

Publications

Journals

Published (SCI/SCIE – 25, Scopus-1)

1. **Bhardwaj S**, Khalil D, Monclova JL, Etterl N, Costanzo F, Simon SD, Craven BA and Manning KB, "An In Vitro Study of Embolus Migration in an Anatomical Cerebrovascular Model ", *Journal of Biomedical Engineering*, vol. 148(9), p. 094501, 2026
2. Bessler R, Mekler T, Malka D, Onallah N, Farhana O, Fishler R, **Bhardwaj S**, Koshiyama K, Korin N and Sznitman J, "Electrostatic charge effects on aerosol deposition in a multiscale in vitro one-path lung model", *Physical Review Fluids*, vol. 11(5), p. 050501, 2026
3. Verma SK, **Bhardwaj, S**, Patel KS and Naik BK, "Eulerian–Lagrangian and thin film modeling of drug delivery under physiologically varying breathing in a realistic lung model", *Physics of Fluids*, vol. 38 (2), p. 021919, 2026.
4. **Bhardwaj, S.**, Craven, B.A., Sever, J.E., Costanzo, F., Simon, S.D., and Manning, K.B., "Corrigendum: Modeling flow in an in vitro anatomical cerebrovascular model with experimental validation". *Front. Med. Technol.*, vol. 6, p. 1533412, 2025 (IF- 3.8, Q1)
5. Bessler R., **Bhardwaj, S.**, Malka, D., Fishler, R., and Sznitman, J., "Exploring the role of electrostatic deposition on inhaled aerosols in alveolated microchannels", *Scientific Reports*, vol. 13, p. 23069, 2023. (IF- 3.9, Q1)
6. Allon, R., **Bhardwaj, S.**, Sznitman, J., Shoffel-Havakuk, H., Pinhas, S., Zloczower, E., Shapira-Galitz, Y., and Lahav, Y., "A Novel Trans-tracheostomal Retrograde Inhalation Technique Increases Subglottic Drug Deposition Compared to Traditional Trans-oral Inhalation", *Pharmaceutics*, vol. 15, p. 903, 2023. (IF- 5.5, Q1)
7. **Bhardwaj, S.**, Craven, B.A., Sever, J.E., Costanzo, F., Simon, S.D., and Manning, K.B., "Modeling Flow in an In Vitro Anatomical Cerebrovascular Model with Experimental Validation", *Frontiers in Medical Technology*, vol. 5, p. 1130201, 2023. (IF- 3.8, Q1)
8. Nof, E., **Bhardwaj, S.**, Koullapis, P., Bessler, R., Kassinos, S., and Sznitman, J., "In vitro–in silico correlation of three-dimensional turbulent flows in an idealized mouth-throat model", *PLoS Computational Biology*, vol. 19(3), p. e1010537, 2023 (IF- 3.6, Q1)
9. **Bhardwaj, S.**, Koullapis, P., Kassinos, S. C. and Sznitman, J., "Fate of inhaled aerosols under the influence of glottal motion in a realistic in silico human tracheo-bronchial model", *European Journal of Pharmaceutical Sciences*, vol. 173, 106172, 2022 (IF – 4.7, Q1)
10. Nof, E., Zidan, H., Artzy-Schnirman, A., Mouhadeb, O., Beckerman, M., **Bhardwaj, S.**, Kirma-Elias, S., Gur, D., Beth-Din, A., Levenberg, S., Korin, N., Ordentlich, A. and Sznitman, J. "Human multi-compartment airways-on-chip platform for emulating respiratory airborne transmission: from nose to pulmonary acini", *Frontiers in Physiology*, vol. 13, 2022 (IF – 3.4, Q2)
11. Nof, E., Artzy-Schnirman, A., **Bhardwaj, S.**, Sabatan, H., Waisman, D., Hochwald, O., Gruber, M., Borenstein-Levin, L., and Sznitman, J., "Ventilation-induced epithelial injury drives biological onset of lung trauma in vitro and is mitigated with prophylactic anti-inflammatory therapeutics", *Bioengineering & Translational Medicine*, e10271, 2021 (IF – 6.1, Q1)
12. Kumar, A., **Bhardwaj, S.**, Dalal, A., and Natarajan G., "Numerical analysis of conjugate heat transfer in a planar sudden expansion flow", *Journal of The Institution of Engineers (India): Series C*, vol. 102, pp. 981–993, 2021 (IF – 1.42, Q3)
13. **Bhardwaj, S.**, and Dalal, A., "Numerical Investigation of Free Convection in a Porous Corrugated Cavity filled with Silver (Ag) Dispersed Nano-fluid ", *Journal of Thermal Science and Engineering Applications*, vol. 13, p. 041005, 2020 (IF – 1.6, Q2)
14. Heller-Algazi, M., Nof, E., Das, P., **Bhardwaj, S.**, Kassinos, S. and Sznitman, J., "In silico optimization of targeted aerosol delivery in upper airways via Inhaled Volume Tracking", *Clinical Biomechanics*, vol. 80, p. 105138, 2020.(IF – 1.4, Q2)
15. Shachar-Berman, L., **Bhardwaj, S.**, Ostrovski, Y., Das, P., Koullapis, P., Kassinos, S. C., and Sznitman, J., "In Silico Optimization of Fiber-Shaped Aerosols in Inhalation Therapy for Augmented Targeting and Deposition across the Respiratory Tract", *Pharmaceutics*, vol. 12, p. 230 (1-12), 2020. (IF – 4.9, Q1)

