Annexure-I: List of Publications

A. Papers published/accepted in SCI/Scopus Journals:

SCI Journals

1. Wasim Khan, Mayank Singh and M. Siraj Alam "*A numerical simulation of nucleate boiling of water on inclined and rough surfaces*", Chemical Product and Process Modeling **(ESCI/IF-1.0),** published online **June 18, 2025**, Vol. XX, Issue X, pages XX, Published by Walter De Gruyter GMBH, Germany, ISSN / eISSN: 1934-2659 / 2194-6159. https://doi.org/10.1515/cppm-2025-0008
2. Bushra Khatoon, Shabih-Ul-Hasan, M. Siraj Alam, "*CO_2 capturing in Cross T-junction Microchannel using Numerical and Experimental Approach*", Chemical Papers **(SCI/IF-2.1),** published online, **05/07/2023**, Volume 77, pages 6319–6340, (2023) Published by Springer e-ISSN: 2585-7290 (Print) 0366-6352. https://doi.org/10.1007/s11696-023-02941-x
3. Sandeep Yadav, Bushra Khatoon, Shabih -Ul-Hasan, M. Siraj Alam, "*Hydrodynamics of Shear Thinning Fluid in a Square Microchannel: A Numerical Approach*", Chemical Product and Process Modeling **(ESCI/IF-1.0)**, **2023**, Vol. 18, Issue 6, pages 1005-1013, Published by WALTER DE GRUYTER GMBH, GERMANY, ISSN / eISSN: 1934-2659 / 2194-6159. https://doi.org/10.1515/cppm-2022-0076
4. Bushra Khatoon, Wasim Khan, Shabih-Ul-Hasan, M. Siraj Alam, "*A Review of Fractional Pressure Drop Characteristics of Single Phase Microchannels having different Shapes of Cross Sections*", Chemical Product and Process Modeling **(ESCI/IF-1.0),** published online **May 3, 2023**, 2023, Vol. 18, Issue 5, pages 701-739, Published by Walter De Gruyter GMBH, Germany, ISSN / eISSN: 1934-2659 / 2194-6159. https://doi.org/10.1515/cppm-2022-0084
5. Amreen Naz, Ruby Kumari, Shiva Arun, Shahid Suhail Narvi, M. Siraj Alam, and Pradip K. Dutta, *"Cu (II)-coordinated silica based mesoporous inorganic-organic hybrid material: synthesis, characterization and evaluation for drug delivery, antibacterial, antioxidant and anticancer activities"* Journal of Polymer Research **(SCI/IF-2.6),** published by Springer, **2023**, Vol.30, Article 76. https://doi.org/10.1007/s10965-023-03458-3
6. Wasim Khan, Abhishek K. Chandra, Sadhana Sachan, and Mohammad Siraj Alam, "*Effects of channel hydraulic diameters and flow ratios of two-phase flow in Y-junction microchannels*", Chemical Engineering & Technology **(SCI/IF-2.1),** Article ID: CEAT4788, vol. 45, Issue 3, pp. 535-542, **2022**, publisher Wiley. https://doi.org/10.1002/ceat.202100461
7. Amreen Naza, Shiva Arun, Vidya Singh, Shahid Suhail Narvi, Mohammad Siraj Alam, P.K. Dutta *"Efficient and Reusable Cu (II)-metalated Silica-based Inorganic-Organic Hybrid Catalyst for Dye Degradation"* Journal of the Indian Chemical Society **(SCI/IF-3.2),** Vol 99, Issue 1, Page No. 100296, ISSN: 0019-4522, **2022**. https://doi.org/10.1016/j.jics.2021.100296
8. Amreen Naz, Shiva Arun, Ruby Kumari, Shahid Suhail Narvi and M. Siraj Alam, *"Cu (II)-metalated Silica-based Inorganic-Organic Hybrid: Synthesis, Characterization and its Evaluation for Dye Degradation and Oxidation of Organic Substrates"* Chemical and Biochemical Engineering Quarterly **(SCI/IF-1.6),** Vol 35, Issue 3, Year **2021**, Published by Croatian Society of Chemical Engineers and Technologists. ISSNP 0352-9568, ON 1846-5153. https://doi.org/10.15255/CABEQ.2020.1906
9. Wasim Khan, A. K. Chandra, K. Kishor, Sadhana Sachan, and M. Siraj Alam, *"Slug formation mechanism for air–water system in T-junction microchannel: a numerical investigation"*, Chemical Papers **(SCI/IF-2.1)**, Vol. 72, Number 11, pp. 2921-2932, **04/06/2018**, Published by Springer ISSN: 2585-7290 (Print) 1336-9075 (Online). https://doi.org/10.1007/s11696-018-0522-7
10. Amreen Naz, Shiva Arun, S S Narvi, M S Alam, Anu Singh, Prabha Bhartiya and P K Dutta, "*Cu (II)-carboxymethyl chitosan-silane schiff base complex grafted on nano silica: Structural evolution, antibacterial performance and dye degradation ability"*, Int. J. Biol. Macromol**. (SCI/IF-7.7),** Vol. 110, pp. 215 - 226, **2018**, Published by Elsevier, ISSN: 0141-8130. https://doi.org/10.1016/j.ijbiomac.2017.11.112

