

Amir Abbas, PhD

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Date of Birth: June 4, 1993

Nationality: Pakistani

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PHD PCD Number: 24302(16-10-2016---09-03-2021)

Current City: Nankana Sahib, Pakistan

Language: English; Urdu



Main Research Area

Applied Mathematics: Fluid Mechanics, Computational Fluid Dynamics (CFD), Heat and Mass Transfer, Newtonian and Non-Newtonian Fluid Flows, Mono and Hybrid Nanofluids, Ternary Nanofluids, Boundary Layer Flow, Magneto-hydrodynamics, Modeling and Simulation, Numerical Methods, Finite Difference Method (Explicit and Implicit), bvp4c, and Keller Box Method. Mathematical modeling of fluid flow and heat transfer problems, magneto-hydrodynamics, porous media, advanced numerical methods (FDM), and simulation by using MATLAB and FORTRAN.

Teaching and Research Achievements (2017-2025)

Total No. of Published Articles	60
Number of articles with my first authorship	23
No. of articles with my correspondence	20
Total No. of Published Articles in JCR Q1	29
Total No. of Published Articles in JCR Q2	15
Total No. of Published Articles in JCR Q3	06
Total No. of Published Articles in JCR Q4	04
Total No. of Published Articles not in JCR	06
Total Citations (Google Scholar)	1701
Total Citations (Web of Science)	1381

h-index (Google Scholar)	31
h-index (Web of Science)	28
i10-index	46
Total Author Impact Factor	200+
Enlisted in the Top 2% World Scientists list 2025	Top 2% World Scientists List
PhD Scholars Supervision (2025 to date)	02
M. Phil Scholars Supervision (2017-2025)	21
Key Trainings, Seminars, Workshops, Symposia, and Conferences attended and organized	08
Journal Associate Editor (Academic Editor)	Computational Environmental Heat Transfer
Journal Guest Editor	Frontiers in Materials
Reviewers of the Journals	Several Journals of Elsevier, Springer, AIP, Taylor & Francis, Nature, MDPI, SAGE, IOP, Emerald, De Gruyter, World Scientific, PLOS, Wiley & Sons Publishing groups, etc.
Full-Time University Teaching Experience	8 Years

Professional Experience

1. **Currently working as an Assistant Professor** (July 31, 2024 to date), Baba Guru Nanak University, Nankana Sahib, Punjab, Pakistan (<https://bgnu.edu.pk>)
2. **Lecturer** (May 25, 2022 to), University of Gujrat, Punjab, Pakistan (<https://uog.edu.pk>)
3. **Lecturer** (October 19, 2017-April 21, 2022), The University of Lahore, Sargodha Campus, Punjab, Pakistan (<https://uol.edu.pk>)
4. **Assistant Professor** (April 22, 2022-May 24, 2022), The University of Lahore, Sargodha Campus, Punjab, Pakistan (<https://uol.edu.pk>)
5. **Lecturer (Visiting)**, October 2014-Feb 2018), University of Sargodha, Sargodha, Punjab, Pakistan (<https://www.su.edu.pk>)

Academic Record/Education

PhD in Mathematics (Applied Mathematics) Oct. 2016-March, 2021

Dissertation Title: Effects of Thermophoretic Transportation on Convective Heat Transfer along the Surface of a Sphere
University of Sargodha, Sargodha Pakistan | <https://www.su.edu.pk>

M. Phil in Mathematics (Applied Mathematics) 2014-2016

Dissertation Title: Radiative Heat and Mass Transfer in a Free Stream Which Oscillates Without Reversing
University of Sargodha, Sargodha Pakistan | <https://www.su.edu.pk>

Scholarships/ Awards/Honors/Research Fellowships

Scholarship:

1. **PhD Scholarship:** Higher Education Commission, Pakistan, Indigenous 5000 PhD fellowship Program Phase-II, Batch-V for PhD
2. **Research Fellowship:** Working as a Research Fellow of INTI International University, Malaysia, for (18th Sept 2025 to 31st Dec 2028).

Publications (2020-2025)

Bold (Amir Abbas)	Represents the first author to me
Bold and italic (<i>Amir Abbas</i>)	Represents the co-author to me
Bold & Star on (Amir Abbas*)	Represents the first and corresponding author to me
Total No. of Published Articles	60
Number of articles with my first authorship	23
No. of articles with my correspondence	20
Total No. of Published Articles in JCR Q1	29
Total No. of Published Articles in JCR Q2	15
Total No. of Published Articles in JCR Q3	06
Total No. of Published Articles in JCR Q4	04
Total No. of Published Articles not in JCR	06

1. (2025). Amir Abbas, Laraib Kiran, Kaouther Ghachem, Tarek Salem Abdennaji, Badr M. Alshammari, Lioua Kolsi, Ilyas Khan & M. S. Khan. Effects of variable heat rise/fall on MHD Maxwell ternary nanofluid (Copper-Alumina-Titanium Dioxide/ Water) flow over a moving needle. **15:19194. Scientific Reports.** 15:25209. <https://doi.org/10.1038/s41598-025-10057-3>. **JCR (SCIE, Q1, I.F = 3.9)**
2. (2025). Muhammad Junaid, Amir Abbas, Computational Study of Unsteady Stagnation Point Heat and Mass Transfer along the Stretching/Shrinking Sheet with the Effect of Inclined Magnetic Field. **Annals and Applied Science and Technology.**
3. (2025). Zia Ullah, Amir Abbas, Uzma Tariq, Malik Izhar Ul Haq, Alishba Kaynat, Anila Bibi, Tehreem Soha, M Waheed Iqbal, Muhammad Ashraf. Gravity modulation analysis of heat transfer and magnetic boundary layer of MHD fluid along vertical plate with variable viscosity and porous medium effects. **Computational Environmental Heat Transfer. 1(02), 51-64.**
4. Walid Aich, Abid Hussanan, Amir Abbas, FizzaAnwar, A.M.Obalalu, Rejab Hajlaoui, AlaaChabir, Mohamed Mahdi Boudabous, LiouaKolsi. Inclined magnetic field and chemical reaction effects on maxwell h ybrid nanofluid flow in a non-darcy porous medium. **ZAMM - Journal of Applied Mathematics and Mechanics.** 2025;105:e70172. **(Impact Factor 2.3)** DOI: 10.1002/zamm.70172. **JCR (SCIE, Q1, I.F = 3.2)**
5. (2025). Aziz Khan, Amir Abbas, Khaled Naseralla, Thabet Abdeljawad, Nidhal Becheikh, , Lioua Kolsi. Manara A. Alqudah, Theoretical analysis of mhd darcyforchheimer porous media for hybrid nanomaterial flow with third-grade fluid over an exponential stretching sheet. **FRACTALS-COMPLEX GEOMETRY PATTERNS AND SCALING IN NATURE AND SOCIETY.** DOI: 10.1142/S0218348X25402406. **JCR (SCIE, Q1, I.F = 2.9)**