16. **Bhardwaj, S.**, Dalal, A., and Mukherjee, P. P., 2019, "Mesoscale Understanding of Capillarity Driven Two-Phase Flow in a Packed Bed Architecture, *International Journal of Heat and Mass Transfer*, vol. 136, pp. 116-127. (IF – 5, Q1)
17. **Bhardwaj, S.**, Dalal, A., Biswas, G., and Mukherjee, P. P., 2018, "Analysis of Droplet Dynamics in a Partially Obstructed Confinement in a Three-Dimensional Channel", *Physics of Fluids*, vol. 30(10). [Editor's Pick article] (IF – 4.6, Q1)
18. **Bhardwaj, S.**, and Dalal, A., 2018, "Sweeping of the entrapped fluid out of the groove in a three-dimensional channel using lattice Boltzmann method", *European Journal of Mechanics- B/Fluids*, vol. 72, pp. 328-339. (IF – 2.5, Q2)
19. **Bhardwaj, S.**, and Dalal, A., 2018, "Mesoscopic analysis of three-dimensional droplet displacement on wetted grooved wall of a rectangular channel", *European Journal of Mechanics- B/Fluids*, Volume 67, Pages 35-53 (IF – 2.5, Q2)
20. **Bhardwaj, S.**, and Dalal, A., 2017, "Mesoscopic analysis of dynamic droplet behaviour on wetted flat and grooved surface for low viscosity ratio", *ASME-Journal of Heat Transfer*, Volume 139(5), 052002(11 pages). (IF – 2.8, Q2)
21. **Bhardwaj, S.**, Randive, P., and Dalal, A., 2017, "Lattice Boltzmann simulations of coalescence of two droplets on a rectangular channel wall considering wetting effects", *Progress in Computational Fluid Dynamics International Journal*. Volume 17, No. 5, Pages 281–289. (IF – 0.6, Q4)
22. Meshram, P., **Bhardwaj, S.**, Dalal, A and Pati, S., 2016, "Effects of the inclination angle on natural convection heat transfer and entropy generation in a square porous enclosure", *Numerical Heat Transfer: Part A*, vol. 70, No. 11, pp. 1271–1296, 2016 (IF – 2.8, Q2)
23. Meshram, P., **Bhardwaj, S.**, and Dalal, A., 2015, "Numerical investigation of two dimensional natural convection and entropy generation inside a porous square enclosure with sinusoidally heated wall", *Progress in Computational Fluid Dynamics International Journal*, Volume 16, Pages 88-101. (IF – 0.6, Q4)
24. **Bhardwaj, S.**, Dalal, A., and Pati, S., 2015, "Influence of wavy wall and non-uniform heating on natural convection heat transfer and entropy generation inside porous complex enclosure", *ENERGY*, Volume 79, Pages 467-481 (IF – 9, Q1)
25. **Bhardwaj, S.**, and Dalal, A., 2015, "Effect of undulations on the natural convection heat transfer and entropy generation inside porous right-angled triangular enclosure", *Numerical Heat Transfer: Part A*, Volume 67(9), Pages 972-991. (IF – 2.8, Q2)
26. **Bhardwaj, S.**, and Dalal, A., 2013, "Analysis of Natural Convection Heat Transfer and Entropy Generation inside Porous Right-angled Triangular Enclosure", *International Journal of Heat and Mass Transfer*, Volume 65, Pages 500-513. (IF – 5, Q1)

Technical Articles

1. **Bhardwaj, S.**, Euser, R., Stadik, A., Monaco, E., Sharma, V. K., and Borra, R. K., "High accurate heat transfer tasks on example of body in white drying process in paint shop", 2019-01-0185, WCX SAE World Congress Experience, April 9-11, 2019, Detroit, USA.