11. K. Kishor, A. K. Chandra, W. Khan, P. K. Mishra, and M. Siraj Alam, *"Numerical Study on Bubble Dynamics and Two-Phase Frictional Pressure Drop of Slug Flow Regime in Adiabatic T-junction Square Microchannel"*, Chemical and Biochemical Engineering Quarterly **(SCI/IF-1.6),** Vol. 31, Issue 3, pp.275-291, **10/2017**, Published by Croatian Society of Chemical Engineers and Technologists. ISSNP 0352-9568, ON 1846-5153. https://doi.org/10.15255/CABEQ.2016.877
12. S. B. Gautam, M. S. Alam, S. Kamsonlian, *"Adsorptive Removal of As(III) from Aqueous Solution by Raw Coconut Husk and Iron Impregnated Coconut Husk: Kinetics and Equilibrium Analyses"*, International Journal of Chemical Reactor Engineering **(SCI/IF-1.2),** Vol. 15, Issue 2, pp. 1- 15, **04/2017**, Published By De Gruyter ISSN 1542-6580. https://doi.org/10.1515/ijcre-2016-0097
13. AK Chandra, K Kishor, PK Mishra, MS Alam, *"Numerical Investigations of Two-phase Flows through Enhanced Microchannels", Chemical and Biochemical Engineering Quarterly* **(SCI/IF-1.6),** vol.30, Issue 2, pp.149-159, **07/2016**, Published by Croatian Society of Chemical Engineers and Technologists. ISSNP 0352-9568, ON 1846-5153. https://doi.org/ 10.15255/CABEQ.2015.2289
14. S. B. Gautam, M. S. Alam, S. Kamsonlian, *"Adsorption of As (III) on iron coated quartz sand: influence of temperature on the equilibrium isotherm, thermodynamics and isosteric heat of adsorption analysis"*, International Journal of Chemical Reactor Engineering **(SCI/IF-1.2),** vol.14, Issue 1, pp.289-298, **02/2016**, Published By DE GRUYTER. ISSN 1542-6580. https://doi.org/10.1515/ijcre-2015-0061.
15. M. Siraj Alam, L. Prasad, S.C Gupta, and V. K. Agarwal, "*Enhanced Boiling of Saturated Water on Copper Coated Heating Tubes*", Chemical Engineering and Processing: Process Intensification **(SCI/IF-3.8),** Vol. 47, Issue 1, pp 159-167, **01/2008**, Published by Elsevier. ISSN: 0255-2701. https://doi.org/10.1016/j.cep.2007.07.021
16. L. Prasad, M. Siraj Alam, S.C Gupta, and V.K. Agarwal, "*Enhanced Boiling of Methanol on Copper Coated Surface*", Chemical Engineering and Technology **(SCI/IF-2.1),** Vol. 30, No. 7, pp 901-906, 07/2007, Published by Wiley-VCH Verlag. ISSN 0930-7516. https://doi.org/10.1002/ceat.200700043
17. M. Anil, M. Siraj Alam, V. K. Agarwal, and, Kailas Wasewar, "*CFD Modeling of Three-Phase Bubble Column: 1. Study of Flow Pattern*", Chemical and Biochemical Engineering Quarterly **(SCI/IF-1.6)**, Vol. 21, Issue 3, pp 197–205, **10/2007**, Published by Croatian Society of Chemical Engineers and Technologists. ISSN0352-9568. https://doi.org/10.15255/CABEQ.2014.402
18. S. Bandyopadhyay, M. Siraj Alam, V.K. Agarwal, and Kailas L. Wasewar, "*Computer Aided Design (CAD) of Multicomponent Condenser*" Chemical and Biochemical Engineering Quarterly **(SCI/IF-1.6),** Vol. 21, Issue 2, pp 97–103, **06/2007**, Published by Croatian Society of Chemical Engineers and Technologists. ISSN0352-9568. https://doi.org/10.15255/CABEQ.2014.416