6. (2025). Rejab Hajlaoui, **Amir Abbas***, Fizza Anwar, Mohamed Mahdi Boudabous, Alaa Chabir, Walid Hassen, Lioua Kolsi. Magnetohydrodynamic Maxwell hybrid nanofluid flow and heat transfer over a moving needle in porous media. **15:19194. *Scientific Reports*. <https://doi.org/10.1038/s41598-025-04071-8>. JCR (SCIE, Q1, I.F = 3.9)**
7. (2025). **Amir Abbas**, Qurat-ul-Ain, Asifa Ilyas, Laraib Kiran, Mdi Begum Jeelani. Soret and Dufour Effects in Computational Analysis of Assisting and Opposing Stagnation Point Flow of Viscoelastic Fluid. *Computational Environmental Heat Transfer*. Vol. 1, Issue No. 1, 2025. <http://dx.doi.org/10.62762/CEHT.2025.786259>. JCR (N/A)
8. (2025). Mdi Begum Jeelani, **Amir Abbas***. Energy transport in MHD Maxwell hybrid nanofluid flow over inclined stretching porous sheet with effects of chemical reaction, solar radiation and porous medium. *Case Studies in Thermal Engineering*, 68,10591. <https://doi.org/10.1016/j.csite.2025.105915>. JCR (SCIE, Q1, I.F = 6.4)
9. (2025). Saleh Chebaane, Taoufik Saidani, E.O. Fatunmbi, A.M. Obalalu, Mohamed Bouzidi, Turki Alkathiri, Taoufik Saidani, **Amir Abbas**. Heat transfer and rheological analysis of a converging-diverging artery using the Prandtl viscoelastic model with chemical reactions. *Thermal Science and Engineering Progress*, 60 (2025), 103460. <https://doi.org/10.1016/j.tsep.2025.103460>. JCR (SCIE, Q1, I.F = 5.4)
10. (2025). Walid Aich, **Amir Abbas**, Adebowale Martins Obalalu, Walid Hassen, Lotfi Ben Said, Rejab Hajlaoui, Lioua Kolsi. Double Diffusive MHD Stagnation Point Flow of Second Grade Fluid in Non-Darcy Porous Media under Radiation Effects. *Scientific Reports*. **15: 395** <https://doi.org/10.1038/s41598-024-84562-2>. JCR (SCIE, Q1, I.F = 3.9)
11. (2025). A.M. Obalalu, E.O. Fatunmbi, Md Mahbub Alamc, **Amir Abbas**, Umair Khan, Abibat Adekoya-Olowofela, El-Sayed M. Sherif, Yalcin Yilmaz. Influence of thermal radiation and electromagnetic characteristics of micropolar ternary hybrid nanofluid flow over a slender surface. *Journal of Radiation Research and Applied Sciences*. **18(1): 101268. JCR (SCIE, Q2, I.F = 2.5)**
12. (2025). Javaria Farooq, **Amir Abbas**, Badr M Alshammari, Ahmed Mir, and Lioua Kolsi. Analysis of MHD slip blood flow through a constricted artery filled with a porous medium of variable permeability: Applications in Biomedical Engineering. *Alexandria Engineering Journal*. Vol. 114, pp:426–439 <https://doi.org/10.1016/j.aej.2024.11.093>. JCR (SCIE, Q1, I.F = 6.8)
13. (2024). **Amir Abbas***, Hussanan, A., Anwar, F., Obalalu, A. M., Almeshaal, M. A., Palaniappan, M., ... & Aslam, M. (2024). Thermal analysis of AA7075-AA7072/methanol via Williamson hybrid nanofluid model past thin needle: Effects of Lorentz force and irregular heat rise/fall. *Case Studies in Thermal Engineering*, 53, 103883. <https://doi.org/10.1016/j.csite.2023.103883>. JCR (SCIE, Q1, I.F = 6.4)
14. (2024). Saleh Chebaane, A.M. Obalalu, **Amir Abbas***, Fizza Anwar, Adnan, Mouloud Aoudia, Badr M. Alshammari, Mohamed Bouzidi, Lioua Kolsi. EMHD Flow and Heat Transport in Cross Ternary Nanofluid with Gyrotactic Microorganisms: A Case Study on Thermophoretic Particle Deposition. *Case Studies in Thermal Engineering*. Vol. 64, pp 105531. <https://doi.org/10.1016/j.csite.2024.105531>. JCR (SCIE, Q1, I.F = 6.4)
15. (2024). Umbreen Ayub, Madiha Shafiq, **Amir Abbas**, Umair Khan, Anuar Ishak, Y. S. Hamed, and Homan Emadifar. The g-generalized Mittag-Leffler (p,s, k)-Function. *Alexandria Engineering Journal*. Vol. 113: pp: 565–572. JCR (SCIE, Q1, I.F = 6.8)
16. (2024). A. M. Obalalu, Mohit Bajaj, S. O. Salalwu, Arvind R. Singh, Pradeep Vishnuram, **Amir Abbas** & A. D. Adeshola . Optimizing solar water pumps for irrigation: the impact of aluminum–titanium hybrid nanofluid on thermal efficiency and performance. *Multiscale and Multidisciplinary Modeling, Experiments and Design*, Vol. 53, Issue No. 08, pp 1-20. <https://doi.org/10.1007/s41939-024-00592-3>. JCR (ESCI, Q2, I.F = 2.0)
17. (2024). Adebowale M. Obalalu, Adil Darvesh, **Amir Abbas**, Aboulbaba Eladeb, Rajab Alsayegh Wajdi Rajhi, Lioua Kolsi. Improving solar HVAC performance by incorporating sutterby SiO₂–Cu/C₃H₈O₂ hybrid nanofluid flow via a collocation based Gegenbauer wavelets technique: Effects of electromagnetic control and Smoluchowski's temperature slippage, <https://doi.org/10.1002/zamm.202400473> *ZAMM-Journal of Applied Mathematics and Mechanics*. JCR (SCIE, Q1, I.F = 3.2)