Conferences

1. Srivastava Y., Sahai R. and **Bhardwaj S.**, "Automated Generation of CFD-Compatible Surface Geometries from 3D Medical Imaging Using Topology-Aware Deep Learning" Paper No-114, *Proceedings of The International Conference on Applied Mathematics and Computational Fluid Dynamics (ICAMCFD 2026)*, MNNIT Allahabad, January 30-February 1, 2026.
2. Yadav A. and **Bhardwaj S.**, "Hemodynamic Analysis of Intracranial Aneurysms Using Computational Fluid Dynamics Approach" Paper No-116, *Proceedings of The International Conference on Applied Mathematics and Computational Fluid Dynamics (ICAMCFD 2026)*, MNNIT Allahabad, January 30-February 1, 2026.
3. Vaishnavi S. and **Bhardwaj S.**, " Numerical Analysis of Airflow Dynamics and Aerosol Deposition in Subglottic Stenosis" Paper No-115, *Proceedings of The International Conference on Applied*

4. Vaishnavi S. and **Bhardwaj S.**, "Numerical Investigation of Subglottal Airflow with Fenestrated Cannula During Physiological Breathing Cycle" Paper No-584, *Proceedings of 10th International Congress on Computational Mechanics and Simulations (ICCMS 2025)*, IIT Bhubaneswar, December 17-19, 2025
5. **Bhardwaj, S.**, Craven, B.A., Sever, J.E., Costanzo, F., Simon, S.D., and Manning K.B., "Towards Modeling Acute Ischemic Stroke: In Vitro Experiments And Simulations Of Blood Flow And Mean Arterial Pressure In An Artificially Clotted Cerebrovascular Model", *Summer Biomechanics, Bioengineering and Biotransport Conference, June 4-8, 2023, Vail, Colorado, USA.*
6. **Bhardwaj, S.**, Craven, B.A., Sever, J.E., Costanzo, F., Simon, S.D., and Manning K.B., "Modeling Flow in an Anatomical Cerebrovascular Model with Experimental Validation in Acute Ischemic Stroke Patients", *Biomedical Engineering Society Annual Meeting, October 12-15, 2022, San Antonio, Texas, USA.*
7. Bessler, R., **Bhardwaj, S.**, Fishler, R., and Sznitman, J., "Electrostatic Effects on Inhaled Aerosol Deposition in the Deep Pulmonary Airways", *Annual Faculty Retreat, September 15, 2022, Technion-IIT, Haifa, Israel.*
8. Euser, R., Vuik, C., and **Bhardwaj, S.**, "Simulating real world fluid flows using a GPU accelerated Lattice Boltzmann method", Poster No. 10, *Forty-third Woudschoten Conference, October 3-5, 2018, Zeist, The Netherlands.*
9. Meshram, P., **Bhardwaj, S.**, and Dalal, A., 2016, "Numerical Study of Two Dimensional Natural Convection Inside a Porous Square Cavity with Top Wall Sinusoidally Heated and Others Cooled", Paper No: 325, *6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, December 15-17, 2016, MNNIT Allahabad, India.*
10. **Bhardwaj, S.**, and Dalal, A., "Three-dimensional deformation of a droplet on a square duct wall considering wetting effects" Paper No:289, *Sixth International Congress on Computational Mechanics and Simulation, 27th June-1st July, 2016, IIT Bombay, Mumbai, India.*
11. **Bhardwaj, S.**, and Dalal, A., "Mesoscopic analysis of droplet spreading behaviour on wetted surface for low viscosity ratio" Paper No: MNHMT2016-6492, *5th International ASME Micro/Nanoscale Heat and Mass Transfer Conference, January 3-6, 2016, Biopolis, Singapore.*
12. **Bhardwaj, S.**, Dalal, A., Biswas, G., "Natural convection flows in a porous nanofluid-filled triangular enclosure with wavy left wall", Paper No: CHT-15-259, *6th International Symposium on Advances in Computational Heat Transfer, May 25-29, 2015, Rutgers University, Piscataway, USA.*
13. Randive, P., **Bhardwaj, S.**, and Dalal, A., "Lattice Boltzmann Modelling of Capillarity-Induced Resonance of Blob inside a Circular Tube", Paper No: 526, *5th International and 41th National Conference on Fluid Mechanics and Fluid Power, December 12-14, 2014, IIT Kanpur, India.*
14. **Bhardwaj, S.**, and Dalal, A., "Numerical Simulations of Natural Convection Flow in a Porous Right-angled Triangular Enclosure with Nanofluid", Paper No: HMTTC1300281, *22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, December 28-31, 2013, IIT Kharagpur, India.*

Book Chapter

1. Randive, P., **Bhardwaj, S.**, and Dalal, A., "Lattice Boltzmann Modelling of Capillarity-Induced Resonance of Blob inside a Circular Tube", *Fluid Mechanics and Fluid Power-Contemporary Research, (Lecture Notes in Mechanical Engineering), Springer, 2017, pp. 1121-1130.*