SCOPUS Journals

19. Vikas Kumar Choudhary, Bushra Khatoon, Sadhana Sachan and M Siraj Alam, *"Liquid-Liquid Extractive De-aromatization of Toluene from n-hexane by Using Three Deep Eutectic Solvents (DES) in Two Different T- junction Geometries"* Korean Chemical Engineering Research, Publication Date: **XX/XX/2025**, (Accepted on 18 December 2024) Vol. 63., Issue-2, Pages 1-10., pISSN: 0304-128X, eISSN: 2233-9558. https://doi.org/10.9713/kcer.2025.63.2.105108
20. Vidya Singh, M Siraj Alam, SS Narvi" *Impact of Transition and Rare-Earth Elements Doping on the Cobalt Ferrite Nanoparticles and its Magnetic Applications"* Korean Chemical Engineering Research, Publication Date: **01/02/2025**, Vol. 63., Issue-1, Pages 1-24., pISSN: 0304-128X, eISSN: 2233-9558. https://doi.org/10.9713/kcer.2025.63.1.1
21. Dhananjay Singh, Indresh Singh, Raj Kumar Arya, Vinay Mishra, Deepak Singh, M. Siraj Alam and Balendu Shekher Giri, "*Solar water splitting for hydrogen production using Zn electrodes: a green and sustainable approach"* Environmental Science and Pollution Research, Publication date 09/05/2024, Vol. 41, Springer. https://doi.org/10.1007/s11356-024-34914-2

