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Name : Pankaj Kumar Gupta  
Qualifications : B.E. (Mech. Engg.), M.S.(Research), Ph.D. (IIT Delhi)  
Area of Interest/Specialization: Fluid Thermal Sciences, FEM, CFD, Multiphase Flows  
Experience : Teaching – 16 years; Research – 03 years; Industry – 1.25 yrs  
Awards and Honors : (a) High Value Research Assistantship (HVRA) awarded  
Amongst top 5% research scholars in IIT Delhi for 2003-2006  
(b) Best paper award at CHEMCON-2022, International Conf.  
Research projects : NIL  
International Collaboration : (a) External Examiner for PhD Thesis evaluation of candidate  
registered with Politecnico di Milano, Italy (QS-13, 2022)  
List of Publications (All) :

Journals:

1. Ram Krishna, Kumar, N., **Gupta, P. K.**, 2022, “Numerical Prediction of Wall Erosion Using Energy Approach for the Flow of Dense Slurry in 90° Horizontal Pipe Bend,” *Powder Technology*, (Revision submitted, Under Review)
2. Ram Krishna, Kumar, N., **Gupta, P. K.**, 2022, “CFD Investigation of Pressure Drop Reduction in Hydrotransport of Multisized Zinc Tailings Slurry through Horizontal Pipes,” *Int. J. Hydrogen Energy*, (Revision submitted, Under Review)
3. Sharma, N.K., Dewangan, S.K., **Gupta, P.K.**, 2022, “Numerical Simulation of Three-Dimensional Circular Free Turbulent Jet Flow Using Different RANS Turbulence Models”, *Computational Thermal Sciences* (Accepted for publication) (**SCOPUS Indexed**)
4. Sambhare, R., Dewangan, S.K., **Gupta, P.K.**, Joshi, P., 2022, “Energy, exergy and economic

analyses of tubular solar still with various transparent covers”, *Process Safety and Environmental Protection*, Vol. 168, pp. 1101-1108 (SCI)

5. Sambhare, R., Dewangan, S.K., **Gupta, P.K.**, Joshi, P., 2022, “Augmenting the productivity of tubular solar still using low-cost energy storage materials”, *Environmental Science and Pollution Research*, Vol. 29, pp. 78739-78756 (SCI)
6. Sambhare, R., Dewangan, S.K., **Gupta, P.K.**, Joshi, P., 2021, “Exergy and thermo-economic analyses of various Tubular solar still configurations for improved performance”, *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, <https://doi.org/10.1080/15567036.2021.1887977> (SCI)
7. **Gupta, P.K.**, 2018, “Numerical insight into multisize particulate flow field through rotating channel,” *Progress in Computational Fluid Dynamics*, Vol. 18, No. 5, pp. 277-288 (SCI).
8. **Gupta, P.K.**, 2017, “Role of Centrifugal Force on Solid-Liquid Two-Phase Flow through Rotating Channel,” *Progress in Computational Fluid Dynamics*, Vol. 17, Issue 5, pp. 313-325 (SCI).
9. **Gupta, P.K.** and Patel, R.N., 2017 “A teaching-learning tool for elementary psychrometric processes on psychrometric chart using MATLAB,” *Computer Applications in Engineering Education*, Vol. 25, No. 3, pp. 458-467 (SCI).
10. **Gupta, P.K.**, 2016, “Air flow investigations in direct type solar food dryer using computational fluid dynamics,” *Carbon-Science and Technology*, Vol. 8, No. 2, pp. 9-16. (SCOPUS Indexed).
11. **Gupta, P.K.**, 2016, “Development of low cost solar cooker,” *Carbon-Science and Technology*, Vol. 8, No. 2, pp. 17-20. (SCOPUS Indexed).
12. Pagalthivarthi, K.V., **Gupta, P.K.**, Tyagi, V., Ravi, M.R., 2011, “CFD Prediction of Erosion Wear in Centrifugal Slurry Pumps for Dilute Slurry Flows,” *International Journal of Computational Multiphase Flows*, Vol. 3, No.4, pp.225 –245. (SCOPUS Indexed)
13. Pagalthivarthi, K.V., Ravichandra, J.S., Sanghi, S., **Gupta, P.K.**, 2009, “Wear Prediction in Fully Developed Multi-size Particulate Flow in Horizontal Pipelines,” *International Journal of Computational Multiphase Flows*, Vol. 1, No.3, pp.263-282. (SCOPUS Indexed)
14. **Gupta, P.K.** and Pagalthivarthi, K.V., 2009, “Multi-size Particulate Flow through Rotating Channel–Modeling and Validation using Three Turbulence Models,” *International Journal of Computational Multiphase Flows*, Vol. 1, No.2, pp.133-160. (SCOPUS Indexed)
15. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2009, “Prediction of Erosion Wear in Multi-size Particulate Flow through Rotating Channel,” *Fluid Dynamics and Materials Processing*, Vol.5, No.1, pp.93-122. (SCOPUS Indexed)
16. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2008, “Particle Tracking in Rotating Channel Flow,” *Indian J. Engg. Material Sciences*, Vol.15, No.5, pp.365-376. (SCI)
17. **Gupta, P.K.** and Pagalthivarthi, K.V., 2007, “Application of MultiFrontal and GMRES Solvers in Multi-size Particulate Flow in Rotating Channels,” *Progress in Computational Fluid Dynamics*, Vol. 7, No.5, pp. 323–336. (SCI on Ph.D. work)
18. **Gupta, P.K.** and Pagalthivarthi, K.V., 2007, “Finite Element Modelling and Validation of Multi-size Particulate Flow through Rotating Channel,” *Progress in Computational Fluid Dynamics*, Vol.7, No.5, pp. 293-306. (SCI on Ph.D. work)