18. (2024). Obalalu, A. M., Avikal, S., Bajaj, M., & **Abbas, A.** Thermal Case Study of Solar-Powered Tractors Using Tetra Hybrid Nanofluid Flow Over Penetrable Expanding Surfaces Experiencing Non-Newtonianism Fluid for Thermal Technology Advancement. In *E3S Web of Conferences* (Vol. 564, p. 05001). EDP Sciences. **International Conference on Power Generation for Renewable Energy Sources**. E3S Web of Conferences. <https://doi.org/10.1051/e3sconf/2024564050>. **JCR (N/A)**
19. (2024) Ali, L., Apsari, R., **Abbas, A.**, & Tak, P. Entropy generation on the dynamics of volume fraction of nano-particles and coriolis force impacts on mixed convective nanofluid flow with significant magnetic effect. *Numerical Heat Transfer, Part A: Applications*, 1-16. **JCR (SCIE, Q2, I.F = 3.5)**
20. (2024). O.A. Ajala P. Adegbite A.M., Obalalu, **Amir Abbas**, A.O. Owolabi, O.B. Ojewola. Bio-Convective Flow of Micropolar Nanofluids over an Inclined Permeable Stretching Surface with Radiative Activation Energy. *Journal of Biomimetics, Biomaterials and Biomedical Engineering*. Vol. 65, pp 1-13. **JCR (ESCI, Q4, I.F = 0.5)**
21. (2024). **Amir Abbas***, Hussanan, A., Obalalu, A. M., Kriaa, K., Maatki, C., Hadrich, B., ... & Kolsi, L. (2024). Effect of non-uniform heat rise/fall and porosity on MHD Williamson hybrid nanofluid flow over incessantly moving thin needle. *Heliyon*, 10(1), e23588. <https://doi.org/10.1016/j.heliyon.2023.e23588>. **JCR (SCIE, Q1, I.F = 3.6)**
22. (2024). **Amir Abbas***, Hussanan, A., Ullah, Z., R. El-Zahar, E., & Seddek, L. F. (2024). Heat and mass transfer in magnetohydrodynamic boundary layer flow of second-grade nanofluid fluid past inclined stretching permeable surface implanted in a porous medium. *International Journal of Modelling and Simulation*, 1-15. <https://doi.org/10.1080/02286203.2024.2330993>. **JCR (ESCI, Q1, I.F = 3.9)**
23. (2024). Mdi Begum Jeelani, **Amir Abbas***, Nouf Abdulrahman Alqahtani. Thermal Transportation in Heat Generating and Chemically Reacting MHD Maxwell Hybrid Nanofluid Flow past Inclined Stretching Porous Sheet in Porous Medium with Solar Radiation Effects. *Processes*, 12,1196. <https://doi.org/10.3390/pr12061196>. **JCR (SCIE, Q3, I.F = 2.8)**
24. (2024). Lioua Kolsi, Atef El Jery, Abdelhalim Ebaid, **Amir Abbas**, Nidhal Becheikh, Javaria Farooq, A.M. Obalalu, Kaouther Ghachem, Muhammad Aslam. Analysis of MHD Third-Grade Hybrid Nanofluid in Darcy-Forchheimer Porous Medium: Thermal Performance of $Al_2O_3 - Cu$ Cylindrical Nanoparticles dispersed in Ethylene Glycol Fluid. *Case Studies in Thermal Engineering*. 60 (2024) 104688. **JCR (SCIE, Q1, I.F = 6.4)**
25. (2024). Hossam A Nabwey, Muhammad Ashraf, Anwar Khan, **Amir Abbas**, A M Rashad, Zeinab M Abdelrahman, Ehssan Ahmed Hassan, Mohamed M Awad. Numerical investigation of the impact of temperature-dependent thermal conductivity and viscosity on thermo-particle heat transfer through stationary sphere and using plume. Jun 7;19(6):e0303981. doi: 10.1371/journal.pone.0303981. eCollection 2024. *PLOS ONE*. **JCR (SCIE, Q2, I.F = 2.6)**
26. (2024). Hatem Gasmi, A.M. Obalalu, A.O. Akindele, S.A. Salaudeen, Umair Khan, Anuar Ishak, **Amir Abbas**, Taseer Muhammad, Syed Modassir Hussain, Ahmed M. Abed. Thermal performance of a motile-microorganism within the two-phase nanofluid flow for the distinct non-Newtonian models on static and moving surfaces. *Case Studies in Thermal Engineering*. 58 (2024) 104392. <https://doi.org/10.1016/j.csite.2024.104392>. **JCR (SCIE, Q1, I.F = 6.4)**
27. (2024). Nutakki, T. U. K., Kolsi, L., Eladeb, A., **Abbas, A.**, Ahmed, M. A., Ayadi, M., ... & Bai, W. (2024). Simulation and comprehensive 4E study of a high-efficient CCHP arrangement utilizing geothermal energy and eco-friendly heat recovery. *Geothermics*, 118, 102916 <https://doi.org/10.1016/j.geothermics.2024.102916>. **JCR (SCIE, Q1, I.F = 3.9)**
28. (2024). Faisal, S., **Abbas, A.**, Eladeb, A., Agrawal, M. K., Muhammad, T., Ayadi, M., ... & Mustafa, A. (2024). Innovative modification process of a natural gas power plant using self-sufficient waste heat recovery and flue gas utilization for a CCHP-methanol generation application: A comprehensive multi-variable feasibility study. *Process Safety and Environmental Protection*, 183, 801-820. <https://doi.org/10.1016/j.psep.2024.01.022>. **JCR (SCIE, Q1, I.F = 7.9)**

