

# CURRICULUM VITAE

**Prof. Mohammad Siraj Alam**  
(M. Tech. & Ph.D. IIT Roorkee, Fellow IEI & IChE)  
Professor, Department of Chemical Engineering  
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## **Educational Qualifications**

- **Ph. D.**, IIT Roorkee, 2008;      **M. Tech.**, IIT Roorkee, 2003;      **B. Tech.**, B.I.E.T. Jhansi, 2000

## **Teaching Experience [as on 17/02/2026]**

- Total Experience: **18 Years 02 Months** [Professor (01Y), Associate Professor (6Y 09M), Assistant Professor (10Y 05M)]  
➤ Joined, MNNIT Allahabad on **17/12/2007** (*1<sup>st</sup> Regular faculty of the Chemical Engineering Department*)

## **Major Areas of Interests**

Microfluidic Devices and Micro-Structured Reactor, Chemical Reactor Analysis and Design, Convective Heat Transfer, Design of Heat Exchanger: Nanofluids application.

## **Courses Taught**

Chemical Reactor Analysis & Design (PG), Chemical Reaction Engineering (UG), Heterogeneous Reaction Engineering (UG), Two Phase Flow & Heat Transfer (UG), Process Modeling & Simulation (UG).

## **Publications (Annexure-I)**

- **87** [**33** (SCI/Scopus Journals) + **44** (Conference Proceedings) + **2** Books + **8** Book Chapters]  
➤ Adapted “**Chemical Reaction Engineering**” by Octave Levenspiel, **3<sup>rd</sup> Edition, Wiley, 2022.**

## **Patent[s] Granted/Applied (Annexure-II)**

Patent Granted: **02** [Gas-Liquid Absorption in Microchannel, Dated: 28/05/2021]  
[Humidification of Gas Through Microfluidic Devices, Dated: 09/11/2023]

## **Thesis/Project Supervision (Annexure – III)**

**Ph. D. Thesis:** 11 [07 (Completed) + 04 (In Progress)]; **M. Tech. Thesis:** 16 (Completed);      **B. Tech. Projects:** 26

## **Externally Funded Project[s] as PI/Co-PI (Annexure-IV)**

**Project[s](Completed):** Externally Funded R&D/Consultancy Project[s] as PI/Co-PI: **07**  
Part of revenue generation: 1.61 Crore

## **Contribution in development of the Department**

- Contributed in establishment of the basic amenities and equipment for the labs, and offices of the department. [Department Inception Year = July 2006].  
➤ **Labs Establishment:** Chemical Reaction Engineering, Process Dynamics & Control, and Heat & Mass Transfer Labs.  
➤ **Research Facilities:** Microreactor Test Set-up, ANSYS 2021R2, Boiling Test Rig, Critical Heat Flux Measurement Rig, Simultaneous Thermal Analyzer, Gas Chromatograph, Nanofluid Interferometer, Viscometer, Gas Analyzer, UV Spectrophotometer.  
➤ Contributed in modification and development of UG & PG course curriculum as a BoAC member.

## **Contribution to Institute Administration**

<b>Present</b>	<b>Faculty In-charge:</b> Centre for Interdisciplinary Research, <b>Faculty In-charge:</b> Landscaping & Swachh Bharat Abhiyan <b>Coordinator,</b> MoU MNNIT Allahabad and RGIPT, Amethi
<b>Past</b>	<b>Chief Vigilance Officer (Oftg):</b> MNNIT Allahabad <b>Head of the Department:</b> Chemical Engineering Department, MNNIT Allahabad <b>Faculty In-charge:</b> Water Management & Waste Disposal, Swachh Bharat Abhiyan, & Services <b>Warden:</b> Swami Vivekanand Boys, P. D. Tandon and C. V. Raman Hostels, <b>Joint Secretary-I:</b> Alumni Association, MNNIT Allahabad; <b>Coordinator,</b> Dance Club, Student Activities Centre; <b>Officer In-charge:</b> Fire Fighting & Safety;