19. **Gupta, P.K.** and Pagalthivarthi, K.V., 2006, "A Comparative Study of the Effect of Model Lift Coefficient on Particle Trajectory," *Indian Journal of Engg. & Material Sciences*, Vol. 13, No. 4, pp. 293-306. (SCI)
20. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2004, "Simulation of Developing Flow Through Rotating Channel Using Q1Q0 Elements," *Progress in Computational Fluid Dynamics*, Vol. 4, No. 6, pp. 285-298. (SCI)
21. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2001 "Forces on Particles Entrained in Turbulent Flow through Rotating Channel," *Journal of Mechanical Engg. Research and Developments*, Vol. 22-23, pp. 1-18. (SCOPUS Indexed)
22. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2001 "Performance of Eddy Viscosity Model in Rotating Channel Flow," *Journal of Mechanical Engg. Research and Developments*, Vol. 22-23, pp. 37-55. (SCOPUS Indexed)
23. Das, L.M., Gulati, R., **Gupta, P.K.**, 2000, "Performance evaluation of a hydrogen-fuelled spark ignition engine using electronically controlled solenoid-actuated injection system," *International Journal of Hydrogen Energy*, Vol. 25, No. 6, pp.569-579. (SCI)
24. Das, L.M., Gulati, R., **Gupta, P.K.**, 2000, "A comparative evaluation of the performance characteristics of a spark ignition engine using hydrogen and compressed natural gas as alternative fuels," *International Journal of Hydrogen Energy*, Vol. 25, No. 8, pp.783- 793.(SCI)

#### Conference Proceedings:

1. Ram Krishna, Kumar, N., **Gupta, P. K.**, 2022, "Computational Analysis of Elbow Wear due to High Concentration Slurry Flow," *Proceedings of CHEMCON2022*, December 27-30, 2022, HBTU Kanpur, India
2. Ram Krishna, Kumar, N., **Gupta, P. K.**, 2022, "CFD Prediction of Erosion Zone in Pipe Bends due to Flow of Solid-Liquid Mixtures," *Proceedings of CHEMCON2022*, December 27-30, 2022, HBTU Kanpur, India
3. **Gupta, P. K.** and Kashyap, T.K., 2022, "CFD Analysis of Specific Energy Consumption of Fly Ash Slurry Flow in Pipelines and Bends," *Proceedings of CHEMCON2022*, December 27-30, 2022, HBTU Kanpur, India
4. Ram Krishna, Kumar, N., **Gupta, P. K.**, 2022, "Pressure Drop Optimization at 90° Bend Horizontal Pipeline for Dense Slurry Flow," *Proceedings of CHEMCON2022*, December 27-30, 2022, HBTU Kanpur, India
5. **Gupta, P. K.** and Bareth, P.C., 2022, "Thermal Performance Analysis of Panel Type Solar Cookers," *Proceedings of CHEMCON2022*, December 27-30, 2022, HBTU Kanpur, India
6. Rathore, R.K., **Gupta, P.K.**, Niranjana Kumar, 2021, "Numerical Investigation of Zinc Tailings Slurry Flow Field in a Horizontal Pipeline," *Materials Today: Proceedings*, In Press, SCOPUS Indexed Journal, doi.org/10.1016/j.matpr.2020.11.541
7. **Gupta, P.K.**, Nyein Aye San, Bhramara, P., 2021, "Numerical Prediction of Near-Wall Flow Field of Dense Slurry Flow in Pipe Bends," *Materials Today: Proceedings*, In Press, SCOPUS Indexed Journal, doi.org/10.1016/j.matpr.2020.12.371
8. **Gupta, P.K.**, Misal, A., Agrawal, S., 2021, "Development of Low Cost Reflective Panel Solar Cooker," *Materials Today: Proceedings*, In Press, SCOPUS Indexed doi.org/10.1016/j.matpr.2020.12.004.
9. **Gupta, P. K.** and Pagalthivarthi, K.V., 2015, "Dense Multisize Slurry Flow through Rotating Channel: Effect of Flow Reynolds Number," *Proceedings of International Conference on Paradigm Shift in Management*