29. (2024). Ayub, U., Mubeen, S., **Abbas, A.**, Khan, A., & Abdeljawad, T. (2024). Some transforms, Riemann–Liouville fractional operators, and applications of newly extended M–L (p, s, k) function. *Open Physics*, 22(1), 20240005. <https://doi.org/10.1515/phys-2024-0005>. **JCR (SCIE, Q2, I.F = 1.8)**
30. (2023). **Amir Abbas***, Shahid, M. A., Ilyas, A., & Jeelani, M. B. Effect of Inclined Magnetic Field and Thermal Radiation on Williamson Nanofluid Flow and Heat Transfer Along the Stretching/Shrinking Wedge. *Journal of Nanofluids*, 12(8), 2237-2244. doi:10.1166/jon.2023.2088. **JCR (ESCI, Q4, I.F = 2.2)**
31. (2023). **Amir Abbas***, Aziz Khan, Thabet Abdeljawad, and Muhammad Aslam. Numerical simulation of variable density and magnetohydrodynamics effects on heat generating and dissipating Williamson Sakiadis flow in a porous space: Impact of solar radiation and Joule heating. *Heliyon*. <https://doi.org/10.1016/j.heliyon.2023.e21726>. Volume 9 pp. e21726 **JCR (SCIE, Q1, I.F = 3.6)**
32. (2023). Mdi Begum Begum Jeelani, **Amir Abbas***. Al2O3 – Cu\Ethylene Glycol-Based Magnetohydrodynamic Non-Newtonian Maxwell Hybrid Nanofluid Flow with Suction Effects in a Porous Space: Energy Saving by Solar Radiation. *Symmetry-Basel*. Volume 15, Issue No. 9, pp. 1794. <https://doi.org/10.3390/sym15091794>. **JCR (SCIE, Q2, I.F = 2.2)**
33. (2023). Mdi Begum Begum Jeelani, **Amir Abbas***. Thermal Efficiency of Spherical Nanoparticles Al2O3-Cu Dispersion in Ethylene Glycol via the MHD Non-Newtonian Maxwell Fluid Model Past the Stretching Inclined Sheet with Suction Effects in a Porous Space. *Processes*. Volume 11, Issue No. 10, pp. 2824. <https://doi.org/10.3390/pr11102842>. **JCR (SCIE, Q3, I.F = 2.8)**
34. (2023). A.M. Obalalu, M.Asif Memon, S. Saleem, **A. Abbas**, O.A. Olayemi , MohamedR. Ali, R. Sadat, A.S. Hendy. Thermal performance of Oldroyd-B hybrid nanofluid in solar energy-based water pumping systems and entropy generation minimization. *Case Studies in Thermal Engineering*. Volume 51, pp. 103476. <https://doi.org/10.1016/j.csite.2023.103476>. **JCR (SCIE, Q1, I.F = 6.4)**
35. (2023). Obalalu, A. M., Oreyeni, T., **Abbas, A.**, Memon, M. A., Khan, U., Sherif, E. S. M., ... & Pop, I. Implication of electromagnetohydrodynamic and heat transfer analysis in nanomaterial flow over a stretched surface: Applications in solar energy. *Case Studies in Thermal Engineering*, Volume 49, pp. 381. <https://doi.org/10.1016/j.csite.2023.103476>. **JCR (SCIE, Q1, I.F = 6.4)**
36. (2023). Zia Ullah, Essam R.. El-Zahar, Laila F. Seddek. **Amir Abbas**. Significance of thermal density and viscous dissipation on heat and mass transfer of chemically reactive nanofluid flow along stretching sheet under magnetic field. *Results in Engineering*. Volume 20, pp. 101413. <https://doi.org/10.1016/j.rineng.2023.101413>. **JCR (SCIE, Q1, I.F = 7.9)**
37. (2023). **Amir Abbas**, Muhammad Ashraf, Hafeez Ahmad, Zia Ullah, Abid Hussanan, Kaouther Ghachem, Taher Labidi, Lioua Klosi. Computational Analysis of Darcy-Forchheimer Relation, Reduced Gravity, and External Applied Magnetic Field Influence on Radiative Fluid Flow and Heat Transfer past a Sphere: Finite Difference Method. *Heliyon*. <https://doi.org/10.1016/j.heliyon.2023.e15696>. **JCR (SCIE, Q1, I.F = 3.6)**
38. (2023). **Amir Abbas***, Ioannis E. Sarris, Muhammad Ashraf, Kaouther Ghachem, Nidhal Hnaien, and Badr M, Alshammari. The Effect of Reduced Gravity and Radiative Heat Transfer on the Magnetohydrodynamic Flow Past a Non-Rotating Stationary Sphere Surrounded by a Porous Medium. *Symmetry-Basel*, Volume 15, Issue No. 3, pp. 806. <https://doi.org/10.3390/sym15040806>. **JCR (SCIE, Q2, I.F = 2.2)**
39. (2023). **Amir Abbas**, Muhammad Ashraf, Ioannis E. Sarris, Kaouther Ghachem, Taher Labidi, Lioua Klosi. Numerical Simulation of the effects of Reduced Gravity, Radiation and Magnetic field on Heat Transfer past a Solid Sphere using Finite Difference Method: *Symmetry-Basel*, Volume 15, Issue No. 3, pp. 772. <https://doi.org/10.3390/sym15030772>. **JCR (SCIE, Q2, I.F = 2.2)**
40. (2023). **Amir Abbas**, Abderrahim Wakif, Maria Shafique, Hafeez Ahmad, Qurat ul ain, Taseer Muhammad. Thermal and Mass Aspects of Maxwell Fluid Flows over a Moving Inclined Surface via Generalized Fourier’s and Ficks’ Laws. *Waves in Random and Complex Media*. <https://doi.org/10.1080/17455030.2023.2198612>. **JCR (N/A)**.