## **Contribution to Department Administration**

<b>Present</b>	<b>Officer In-Charge:</b> Chemical Reaction Engineering Laboratory, <b>Convener:</b> Departmental Purchase Committee (DPC) and Departmental Faculty Advisory Committee (DFAC)
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**Past** | **Chairman:** Departmental Faculty Advisory Committee (DFAC),  
**Conveners:** Departmental Doctoral Programme Committee (DDPC), Departmental Under Graduate Committee (DUGC), Departmental Purchase Committee (DPC), Department Resource Management & Purchase Committee (DRPC). **Office In-Charges:** Infrastructure  
**Office In-Charges:** Heat and Mass Transfer Lab (MED), Process Dynamics & Control Lab

**Conference/Workshop/FDP/Short Term Courses Organized =15 (4+11) (Annexure-V) :**

<b>International Conference:</b>	<b>03</b> [01 (Chairperson) + 01 (Organizing Secretary) + 01 Coordinator]
<b>National conference:</b>	<b>01</b> (Chairperson)
<b>Short Term Courses /Workshops:</b>	<b>11</b> [04 (Chairperson & Coordinator) + 01 (Tech. Chair) + 06 (Coordinator/Convener)]

**Professional recognition and Significant Outreach Activities :**

- **Fellow**
  - Institution of Chemical Engineers (IChE) [Date of Award: 26<sup>th</sup> December 2023]
  - The Institution of Engineers, India (IEI) [Date of Award: 15<sup>th</sup> March 2023]
- Reviewed Paper of the Several Prestigious Journals
- Served as Examiner/Paper setter of various UG, PG and Ph.D. examinations for several Universities, and Institutions.
- Examiner/Paper setter/Selection committee member in Examination/Interviews conducted by U.P. Public Service Commission, Prayagraj.
- Served as Observer for various NTA Examinations
- Invited Speaker: 11

**Personal Details :**

Date of Birth: **10<sup>th</sup> June, 1977;**      Father's Name: Late Sri Abdul Aziz;      Mother's Name: Late Smt. S. Nisha  
Marital Status: Married,      Nationality: Indian,      Language Known: Hindi, English, and Urdu

**(M. SIRAJ ALAM)**

## Annexure-I: List of Publications

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

#### SCI Journals

1. Vikas Kumar Choudhary, Bushra Khatoon, Sadhana Sachan, and M Siraj Alam, " *Liquid-Liquid extractive de-sulfurization of diesel oil by using five deep eutectic solvents (DES) in Imm circular T and Y junction geometries*", Chemical Papers (SCI/IF-2.5), published online, **30/01/2026**, Published by Springer e-ISSN: 2585-7290 (Print) 0366-6352. <https://doi.org/10.1007/s11696-026-04642-7>
2. Bushra Khatoon, Vikas K. Chaudhary, Shoaib Kamil, Shabih-Ul Hasan, and M. Siraj Alam, " *Enhanced Mass Transfer in Microgeometry Using Pulsating Velocity Inputs: Hydrodynamic Analysis & Numerical Simulation*", Physics of Fluids (SCI/IF-4.3), published online on **16/12/2025**, Volume 37, Issue 12 pages 122012-1 to 25, (2025) Published by Published by AIP Publishing. <https://doi.org/10.1063/5.0303132>
3. Antaram Datta, Shabih-Ul Hasan, and M. Siraj Alam, " *Selectivity engineering with single-feed hybrid reactive distillation (RD) columns for a wider range of reaction networks—Part I: Elimination of complex hybrid RD configurations for two equilibrium reactions*", Chemical Engineering and Processing: Process Intensification (SCI/IF-3.9), **published online, 29 December 2025**, Published by Elsevier. ISSN: 0255-2701. <https://doi.org/10.1016/j.cep.2025.110687>
4. 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-1.3), published online **June 18, 2025**, Vol. 20, Issue 4, pages 561-579, Published by Walter De Gruyter GMBH, Germany, ISSN / eISSN: 1934-2659 / 2194-6159. <https://doi.org/10.1515/cppm-2025-0008>
5. Bushra Khatoon, Shabih-Ul-Hasan, M. Siraj Alam, " *CO<sub>2</sub> capturing in Cross T-junction Microchannel using Numerical and Experimental Approach*", Chemical Papers (SCI/IF-2.5), 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>
6. 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-1.3), **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>
7. 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-1.3), 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>
8. 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-2.8), published by Springer, **2023**, Vol.30, Article 76. <https://doi.org/10.1007/s10965-023-03458-3>
9. 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>
10. 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*"

