Ritesh Kumar, Badyanath Tiwary and **Pawan Kumar Singh** “Effect of Wavy Microchannel on Heat Transfer Performance with Nanofluid”, *International Conference on Fluid Mechanics and Fluid Power (FMFP-2018)* IIT BOMBAY, INDIA December 10-12, 2018.
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35. Ritesh Dwivedi, Saumya Singh, **Pawan Kumar Singh**, “Effect of nanoparticles in a polar/non-polar liquid of an evaporating thin-film meniscus”, Proceedings of CONV-22: International Symposium on Convective Heat and Mass Transfer (June 5 – 10, 2022), held in Turkey, available online at ICHMT Digital Library. DOI: 10.1615/ICHMT.2022.CONV22.
36. Ritesh Dwivedi, Saumya Singh, **Pawan Kumar Singh**, “Effect of nanofluid and electrostatic disjoining pressure on heat transfer from an evaporating meniscus”, 1st International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT-2022), in IITRAM & Space Application Centre, ISRO, Ahmedabad, India (Jan 20-22, 2022).
37. Saumya Singh, Ritesh Dwivedi, Soubhik Kumar Bhaumik, **Pawan Kumar Singh**, “Measurement of evaporating thin film thickness of a microfluidic channel using reflectometer”, 27th International Meeting Thermophysics 2022 (October 4 – 6, 2022), held in Dalešice Brewery, Dalešice, Czech Republic, available online at AIP Conference Proceedings, 2894 (2023), 020018. <https://doi.org/10.1063/5.0162980>.
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39. K Gopi Kannan, P Vinoth Kumar, **Pawan Kumar Singh**, Enhancement in thermal management of electronic devices using thermosyphon assist phase change material: An experimental study, *International Heat and Mass Transfer Conference (IHMTC'2023)*, Indian Institute of Technology, Patna, India, December 14-17, 2023.
40. K Gopi Kannan, **Pawan Kumar Singh**, Experimental study on storage of heat power by heat dissipation in electronic modules using thermic fluids and phase change material, *International Conference on Fluid Mechanics and Fluid Power (FMFP'2023)*, Indian Institute of Technology, Jodhpur, India, December 20-22, 2023.

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43. Saumya Singh, Ankit Kumar, Soubhik Kumar Bhaumik, S. Narayanan, **Pawan Kumar Singh**, "Transient thickness profile measurement of the extended thin film meniscus using reflectometry", 2nd International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT-2022), in IITRAM & Space Application Centre, ISRO, Ahmedabad, India (Jan 19-21, 2024).
44. Motilal Chavhan, Saumya Singh, **Pawan Kumar Singh**, "An experimental investigation on thermal performance of heat pipe" 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference (December 14-17, 2023), held at IIT Patna. DOI: 10.1615/IHMTC-2023.1470
45. Deepika, Kumari, Ashutosh Kumar, and **Pawan Kumar Singh**. "Numerical simulation of air-water two phase flow regimes in mini channel heat sink." *Proceedings of the 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference December 14-17, 2023, IIT Patna, Patna-801106, Bihar, India*. Begel House Inc., 2024.

Ph.D. Supervision:

Sl.No-	Name	Area of research	Role	Registration/ type	Status	Current status
1.	Sanjeev Kumar	Single and two phase flow maldistribution in minichannel	Guide	2016/full time	Degree Awarded	Post doc, Khalifa University, Abu Dhabi
2.	Badyanath Tiwari	Nanofluids in Oblique finned microchannel	Guide	2017/ full time (project JRF)	Degree Awarded.	TCS R & D, Bangalore
3.	Ritesh Kumar	Nanofluid in Branched wavy microchannel	Guide	2016/ part time (Converted from full time to part time)	Degree Awarded	Lecturer, Bhagalpur Engineering College
4.	Dilip Singh Naruka (2015DR0 299)	Nanofluids with heat pipe	Guide	2015/ part time (Converted from full time to part time)	Degree Awarded	Section Engineer, Indian Railway