41. **Amir Abbas**, Radhika Khandelwal, Hafeez Ahmad, Asifa Ilyas, Liaqat Ali, Kaouther Ghachem, Walid Hassen, Lioua Kolsi. Magnetohydrodynamic Bioconvective Flow of Williamson Nanofluid over a Moving Inclined Plate Embedded in a Porous Medium. *Mathematics*. Volume 11, Issue 4, pp. 1043. <https://doi.org/10.3390/math11041043>. **JCR (SCIE, Q1, I.F = 2.2)**
42. (2023). Muhammad Ashraf, Anwar Khan, **Amir Abbas**, Abid Hussanan, Kaouther Ghachem, Chemseddine Maatki, Lioua Kolsi. Finite difference method to evaluate Characteristics of Optically Dense Gray Nanofluid Heat Transfer around the Surface of a Sphere and in the Plume Region. *Mathematics*, Volume 11, Issue No. 4, pp. 908. <https://doi.org/10.3390/math11040908>. **JCR (SCIE, Q1, I.F = 2.2)**
43. (2023). A.M. Obalalu, M.O. Oni, Umair Khan, **Amir Abbas**, Taseer Muhammad, Aurang Zaib. Two-Phase Numerical Simulation for the Heat and Mass Transfer Evaluation Across a Vertical Deformable Sheet with Significant Impact of Solar Radiation and Heat Source/Sink. *Arabian Journal for Science and Engineering*. <https://doi.org/10.1007/s13369-023-08585-z>. **JCR (SCIE, Q2, I.F = 2.9)**
44. (2023). Muhammad Khalid Hussain, N.R. Khalid, Muhammad Tanveer, **Amir Abbas**, Furqan Ali, Ward a Hassan f, Martha Rianna, Sultan a Rahman, Muhammad Hamza, Muhammad Aslam. Facile fabrication of Z -scheme ZnO/Mo O 3 heterojunction as an excellent visible-light responsive photocatalyst for the degradation of rhodamine B and alizarin yellow dyes. *Optical Materials* Volume: 148, PP. 114794 <https://doi.org/10.1016/j.optmat.2023.114794> **JCR (SCIE, Q2, I.F = 3.1)**
45. (2022). **Amir Abbas**, Asma Noreen, Masood Ashraf Ali, Muhammad Ashraf, Eman Alzahrani, Riadh Marzouki, M. Goodarzi. Solar radiation over a roof in the presence of temperature-dependent thermal conductivity of a Casson flow for energy saving in buildings. *Sustainable Energy Technologies and Assessments*, Volume 75, Part B, pp. 102606. <https://doi.org/10.1016/j.seta.2022.102606>. **JCR (SCIE, Q2, I.F = 7.0)**
46. (2022). **Amir Abbas***, Mdi Begum Jeelani, Abeer S Alnahdi^{b,*}, Asifa Ilyas. MHD Williamson Nanofluid Fluid Flow and Heat Transfer Past a Non-linear Stretching Sheet Implanted in a Porous Medium: Effects of Heat Generation and Viscous Dissipation. *Processes*. Volume 10, Issue No. 6, pp. 1221. <https://doi.org/10.3390/pr10061221>. **JCR (SCIE, Q3, I.F = 2.8)**
47. (2022). **Amir Abbas***, Mdi Begum Jeelani, Nadiyah Hussain Alharthi. Magnetohydrodynamic Effects on Third-Grade Fluid Flow and Heat Transfer with Darcy-Forchheimer Law over an Inclined Exponentially Stretching Sheet Embedded in a Porous Medium. *Magnetochemistry*, Volume 08, Issue No. 6, pp. 61. <https://doi.org/10.3390/magnetochemistry8060061>. **JCR (SCIE, Q2, I.F = 2.5)**
48. (2022). Muhammad Ashraf, Asifa Ilyas, Zia Ullah, and . Periodic Magnetohydrodynamic Mixed Convection Flow along a Cone Embedded in a Porous Medium with Variable Surface Temperature. *Annals of Nuclear Energy*. Volume 175, Issue No. 2022, pp. 109218. <https://doi.org/10.1016/j.anucene.2022.109218>. **JCR (SCIE, Q1, I.F = 2.3)**
49. (2022). **Amir Abbas***, Mdi Begum Jeelani, Nadiyah Hussain Alharthi. Darcy Forchheimer Relation Influence on MHD Dissipative Third-Grade Fluid Flow and Heat Transfer in Porous Medium with Joule Heating Effects: A Numerical Approach. *Processes*, Volume 10, Issue No. 5, pp. 906. <https://doi.org/10.3390/pr10050906>. **JCR (SCIE, Q3, I.F = 2.8)**
50. (2022). **Amir Abbas***, Hafeez Ahmad, Memoona Mumtaz, Asifa Ilyas, Muhammad Hussan. MHD Dissipative Micropolar Fluid Flow Past Stretching Sheet with Heat Generation and Slip Effects. *Waves in Random and Complex Media*. <https://doi.org/10.1080/17455030.2022.2075957>. **JCR (N/A)**
51. (2022). **Amir Abbas***, Ramsha Shafqat, Mdi Begum Jeelani, and Nadiyah Hussain Alharthi. Convective Heat and Mass Transfer in Third-Grade Fluid with Darcy-Forchheimer Relation in the Presence of Thermal-Diffusion and Diffusion-Thermo Effects over an Exponentially Inclined Stretching Sheet Surrounded by a Porous Medium. A CFD Study. *Processes*, Volume 10, Issue No. 4, pp. 776. <https://doi.org/10.3390/pr10040776>. **JCR (SCIE, Q3, I.F = 2.8)**
52. (2022). **Amir Abbas***, Ramsha Shafqat, Mdi Begum Jeelani, and Nadiyah Hussain Alharthi. Significance of Chemical Reaction and Lorentz Force on Third-Grade Fluid Flow and Heat