22. Wasim Khan, A. K. Chandra, K. Kishor, Bushra Khatoon, S. Sachan, and M. Siraj Alam, "*Numerical study on mixing of two fluids in a Y-junction microchannel with and without obstructions*", Preprint available online, Research Square **(SCOPUS)**, ISSN 2693-5015, **31 May, 2023**. https://doi.org/10.21203/rs.3.rs-2955131/v1
23. Bushra Khatoon, Shoaib Kamil, Hitesh Babu, and M. Siraj Alam, "*Experimental Analysis of Cascade CSTRs with Step and Pulse Inputs*", Materials Today: Proceedings **(SCOPUS),** vol. 78, pp. 40-47, **01/01/2023**. https://doi.org/10.1016/j.matpr.2022.11.037
24. Bushra Khatoon, Vikas Kumar Choudhary, Rajesh Kumar, Shailendra K. Pandey, Raghwendra Singh, Ram Naresh, and M. Siraj Alam, "*Enhancement of Heat Transfer Rate in Shell & Tube Heat Exchanger using Cuo/Al_2O_3-Water based Nanofluids*", Materials Today: Proceedings **(SCOPUS)**, **18/11/2022**, In press. https://doi.org/10.1016/j.matpr.2022.10.258
25. Bushra Khatoon, Shabih-Ul-Hasan, and M. Siraj Alam, "*Study of Mass Transfer Coefficient of CO_2 Capture in different Solvents using Microchannel: A Comparative Study*", In Computer Aided Chemical Engineering **(SCOPUS),** vol. 49, pp. 691-696. Elsevier, **2022**. https://doi.org/10.1016/B978-0-323-85159-6.50115-9
26. Gautam Shashi Bala, Kamsonlian Suantak, M. Siraj Alam, *"Equilibrium and thermodynamic aspects of As(III) with temperature onto raw coconut husk and iron impregnated coconut husk"*, Research Journal of Chemistry and Environment **(SCOPUS),** Vol. 23, Issue 4, pp. 57-69, **04/2019**, Published by International Congress of Chemistry and Environment ISSN: 0972-0626. https://worldresearchersassociations.com/Archives/RJCE/Vol(23)2019/April2019.aspx#
27. Abhilasha Dixit, Kunal Atal, PK Mishra, M Siraj Alam, *"Removal of Mercury (II) through Adsorption on Titania Nanofibers"*, Asian Journal of Chemistry **(SCOPUS),** vol.28, Issue 2, pp. 415-422, **01/2016**, Published by Asian Journal of Chemistry. ISSNP: 0970-7077, ON 0975-427X. https://doi.org/10.14233/ajchem.2016.19389
28. Abhishek Kumar Chandra, Kaushal Kishor, PK Mishra, Md Siraj Alam, *"Numerical Simulation of Heat Transfer Enhancement in Periodic Converging-diverging Microchannel"*, Procedia Engineering **(SCOPUS),** vol. 127, pp. 95-101, **01/2015**, Published by Elsevier. ISSN: 1877-7058. https://doi.org/10.1016/j.proeng.2015.11.431
29. M. Siraj Alam, and V. K. Agarwal, "*Pool Boiling of Liquids & their Mixtures on Enhanced Surfaces at Sub-atmospheric Pressures*" Chemical Engineering Transactions **(SCOPUS),** Vol. 17, pp 1503-1508, **2009**, Published by AIDIC Servizi S.r. First-edition, 2009, Copyright © 2009, AIDIC Servizi S.r.l., ISBN 978-88-95608-01-3, ISSN 1974-9791. https://doi.org/10.3303/CET0917251
30. VK Agarwal, M. Siraj Alam, SC Gupta, "*Mathematical model: For existing multiple effect evaporator systems*", Chemical Engineering World **(SCOPUS)**, Vol. 39, Issue 5, pp 76–78, **05/2004**, Published by Industrial Publications, India. ISSN: 0009-2517.

B. Book published/accepted:

1. **An Indian Adaptation of Chemical Reaction Engineering by Octave Levenspiel, 3rd Edition, Wiley, 2022. [ISBN:978-93-5424-460-5, ISBN (ebk): 978-93-5424-541-1].**
2. Industrial Application of Nanoscience and Nanotechnology, Vol.-1, Excel India Publishers 2020, Editors: M. Siraj Alam, Animesh K. Ojha, Naresh Kumar and Ankur Gaur, (ISBN:978-93-89947-256-7)

C. Book Chapter published/accepted:

1. Bushra Kathoon, M. Siraj Alam, "*Blockage Study in Carotid Arteries*" Mechanical Engineering in Biomedical Applications: Bio-3D Printing, Biofluid Mechanics, Implant Design, Biomaterials, Computational Biomechanics, Tissue Mechanics, Volume-1, Chapter -12, Pages 327-342, John Wiley & Sons, Inc., January 02, 2024. https://doi.org/10.1002/9781394175109.ch12
2. Bushra Kathoon, M. Siraj Alam, "*Blockage Study in Carotid Arteries*" Mechanical Engineering in Biomedical Applications: Bio-3D Printing, Biofluid Mechanics, Implant Design, Biomaterials,

Computational Biomechanics, Tissue Mechanics, Volume-1, Chapter -12, Pages 327-342, John Wiley & Sons, Inc., January 02, **2024**. https://doi.org/10.1002/9781394175109.ch12