5.	Sakshi Tyagi	Nanostructure composites for hybrid solar cell	Guide	2016/part time	Degree Awarded	Lecturer, Haldia Institute of technology
6.	Ritesh Dwivedi	Thin film evaporation with nanofluids	Guide	2017/ full time	Degree Awarded	TCS R & D, Bangalore
7.	Gajendra Singh (18DP000382)	Energy and exergy analysis of active solar still loaded with nanofluids	Guide	2018/part time	Thesis submitted	---
8.	Saumya Singh (19DR0137)	Thin Film Evaporation	Guide	2019/ Full time	Thesis submitted	-----
9.	Ankit Kumar (21DR0024)	Acoustofluidics	Guide	2021/ Full time	Ongoing	-----
10	Kumari Deepika (21DR0083)	Two phase flow maldistribution	Guide	2021/ Full time	Ongoing	-----
11	Motilal S Chavhan (22DR0128)	Heat Pipe	Guide	2022/Full time/project	Ongoing	-----
12	Kumar Deepak (22DR0106)	Battery Thermal management	Guide	2022/Full Time	Ongoing	-----
13	Manish Kumar	Heat Sink and Heat Pipe	Guide	2024/Full Time	Ongoing	-----

M. Tech. Supervision:

Sl. No.	Name of Student	Admission No.	Title of Dissertation
1.	Gautam	15MT000449	Heat Transfer Performance Of Straight Channel Heat Sink For Electronic Cooling Applications
2.	Mukesh Kumar Mishra	15MT000035	Numerical Modelling Of Heat Pipe
3.	Nitish Sagar	15MT000643	Numerical Analysis Of Heat Transfer & Fluid Flow Through Oblique-Finned Channel Using Nanofluid
4.	Om Prakash Pandit	15MT000271	Thermal Analysis Of Stress Distribution In The Vicinity Of Underground Coal Gasification (UCG) Through Simulation & Modeling

5.	Shanti Lata Das	15MT000049	Numerical Analysis Of Heat Transfer And Fluid Flow in Wavy Microchannel Using Nanofluid
6.	Dinesh Thakur	15MT000703	Simulation of Flow inside a heat Pipe and Thermal Performance of nanofluids
7.	Abhishek Jain	16MT001084	Effects Of Flow Maldistribution In Single Phase Microchannel Heat Sink
8.	Mainak Sit	16MT001284	Full Domain Simulation Of Oblique,Wavy & Branched Wavy With Water & Nanofluid In Microchannels
9.	Mithun Sarkar	16MT001207	Study Of Air Flow And Heat Transfer Characteristics On Novel Geometry Minichannel Heat Sink
10.	Devendra Yadav	16MT001201	Nanofluids Preparation, Characterization, Rheological Properties And ANN Modelling
11.	Ankur Shukla	16MT001389	Effects Of Nanofluids On The Performance Of Heat Pipe
12.	Anindya Sundar Sinha	15KT000033	A Comparative Study Of Exergy Destruction Factor For Vapour Compression Refrigeration System Operating With Nanorefrigerants.
13.	Sudip Chakraborty	15KT000013	Design Of Fuzzy Logic Based Vapour Compression Refrigeration System And Analysis Of Its Performance Using Nanorefrigerants
14.	Bharat Shukla	17MT002059	Nanofluid In Heat Pipe And Effect Of Temporal Variation Of Wick With Nanofluid
15.	Purushottam Kumar Mishra	17MT002061	Study Of Thermal And Hydraulic Performance Of Air Cooled Branched Wavy Mini Channel Heat Sink
16.	Sundaram Tripathi	17MT002060	Study Of Flow Maldistribution And Heat Transfer In Mini Channel Heat Sink
17.	Vikas Kumar	17MT001549	Investing The Thermal Conductivity of Nanofluid in Presence of Magnetic field
18.	Soumya Raj	16KT000078	Experimental And Theoretical Analysis Of Drying Process Of Potato Slices Within Passive Mode Greenhouse Solar Dryer
19.	Rishi Kapoor	18MT0460	Development Of Transient Hot Wire Setup And Measurement Of The Thermal Conductivity Of Nanofluids In Presence Of Magnetic Field
20.	Swikriti Srivastava	18MT0043	Comparative Study Of Adiabatic Air- Water Two Phase Flow In Wavy And Straight Mini-Channel
21.	Tarun Kumar	18MT0399	Numerical Comparison Of Heat Transfer And Fluid Flow Characteristics Of An Air Cooled Oblique Fin, Straight Channel And Branched Wavy 1.0 Mini-Channel Heat Sink
22.	Ravi Sharma	17KT000263	Thermal Management Of Li-Ion Battery