- Transfer with Darcy-Forchheimer Law over an Inclined Exponentially Stretching Sheet Embedded in a Porous Medium. *Symmetry*, Vol. 14, Issue No. 4, pp-779. <https://doi.org/10.3390/sym14040779>. JCR (SCIE, Q2, I.F = 2.2)
53. (2021). Amir Abbas*, Iqra Ijaz, Muhammad Ashraf, Hafeez Ahmad. Combined Effects of Variable Density and Thermal Radiation on MHD Sakiadis Flow. *Case Studies in Thermal Engineering*, Vol. 28, (2021) 101640. <https://doi.org/10.3390/sym14040779>. JCR (SCIE, Q1, I.F = 6.4)
 54. (2021). Muhammad Ashraf, Amir Abbas, A., Hakan F Oztop, Kottakkaran, Sopyy Nisar, and Ilyas Khan. Computation of mixed convection slips flow around the surface of a sphere: Effects of thermophoretic transportation and viscous dissipation. *Heat Transfer*, Volume 50, Issue No. 7, pp. 7349-7362. <https://doi.org/10.1002/htj.22232>. JCR (SCIE, Q2, I.F = 2.6)
 55. (2021). Uzma Ahmed, U., Muhammad Ashraf, Amir Abbas, A. Rashid, and H. Nabway. Mixed convection flow along a curved surface in the presence of exothermic catalytic chemical reaction. *Scientific Reports*, Vol. 11, Issue No. 1, pp. 1-10. <https://doi.org/10.1038/s41598-021-92409-3>. JCR (SCIE, Q1, I.F = 3.9)
 56. (2021). Amir Abbas*, Muhammad Ashraf and Ali. Jawad Chamkha. Combined effects of thermal radiation and thermophoretic motion on mixed convection boundary layer flow. *Alexandria Engineering Journal*, Vol. 60, Issue No. 03, pp. 3243-3252. <https://doi.org/10.1016/j.aej.2021.01.038>. JCR (SCIE, Q1, I.F = 6.8)
 57. (2020). Muhammad Ashraf, Amir Abbas, Saqib Zia, Ilyas Khan, Yu-Ming Chu, K. S. Nisar, Computational analysis of the effect of nano particle material motion on mixed convection flow in the Presence of heat generation and absorption. *CMC-Computers, Materials and Continua*, Vol. 65, Issue No. 2, pp. 1809-1823. doi:10.32604/cmc.2020.011404. JCR (SCIE, Q3, I.F = 1.7)
 58. (2020). Muhammad Ashraf, Amir Abbas, Amir Ali, Zahir Shah, Hussam Alrabiah, Ebenezer Bonyah, Numerical Simulation of the Combined Effects of Thermophoretic Motion and Variable Thermal Conductivity on Free Convection Heat Transfer, *AIP Advances*, Vol. 10, Issue No. 8, pp. 085005-1-085005-8 (2020). <https://doi.org/10.1063/5.0018674>. JCR (SCIE, Q4, I.F = 1.4)
 59. (2020). Amir Abbas, Muhammad Ashraf, Yu-Ming Chu, Saqib Zia, Ilyas Khan and K. S. Nisar, Computational Study of the Coupled Mechanism of Thermophoretic Transportation and Mixed Convection Flow around the Surface of a Sphere. *Molecules*, Vol. 25, Issue No. 11, pp. 2694. <https://doi.org/10.3390/molecules25112694>. JCR (SCIE, Q2, I.F = 4.6)
 60. (2020). Amir Abbas and Muhammad Ashraf. Combined effects of variable viscosity and thermophoretic transportation on mixed convection flow around the surface of a sphere. *Thermal Sciences*, Vol. 24, Issue No. 6B, pp. 4089-4101. <https://doi.org/10.2298/TSCI190518137A>. JCR (SCIE, Q4, I.F = 1.1)

Publications in Progress (2025)

1. (2025). Walid Aich, Abid Hussanan, Amir Abbas, Fizza Anwar, M. Obalalu, Rejab Hajlaoui, Alaa Choubir, Mohamed Mahdi Boudabous, Lioua Kolsi. Inclined Magnetic Field and Chemical Reaction Effects on Maxwell Hybrid Nanofluid Flow in a Non-Darcy Porous Medium. *ZAMM- Journal of Applied Mathematics and Mechanics*. (Impact Factor 2.3). (Accepted).
2. (2025). Amir Abbas, Maria Gulzar, Aboulbaba Eladeb, Kaouther Ghachem, Lioua Kolsi, Mdi Begum Jeelani, Naveed Ahmad, Farooq Ahmad. Maximizing Energy Output in Solar Systems via MHD-Driven Maxwell Ternary Nanofluid Flow and Entropy Analysis over an Inclined Surface. *Scientific Reports*. (Impact Factor 6.8). (Submitted).
3. (2025). Leila Manai, Amir Abbas, Nermeen Abdullah^c, Aboulbaba Eladeb, Lioua Kolsi, Mdi Begum Jeelani, Ilyas Khan, M.S. Khan. Enhanced Solar Energy Harvesting via Heat-Generating MHD-Driven Maxwell Ternary Nanofluid Flow and Entropy Control on Inclined Sheet. *Scientific Reports*. (Impact Factor 6.8). (Submitted).

4. (2025). Walid Aich, **Amir Abbas**, Muhammad Farman, Badr M. Alshammari, Rejab Hajlaoui, Mohamed Turki, Lioua Kolsi. Numerical and Artificial Neural Network Analysis of Microrotational Nanofluid Flow with Thermal Radiation and Soret Effects. **Scientific Reports. (Impact Factor 6.8). (Submitted).**
5. (2025). Walid Aich, **Amir Abbas**, Muhammad Farman, Badreddine Ayadi, Wajdi Rajhi, Lioua Kolsi. Artificial Neural Network approach for numerical Simulations of hybrid and ternary hybrid nanofluid flow through a porous medium. **Scientific Reports. (Impact Factor 6.8). (Submitted).**
6. (2025). **Amir Abbas**, Kaouther Ghachem, Aboulbaba Eladeb, Chemseddine Maatki, Walid Hassen, Mdi Begum Jeelani, Lioua Kolsi. Hybrid Nanofluid Heat Transfer over a Moving Needle using Artificial Neural Networks with Applications in Energy and Biomedical Cooling. **Scientific Reports. (Impact Factor 6.8). (Submitted).**
7. (2025). **Amir Abbas**; Shamaila Yousaf; Attyia Ilyas, Muhammad Ashraf; Kaouther Ghachem; Aboulbaba Eladeb; Chemseddine Maatki; Lioua Kolsi. Thermal Effects of Non-uniform Heat Source and Sink on Magnetohydrodynamic Ternary Nanofluid Flow on Thin Needle in Porous Media. **Case Studies in Thermal Engineering (Impact Factor 6.4). (Submitted).**
8. (2025). **Amir Abbas**, Shamaila Yousaf, Muhammad Abdullah Shahid, Attyia Ilyas, Kaouther Ghachem, Aboulbaba Eladeb, Lioua Kolsi. Combined Effects of Chemical Reaction and Lorentz Force on Williamson Nanofluid Flow and Heat Transfer along the Stretching/Shrinking Wedge under Solar Radiation Impact. **Mathematics. (Impact Factor 2.4). (Submitted).**
9. **Amir Abbas**, Asifa Ilyas, Shumaila Yousaf. Combined effects of linear Chemical reaction and magnetohydrodynamics heat and mass transfer in second-grade nano fluid over an inclined permeable stretching surface embedded in a porous medium. **(Submitted).**
10. **Amir Abbas**, Farida Safdar, Shumaila Yousaf, Sumaira Shaheen, Alia Akram. Radiative Heat Transfer and Mass Transfer Analysis in Casson Fluid Flow over an Unsteady Permeable Stretching Sheet Embedded in a Porous Medium. **(Submitted).**
11. **Amir Abbas**, Aamir Shahzad, Hassan Raza, Tasadduq Niaz. Computational Study of MHD Ternary Hybrid Maxwell Fluid Flow and Heat Transfer over Linearly Stretching Sheet embedded in a Porous Medium. **(Submitted).**

Key Trainings, Seminars, Workshops, Symposia, and Conferences

More than two training workshops (Including hands-on) have been attended/organized.