& Technology, PSIMT-2015, April 8-9, 2015, YMCAUST Faridabad, India

10. Pagalthivarthi, K.V., **Gupta, P. K.**, Ravichandra, J.S., Sanghi, S., 2015, "Neural Network Prediction of Erosion Wear in Pipeline Transporting Multisize Particulate Slurry," *Proceedings of International Conference on Paradigm Shift in Management & Technology*, PSIMT-2015, April 8-9, 2015, YMCAUST Faridabad, India
11. **Gupta, P. K.**, 2014, "CFD versus Experimentation – A case study," *Proceedings of AICON – 2014*, All India Conference 2014, April 2014, CSIT, Durg, Chhattisgarh, India.
12. Pagalthivarthi, K. V., **Gupta, P. K.**, Tyagi, Vipin, 2011, "Cost-Effective Modelling and Simulation of Erosion Wear in Slurry Transportation Energy System," *Proceedings of International Conference on Advances in Materials and Materials Processing – 2011*, December 9 – 11, 2011, IIT Kharagpur, West Bengal, India.
13. **Gupta, P. K.** and Pagalthivarthi, K. V., 2011, "Multi-size Particulate Flow through Straight Channel– Effect of Changing the Location of Axis of Rotation using CFD," *Proceedings of International Conference on Emerging Trends in Engineering & Technology – 2011*, October 20 – 22, 2011, GIMT Kurukshetra, India.
14. **Gupta, P. K.** and Pagalthivarthi, K. V., 2011, "Sensitivity Studies of Modeling Parameters in Dense Particulate Flow through Rotating Channel," *Proceedings of International Conference on Emerging Trends in Engineering & Technology – 2011*, October 20 – 22, 2011, GIMT Kurukshetra, India.
15. **Gupta, P. K.** and Pagalthivarthi, K. V., 2010, "Comparison of Three Turbulence Models in Predicting Multi-size Particulate Flow through Rotating Channel," *Proceedings of International Conference on Advances in Mechanical Engineering – 2010*, January 4 – 6, 2010, SVNIT Surat, India.
16. **Gupta, P. K.** and Pagalthivarthi, K. V., 2006, "Effect of Diffusive Stress, Lift and Virtual Mass Forces on Multi-Size Particulate Flow through Rotating Channel," *Proceedings of International Congress on Computational Mechanics and Simulation - 2006*, December 8-10, 2006, IIT Guwahati, India.
17. **Gupta, P. K.** and Pagalthivarthi, K. V., 2006, "Effect of Inlet Concentration on Solid-Liquid Mixture Flow through Rotating Channel," *Proceedings of International Congress on Computational Mechanics and Simulation - 2006*, December 8-10, 2006, IIT Guwahati, India.
18. **Gupta, P. K.** and Pagalthivarthi, K. V., 2006, "Effect of Particle Size Distribution on Multi-Size Particulate Flow through Rotating Channel," *Proceedings of NCFMFP 33<sup>rd</sup> National & 3<sup>rd</sup> International Conference on Fluid Mechanics and Fluid Power*, December 7-9, 2006, IIT Bombay, India.
19. **Gupta, P. K.** and Pagalthivarthi, K. V., 2006, "Convergence Characteristics of Two Numerical Methods– Case Study in Rotating Channel Flow," *Proceedings of 18<sup>th</sup> National & 7<sup>th</sup> ISHMT-ASME Heat and Mass Transfer Conference*, IIT Guwahati, India.
20. Vipin Tyagi , K. V. Pagalthivarthi, M.R. Ravi, **Pankaj K. Gupta** , "Study Of Carrier Phase Flow Behavior In A Two Dimensional Centrifugal Slurry Pump Casing", *5th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion Xi'an, China, 3-6 July 2005*.
21. Vipin Tyagi , K. V. Pagalthivarthi, M.R. Ravi, **Pankaj K. Gupta** , "Study of Discrete Phase Flow in a 2D Slurry Pump Casing", *5th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion Xi'an, China, 3-6 July, 2005*.
22. Pagalthivarthi, K. V., Ravichandra, J. S., Sanghi, S. and **Gupta, P. K.**, 2005, "Comparison of Two Strategies in Multi- Size Particulate Flow Computations," *International Symposium on Multiphase Flows, Heat Mass Transfer and Energy Conversion*, Xi'an, China, July 3-6, 2005.
23. **Gupta, P.K.** and Pagalthivarthi, K.V., 2005, "Effect of Model Lift Coefficients on Particle Trajectory," *International Symposium on Multiphase Flows, Heat Mass Transfer and Energy Conversion*, Xi'an, China, July 3-6, 2005.
24. **Gupta, P.K.** and Pagalthivarthi, K.V., 2004, "Comparison of Zero-equation and k-ε Models in Rotating

Channel flow Prediction,” Proceedings of 2<sup>nd</sup> BSME-ASME International Conference on Thermal Engineering, 2-4 January 2004, Dhaka.

25. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2004, “Influence of Shear and Rotation Lift on Particle Motion,” Proceedings of 5<sup>th</sup> International Conference on Multiphase Flows, May 30 – June 4, Yokohama, Japan.
26. **Gupta, P.K.** and Pagalthivarthi, K.V., 2003, “Effect of Lift Force on Particle Trajectories in Horizontal Channel Flow,” Proceedings of 48<sup>th</sup> Congress of ISTAM, an International Meet, 18-21 December, BIT Mesra, Ranchi, India.
27. **Gupta, P.K.** and Pagalthivarthi, K.V., 2003, “Effect of Rotation-Modified Wall Functions in Determining Friction Velocity,” Proceedings of 48<sup>th</sup> Congress of ISTAM, an International Meet, 18-21 December, BIT Mesra, Ranchi, India.
28. Pagalthivarthi, K.V. and **Gupta, P.K.**, 2003, “Modeling Impact of Entrained Particles in Rotating Channel Flow,” Proceedings of IMPLAST, March 2003, New Delhi, India.
29. Das, L.M., Gulati, R., and **Gupta, P.K.**, 1999, “Evaluation of a Solenoid-Actuated Injection System for a Hydrogen Operated Spark Ignition Engine,” Proceedings of 6<sup>th</sup> International Conference on Hydrogen Materials Science and Chemistry of Metal Hydrides, ICHMS, September 1999, Yalta, Ukraine.

Patents :

**1. Patent Granted and Registered (Innovation Patent):**

Patent Number : **2020104031** (Australian Government, IP Australia)

Title of Invention: TWISTED MICRO-FINS EVACUATED TUBE SOLAR AIR HEATER

**2. Patent Filed :** 2021100087

LONGITUDINAL FINS EVACUATED TUBE SOLAR AIR HEATER

Recent Books/Book Chapters/Monographs : NIL

Research Supervision:

- (a) Mrs. Shweta Singh registered with GGV, Bilaspur
- (b) Mr. Ram Krishna, registered with IIT-ISM Dhanbad
- (c) Mr. Nilesh K. Sharma, registered with NIT Raipur
- (d) Mr. Ritesh K. Sambhare, registered with NIT Raipur

Administrative Responsibilities:

- (a) Member, NIRF Committee
- (b) Convener, Solar Panel Installation (Technical)
- (c) School Administrator, AICTE 360 Feedback
- (d) Coordinator, NBA Committee, School of Engineering and Technology

- (e) Member, School Board, School of Engineering and Technology
- (f) Member, BoS, Mechanical Engineering
- (g) Member, Research Advisory Committee, Mechanical Engineering
- (h) Member, Research Advisory Committee, Industrial & Production Engineering

Additional Information :

- (a) **INDIAN HOST for ASEAN India Research & Training Fellowship** awarded to Ms. Toe Yadanar from Mandalay Technological University, Mandalay, Myanmar (October 2022 to March 2023) – *Currently pursuing*
- (b) **INDIAN HOST for ASEAN India Research & Training Fellowship** awarded to Ms. Mon Mon Aye from University of Technology, Yatanarpon Cyber City, Myanmar (W.e.f. March 2021 to August 2021) – *candidate did not join due to Myanmar Government restrictions for govt. employees*
- (c) **INDIAN HOST for ASEAN India Research & Training Fellowship** awarded to Dr. Nyein Aye San from Mandalay Technological University, Mandalay, Myanmar (October 2019 to March 2020)
- (d) **ATAL FDP coordinator for AICTE-sponsored FDP** on “Teaching-Learning Pedagogy using MATLAB” scheduled from November 24<sup>th</sup> – 28<sup>th</sup>, 2020
- (e) **ATAL FDP coordinator for AICTE-sponsored FDP** on “Slurry Flow in Mineral Processing – Principles and Practices” scheduled from December 6<sup>th</sup> – 10<sup>th</sup>, 2021
- (f) **American Society of Mechanical Engineers** Annual membership No. 100766344
- (g) **Institution of Engineers (India)** Life Member M-150122-9
- (h) **American Society of Thermal and Fluids Engineers** Life Member