3. M. Siraj Alam, Shoaib Kamil, Bushra Khatoon, Shabih Ul Hasan and Antarim Datta *"Introduction to Novel Reactors"* An Indian Adaptation of Chemical Reaction Engineering by Octave Levenspiel, 3rd Edition, Chapter-30, Pages 803-821, **2022** (ISBN:978-93-5424-460-5, ISBN (ebk): 978-93-5424-541-1).
4. Wasim Khan, A. K. Chandra, Sadhana Sachan, and M. Siraj Alam, *"Liquid-Liquid Two Phase Flow and Heat Transfer in Microchannel"* Industrial Application of Nanoscience and Nanotechnology, Volume-1, Chapter -5, Pages 43-62, **December 2020**. (ISBN:978-93-89947-256-7).
5. Bushra Kathoon, Vikas K. Choudhary, Wasim Khan, Shabih-Ul-Hasan and M. Siraj Alam, *"Kinetic Study of CO_2 Capture using Amines in Conventional and Microfludic Devices"* Industrial Application of Nanoscience and Nanotechnology, Volume-1, Chapter -8, Pages 83-97, **December 2020**. (ISBN:978-93-89947-256-7).
6. Vikas K. Choudhary, Bushra Kathoon, Sadhana Sachan and M. Siraj Alam, *"Liquid-Liquid Extraction in Microchannel: A Brief Review"* Industrial Application of Nanoscience and Nanotechnology, Volume-1, Chapter -10, Pages 111-126, **December 2020**. (ISBN:978-93-89947-256-7).
7. Antarim Datta, Deepsikha Singh, M. Siraj Alam and Shabih-Ul-Hasan, *"PEMs for Direct Methanol Fuel Cells-Geological Structure Viewpoint for structural System"* Industrial Application of Nanoscience and Nanotechnology, Volume-1, Chapter -13, Pages 147-162, December 2020. (ISBN:978-93-89947-256-7).
8. Amreen Naz, Shiva Arun, Shahid Suhail Narvi, Mohammad Siraj Alam, *"Inorganic-Organic Hybrid Materials: Classification, Synthetic Strategies and Applications"*, Progressive Exposure of Research in the Current Scenario: The Futuristic Wisdom, Chapter 15, Page No. 180-192, **2020,** (ISBN 978-81-938068-7-6), BELVEDERE PRESS, Prayagraj.

Annexure-II: Details of Ph.D. Thesis supervised/on-going as supervisor

S. No.	Title of Ph.D. Thesis	Role	Institute	Name of student[s]	Co-Supervisor[s], if any	Year
1.	Novel Adsorbents for Remediation of Waste Water Laden with Mercury and Lead	Sole Supervisor	MNNIT Allahabad	Dr. Abhilasha Dixit	---	2016
2.	Flow Dynamics Simulation in Enhanced Microchannel	1st Supervisor	MNNIT Allahabad	Dr. Abhishek Kr. Chandra	Prof. P. K. Mishra, MED	2016
3.	Numerical Investigation of Hydrodynamics of Gas-Liquid Slug Flow in T-Microchannel	1st Supervisor	MNNIT Allahabad	Dr. Kaushal Kishor	Prof. P. K. Mishra, MED	2016
4.	Removal of As (III) From Contaminated Water Using Modified Coconut Husk.	1st Supervisor	MNNIT Allahabad	Dr. Shashi Bala Gautam	Dr. Suantak Kamsonlian, ChED	June 2020
5.	Synthesis, Characterization and Applications of Silica-Based Inorganic-Organic Hybrid Materials	2nd Supervisor	MNNIT Allahabad	Dr. Amreen Naz	Prof. S. S. Narvi, Chemistry	July 2020
6.	Numerical and Experimental Studies of Slug Flow Dynamics in T & Y-Microchannels	1st Supervisor	MNNIT Allahabad	Dr. Wasim Khan	Prof. Sadhana Sachan, ChED	March 2021
7.	Hydrodynamics and Mass Transfer Study in Enhanced T-Junction Microchannel Using Constant and Pulsating Flow	1st Supervisor	MNNIT Allahabad	Ms. Busara Khatoon	Dr. Shabih-Ul Hasan, ChED	August 2025
8.	Liquid-Liquid Extraction in Microfluidic Devices: A numerical Study	1st Supervisor	MNNIT Allahabad	Mr. Vikas Kumar Choudhary	Prof. Sadhana Sachan, ChED	In Progress
9.	Selectivity Engineering with Hybrid Reactive Distillation Configurations	2nd Supervisor	MNNIT Allahabad	Mr. Antarim Dutta	Dr. Shabih-Ul Hasan, ChED	In Progress