More than five conferences have been attended, presented, or organized.

- Organized as Focal Person, Two-day National Conference “1st National Conference on Mathematics: Quality Education for Sustainability”, May 15-16, 2025, at Baba Guru Nanak University
- Organized as a member of the organizing committee, 1st International Conference on Applied Sciences and Technology (ICAST-2024), convened under the theme "Cross-Disciplinary Approaches in Research and Innovation for Sustainability. October 24-25, 2024, at Baba Guru Nanak University
- Organized as Focal Person, 1st symposium on “Mathematics is a language of the universe: Exploring its Power and Beauty”. August 19, 2024, at Baba Guru Nanak University
- Participated in HEC National Outreach Program for Higher Education Teaching. May 03 to June 03, 2025.
- Presented as an Invited Speaker at the 2nd International Conference on Advances in Energy and Environment for Sustainable Development, AEESD 2025. India
- Presented as an Invited Speaker at the 3rd International Conference on Advances in Mathematics, University of Education, April 16-17, 2025.
- Organized as Focal Person a One-Day Seminar on “**Mysteries Within Mathematics**”

organized by Baba Guru Nanak Mathematical Society, Department of Mathematics, Baba Guru Nanak University on April 10, 2025.

- Presented as an Invited Speaker at the three-day 5th International Conference on Mathematical Empowerment and Future Trend, November 20-22, 2025, organized Jointly by Government College University, Faisalabad, and Government College University for Women, Faisalabad.
- Presented as an Invited Speaker at the “Internal Symposium on Emerging Trends in Computational Fluid Mechanics organized by the University of Management and Technology, Lahore, on 6 December 2025.

Guest Editor

Journal Name: Frontiers in Materials

Impact Factor: 3.2, **Cite Score:** 4.7

Special Issue Topic: Advancement in Carbon Nanotubes and Electromagnetic Materials for Enhanced Solar Energy Harvesting

Associate Editor (Academic Editor)

Journal Name: Computational Environmental Heat Transfer

Reviewer of the Journals

- **Elsevier Publishing Group:** Applied Thermal Engineering, Case studies in Thermal Engineering, Alexandria Engineering Journal, Heliyon, Research, Propulsion and Power Research
- **American Institute of Physics Publishing Group:** Physics of Fluids
- **Taylor & Francis Publishing Group:** Waves in Random and Complex Media, International Journal of Ambient Energy, International Journal of Modeling and Simulation, Numerical Heat Transfer, Part B: Fundamentals, Numerical Heat Transfer, Part A: Numerical Heat Transfer, Part A: Applications
- **Nature Publishing Group:** Scientific Reports
- **Multidisciplinary Digital Publishing Institute (MDPI):** Materials, Processes, Sustainability, Atmosphere, Water, Applied sciences
- **Strategic Advisory Group of Experts on Immunization (SAGE) Publishing Group:** Journal of Process Mechanical Engineering, Part E: Journal of Process Mechanical Engineering,
- **Emerald Publishing Group:** World Journal of Engineering,
- **De Gruyter Publishing Group:** Nanotechnology Review
- **World Scientific Publishing Group:** International Journal of Modern Physics B
- **Public Library of Science (PLOS) Publisher Publishing Group:** PLOS ONE

- **Wiley & Sons Publishing Group:** Heat Transfer.

Programming Skills and Tools

MATLAB, FORTRAN, Mathematica, C++, and Latex, Operating system (Microsoft Window 7, 8, and 10), Microsoft Office, Microsoft Excel, Internet Surfing, Microsoft PowerPoint, Document Preparation and Word Processing.

Funded Research Group Projects

1. Research Project titled with “**Numerical Study of Heat and Mass Transfer in Third-Grade Fluid with Darcy-Forchheimer Relation over a Inclined Exponentially Stretching Sheet**” funded by Imam Mohammad Ibn Saud Islamic University, KSA, with a grant number [RG-21-09-13] is completed. 16000USD
2. Research group Project funded by Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia, KSA, with grant number (PNURSP2023R41) is completed
3. The Research Project titled “Enhancement in Energy Transfer through the Dispersion of Nanoparticles and Energy Saving by the Inclusion of Solar Radiation in MHD Non-Newtonian Liquids “funded by the Deputyship for Research & Innovation, Ministry of Education in Saudi Arabia and Imam Mohammad Ibn Saud Islamic University, KSA for approval with grant number (IFP-IMSIU-2023116.) is partially completed. 6000USD
4. The research group Project funded by the Deanship of Scientific Research at Imam Mohammad Ibn Saud Islamic University (IMSIU), KSA (grant number IMSIU-RG23057) is partially completed.
5. Research group Project funded by the Deanship of Scientific Research at Imam Mohammad Ibn Saud Islamic University (IMSIU), KSA (grant number IMSIU-RG23099 completed.
6. Research group Project funded by the Deanship of Scientific Research at Imam Mohammad Ibn Saud Islamic University, KSA (IMSIU) (grant number IMSIU-RG23136)
7. A research group Project funded by the Ministry of Science and Higher Education of the Russian Federation for support (Ural Federal University Program of Development Russia, within the Priority-2030 Program, project. 4.38) is in progress.
8. A research group Project the Deanship of Scientific Research at Northern Border University, Arar, KSA for funding this research work through the project number “NBU-FFR-2023-XXXX is in progress.
9. A research project with title “**Modelling and Simulation of Hybrid Nanofluids for Renewable Energy Systems**” is submitted in Research, Development and Innovation Authority (RDIA), KSA, for approval.
10. A research project with title “**Improvement of Thermal Performance of Renewable Energy Sources Systems by Dispersing Hybrid Nanoparticles in Non-Newtonian Fluids**” is accepted in Northern Border University, Arar, KSA and is in progress for completion. 266,600USD.