23.	Ashutosh Kumar	20MT0092	Investigation of two phase flow maldistribution in minichannel heat sink
24.	Meet Naik	21	
25.	Ram Kumar Mahato		

Courses taught:

IIT (ISM) Dhanbad (Aug 2015 – present)

- ❖ Advanced heat Transfer
- ❖ Engineering Mechanics
- ❖ Fluid Mechanics
- ❖ Mechanical Engineering-I
- ❖ Measurement in Thermal Engineering
- ❖ Measurement and Control
- ❖ Mechanical Engineering-II
- ❖ Microfluidics

GNIT Greater Noida (Feb 2003-Nov 2005)

- ❖ Heat Transfer
- ❖ Refrigeration and Air conditioning

Lab Developed:

Developed “Microfluidics and Nanofluids lab”. Currently lab is catering the research and M. Tech laboratory need in area of nanofluids, microfluidics and heat transfer.

Reviewer

- ❖ PhD Thesis, Defense Institute of Advanced Technology (DIAT), Pune
- ❖ DST (SERB) ECR project
- ❖ National Innovation foundation (MANAK Scheme)
- ❖ Nature-Scientific report
- ❖ International Journal of heat and Mass Transfer (Received certificate for outstanding contribution in reviewing in IJHMT by Elsevier)
- ❖ Experimental Thermal & Fluid Science
- ❖ International Journal of Thermal Sciences
- ❖ Heat Transfer engineering
- ❖ Energy
- ❖ Applied Thermal Engineering
- ❖ Journal of Molecular Liquids

- ❖ International Communication in heat and Mass Transfer
- ❖ Experimental Heat Transfer
- ❖ Journal of Thermal analysis and Calorimetry
- ❖ Journal of Nanoparticle research
- ❖ Thermal Sciences and Engineering Progress
- ❖ Heat Transfer
- ❖ Case Studies in Thermal Engineering
- ❖ Ultrasonics and many more
- ❖ Many national and international conferences

Membership of Professional Bodies

Life member of Indian society of heat and Mass Transfer

Life member of Space Society of Mechanical Engineers

Administrative Responsibility:

Sl No	Name of position hold	Duration	
		From	To
1.	Hostel Warden (Sapphire Hostel)	01.06.2018	30.06.2020
2.	Chief warden (Sapphire Hostel)	01.07.2020	30.06.2021
3.	Convener, DUGC	10.08.2020	25.10.2022
4.	Mechanical in-Charge, Naresh Vashishth Centre for Tinkering and Innovation	18.07.2020	15.06.2024
5.	Member, Documentation cell	14.12.2018	24.10.2021
6.	Member, Dean's Council (IRAAA)	09.09.2019	Present
7.	Member, Dean's Council (R &D)	09.09.2019	Present
8.	Member, Goal Setting committee	19.04.2017	11.04.2018
9.	Member, CIIE	18.07.2019	Present
10.	Member, Dept faculty selection committee	September 2019	30.11.2021
11.	Faculty in-charge, Heat Transfer Lab	08.09.2020	Present
12.	Faculty in-charge- Advanced Fluid mechanics and Heat Transfer Lab	08.09.2020	Present
13.	Member, DPAC		

Others:

- Coordinator for e-learning IIRS from ISRO

References

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