Annexure-III: Details of Patents Granted/ Applied

S. No.	Patent Details	
1.	Patent Title:	GAS-LIQUID ABSORPTION IN MICROCHANNEL
	Application No.:	201611043489, dated: 20/12/2016
	Inventors:	K. Kishor, A.K. Chandra, W. Khan, S. Sachan and **M. Siraj Alam**
	Current Status:	**GRANTED on 28/05/2021**
2.	Patent Title:	HUMIDIFICATION OF GAS THROUGH MICROFLUIDIC DEVICES
	Application No.:	201911009370, dated:11/03/2019
	Inventors:	W. Khan, K. Kishor, A.K. Chandra, S. Sachan and **M. Siraj Alam**
	Current Status:	**GRANTED on 09/11/2023**

Annexure-IVA: Details of Externally Sponsored R&D Project[s] as PI/Co-PI

S. No.	Title of Project	Period	Sponsoring Organisation	Amount [`in lakhs]	Role
1.	Development and Analysis of Miniaturized Heat Transfer Devices	15 months	AICTE (NPIU), Government of India	18.63	Co-PI

Annexure-IVB: Details of Consultancy Project[s] as PI/Co-PI

S. No.	Details	CP No. & Date	Agency Name	Testing Amount (Rs.)	Principal Investigator	Project Status
1	Inspection of GPIs by Technical Institutions in Ganga Main Stream States for compliance verification of effluents discharge standard	CP/00203/2024-25, **Dt. 17.08.2024**	CPCB, New Delhi	**38,01,518.00**	Dr. D. Basu, CED	On-going
2	Inspection of 84 GPIs (Tanneries of Kanpur and Unnao District of U.P.) for compliance verification of effluents discharge standard	CP/410/JAN/2022-23, Dt. 19.01.2023	CPCB, New Delhi	**13,73,125.00**	Prof. R. C. Vaishya, CED	Completed
3	Inspection of GPIs (Tanneries, Textile mills, slaughter houses, fertilizers industries etc.) by Technical Institutions in Ganga Main Stream States for compliance verification of effluents discharge standard	CP/239/JAN/2021-22, Dt. 7.01.2022	CPCB, New Delhi	**20,23,125.00**	Prof. R. C. Vaishya, CED	Completed
4	Inspection of GPIs By Technical Institutions in Ganga Main Stream States for compliance verification of effluents discharge standard during DIVYA-KUMBH 2019.	CP/53/MAY/2018-19, Dt. 03.11.2020	CPCB, New Delhi	**27,18,750.00**	Prof. R. C. Vaishya, CED	Completed
5	Inspection of GPIs by Technical Institutions in Ganga Main Stream States for compliance verification of effluents discharge standard	CP/162/DEC/2017-18, Dt. 22.12.2017	CPCB, New Delhi	**30,25,424.00**	Prof. R. C. Vaishya, CED	Completed
6	Inspection of GPIs by Technical Institutions in Ganga Main Stream States for compliance verification of effluents discharge standard	CP/027/APR/2017-18, Dt. 29.12.2017	CPCB, New Delhi	**31,04,348.00**	Prof. R. C. Vaishya, CED	Completed

(M. SIRAJ ALAM)