11. 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. ISSN 0352-9568, ON 1846-5153. <https://doi.org/10.15255/CABEQ.2020.1906>
12. 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-2.5**), 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>
13. 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>
14. 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. ISSN 0352-9568, ON 1846-5153. <https://doi.org/10.15255/CABEQ.2016.877>
15. 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>
16. 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. ISSN 0352-9568, ON 1846-5153. <https://doi.org/10.15255/CABEQ.2015.2289>
17. 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>.
18. 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-3.9**), 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>
19. 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>
20. M. Anil, M. Siraj Alam, V. K. Agarwal, and, Kailas Wasewar, “*CFD Modeling of Three-Phase Bubble Column: I. 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>
21. 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

22. 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: **01/05/2025**, (Accepted on 18 December 2024) Vol. 63., Issue-2, Pages 198-207., pISSN: 0304-128X, eISSN: 2233-9558. <https://doi.org/10.9713/kcer.2025.63.2.105108>
23. 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>
24. 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>
25. 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>
26. 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>
27. 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<sub>2</sub>O<sub>3</sub>-Water based Nanofluids", Materials Today: Proceedings (SCOPUS), **18/11/2022**, In press. <https://doi.org/10.1016/j.matpr.2022.10.258>
28. Bushra Khatoon, Shabih-Ul-Hasan, and M. Siraj Alam, "Study of Mass Transfer Coefficient of CO<sub>2</sub> 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>
29. 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#](https://worldresearchersassociations.com/Archives/RJCE/Vol(23)2019/April2019.aspx#)
30. 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. ISSN: 0970-7077, ON 0975-427X. <https://doi.org/10.14233/ajchem.2016.19389>
31. 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>
32. 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>

33. 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, 3<sup>rd</sup> 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>
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, 3<sup>rd</sup> 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<sub>2</sub> Capture using Amines in Conventional and Microfluidic 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 Patents Granted/ Applied**

<b>S. No.</b>	<b>Patent Details</b>	
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 <b>M. Siraj Alam</b>
	Current Status:	<b>GRANTED on 28/05/2021</b>
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 <b>M. Siraj Alam</b>
	Current Status:	<b>GRANTED on 09/11/2023</b>

**Annexure-III: Details of Ph.D. Thesis/P.G. Thesis/U.G. Projects supervised/on-going**

**A. 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	1 <sup>st</sup> 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	1 <sup>st</sup> Supervisor	MNNIT Allahabad	Dr. Kaushal Kishor	Prof. P. K. Mishra, MED	2016
4.	Removal of As (III) From Contaminated Water Using Modified Coconut Husk.	1 <sup>st</sup> 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	2 <sup>nd</sup> 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	1 <sup>st</sup> 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	1 <sup>st</sup> Supervisor	MNNIT Allahabad	Dr. Bushra Khatoun	Dr. Shabih-Ul Hasan, ChED	August 2025
8.	Liquid-Liquid Extraction in Microfluidic Devices: A numerical Study	1 <sup>st</sup> Supervisor	MNNIT Allahabad	Mr. Vikas Kumar Choudhary	Prof. Sadhana Sachan, ChED	In Progress
9.	Selectivity Engineering with Hybrid Reactive Distillation Configurations	2 <sup>nd</sup> Supervisor	MNNIT Allahabad	Mr. Antarim Dutta	Dr. Shabih-Ul Hasan, ChED	In Progress
10.	Polymer Induced Drug Delivery & Its Impact on Environment.	1 <sup>st</sup> Supervisor	MNNIT Allahabad	Mr. Divyansh Darshan	Dr. S. Rakshit, Chemistry	In Progress
11.	Study of various regimes in rectangular microchannels using CFD.	2 <sup>nd</sup> Supervisor	MNNIT Allahabad	Mr. Shashilendra Mishra	Prof. Pramod Kr. Yadav, Maths	In Progress