PhD Scholars Supervision (2025-to date)

1. Scholar name: **Mr. Muhammad Abdullah Shahid**
Registration No. 23016109-002
2. Scholar name: **Ms. Attyia Ilyas**
Registration No. 23016109-005

M. Phil Students Supervision (2017-2025)

1. Student name: **Hafiz Mudasir Aziz**
Registration No. PMAT07153056
Thesis Title: Numerical study of radiative mixed convection over a vertical plate with uniform surface temperature.
2. Student name: **Iqra Mubeen**
Registration No. PMAT07163025
Thesis Title: The analysis of radiative MHD stagnation point flow of nano-fluid over a stretching surface.
3. Student name: **Hafiz Atif Islam**
Registration No. PMAT07163016
Thesis Title: Computational analysis of boundary layer flow by using shooting method.
4. Student name: **Saeed Ahmad**
Registration No. PMAT07163028
Thesis Title: On the study of heat and mass transfer over a vertical surface in case of opposing buoyancy forces.
5. Student name: **Sajeela Jameel**
Registration No. PMAT07153056
Thesis Title: MHD radiative mixed convection stagnation point flow through a porous medium with heat generation.
6. Student name: **Muhammad Waseem Akhter**
Registration No. PMAT07171031
Thesis Title: Effects of heat transfer on the flow of sisko fluid through a rigid medium.
7. Student name: **Misbah Zumar**
Registration No. PMAT07153044
Thesis Title: Optimized numerical study of Burger Huxley equation by finite difference schemes.
8. Student name: **Andeela Islam**
Registration No. PMAT07153045
Thesis Title: Numerical solutions of parabolic differential equations using Galerkin finite element technique
9. Student name: **Iqra Ijaz**
Registration No. PMAT07183036
Thesis Title: On Sakiadis flow with the inclusion of variable density effects along the inclined plate.
10. Student name: **Iqra Anum**

Registration No.PMAT07183041

Thesis Title: Theoretical Analysis of Blasius flow over inclined plate with variable density.

11. Student name: **Maria Shafique,**

Registration No. PMAT07193048

Thesis Title: Theoretical Analysis of Boundary Layer Flow of Maxwell Fluid Coupled with Cattaneo-Christov Heat and Mass Flux Model over a Moving Inclined Surface

12. Student name: **Asma Noreen,**

Registration No. PMAT07193044

Thesis Title: Computational Study of Boundary Layer Flow of Casson Fluid over an Exponentially Stretching Sheet

13. Student name: **Muhammad Junaid,**

Registration No. PMAT07193069

Thesis Title: The Analysis of Unsteady Stagnation Point Boundary Layer Flow along a Stretching/Shrinking Sheet

14. Student name: **Quart-Ul-Ain,**

Registration No. PMAT07193035

Thesis Title: The Theoretical Study of Viscoelastic Fluid Flow over the Vertical Surface

15. Student name: **Memoona Mumtaz,**

Registration No. PMAT07193030

Thesis Title: Computational Analysis of Convective Heat and Mass Transfer in Micropolar Fluid Over a Stretching Sheet

16. Student name: **Sadia Azam,**

Registration No. PMAT07293045

Thesis Title: Computational Analysis of Boundary Layer Flow of Second Grade Nanofluid Past Inclined Permeable Stretching Surface Embedded in a Porous Medium.

17. Student name: **Anmol Sahir,**

Registration No. PMAT07293049

Thesis Title: Numerical Study of Heat and Mass Transfer in Third-Grade Fluid with Darcy-Forchheimer Relation over an Exponentially Angled Stretching Sheet Embedded in a Porous Medium.

18. Student name: **Asma Yousuf,**

Registration No. PMAT07293016,

Thesis Title: Computational Study of Heat and Mass Transfer in Williamson Nanofluid over a Non-linear Stretching Surface Embedded in a Porous Medium.

19. Student name: **Naveed Hassan,**

Registration No. PMAT07293037

Thesis Title: Theoretical Analysis of Boundary Layer Flow of Williamson Fluid over a Moving Surface.

20. Student name: **Zaheer Ahmed,**

Registration No. PMAT07293018

Thesis Title: Heat and Mass Transfer Analysis on an Unsteady Stretching Surface Embedded in a Porous Medium.

21. Student name: **Aalia Akram,**

Registration No. PMAT07293046

Thesis Title: The Numerical Analysis of Boundary Layer Flow of Casson Fluid over an Unsteady Permeable Stretching Sheet Embedded in a Porous Medium.

Administrative Record (2017-2025)

- Working as a member of the admission committee at Baba Guru Nanak University (2025 to date).

- Working as a member of the Blasphemy Committee at Baba Guru Nanak University (2024 to date).
- Worked as Focal Person of Campus Review Parameters (CRP) in Quality Enhancement Cell (QEC) at The University of Lahore Sargodha Campus, Sargodha, Pakistan since December 18, 2020 to May 24, 2022.
- Worked as Course Folder In-charge Department of Mathematics and Statistics at The University of Lahore Sargodha Campus, Sargodha, Pakistan from October 7, 2020 to June 22, 2021.
- Worked as Admission Coordinator, Department of Mathematics and Statistics at The University of Lahore Sargodha Campus, Sargodha, Pakistan from June 22, 2021, to May 24, 2022.
- Worked as Campus timetable coordinator at The University of Lahore Sargodha Campus, Sargodha, Pakistan from October 19, 2019, to May 24, 2022.
- Worked as timetable coordinator of Mathematics and Statistics in The University of Lahore Sargodha Campus, Sargodha, Pakistan since August 2018 to May 24, 2022.
- Worked as a member of the Transport Committee at the University of Gujrat Sub-Campus Mandi Bahauddin.

References

1. **Name:** Dr. Muhammad Ashraf
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2. **Name:** Dr. Shahid Mubeen,
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3. **Name:** Dr. Azhar Hussain
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