**B. Details of P.G. Dissertation/Project supervised:**

S. No.	Title of Dissertation/Project	Department/ Institute	Name of student[s]	Co-Supervisor[s], if any	Year	
1.	Modeling & Simulation of Shell & Tube Heat Exchanger	Mechanical Engineering (Design)	MNNIT Allahabad	Neeraj Kumar, (2010DN06)	Dr. M. K. Khurana, MED	2012
2.	Modeling and simulation of Condenser for Multi-component Vapor Mixtures	Mechanical Engineering (Design)	MNNIT Allahabad	Vivek Kr. Singh, (2010DN11)	Dr. R. K. Patel, MED	2012
3.	Modeling and Simulation of Concentric Heat-Pipe	Mechanical Engineering (Design)	MNNIT Allahabad	Subhash Patel, (2010DN18)	Dr. V. R. Komma, MED	2012

4.	Numerical Simulation of Shell & Tube Heat Exchanger with Nano-fluids	Mechanical Engineering (Design)	MNNIT Allahabad	Ashish Mishra, (2011DN16)	Dr. R. K. Patel, MED	2013
5.	Nucleate Pool Boiling of Nanofluids: Modeling & Experimental Analysis	Chemical Engineering	MNNIT Allahabad	Amar Deep (2015CL08)	---	2017
6.	Nucleate Boiling of Al <sub>2</sub> O <sub>3</sub> -methanol based Nanofluid on Copper Surface	Chemical Engineering	MNNIT Allahabad	Mona Vishwakarma (2016CL01)	---	2018
7.	Study of Acoustic and Vibration in T-shaped Circular Cross-sectional Channels	Chemical Engineering	MNNIT Allahabad	Hitesh Babu (2016CL08)	---	2018
8.	Application of Nanofluids as Coolant in Shell and Tube Heat Exchanger	Chemical Engineering	MNNIT Allahabad	Bhaskar Kumar (2017CL12)	Dr. Shabih-Ul Hasan, ChED	2019
9.	Hybrid Membrane Separation Process for Textile Dye Effluent Treatment.	Chemical Engineering	MNNIT Allahabad	Ashish Gautam (2017CL02)	Prof. Sadhana Sachan, ChED	2019
10.	Numerical Study of double pipe and shell and tube heat exchanger with nanofluid used as coolant.	Chemical Engineering	MNNIT Allahabad	Rajesh Kumar (2018CL05)	Dr. Parul Katiyar, ChED	2020
11.	Boiling Heat Transfer Enhancement Using Water-Al <sub>2</sub> O <sub>3</sub> , Bi <sub>2</sub> O <sub>3</sub> Based Nanofluids	Chemical Engineering	MNNIT Allahabad	Rashmi Priya (2018CL08)	Dr. Shabih-Ul Hasan, ChED	2020
12.	Organo-chemical fertilizers: Analysis of its impact on plant growth and environment	Chemical Engineering	MNNIT Allahabad	Himanshu Soni (2019CL07)	Prof. Sadhana Sachan, ChED	2021
13.	Effectiveness of Nanofluids as a coolant inside heat exchange devices	Chemical Engineering	MNNIT Allahabad	Priya Kushwaha (2020CL08)	Dr. Shabih-Ul Hasan, ChED	2022
14.	Hydrodynamics of two phase non-Newtonian fluid flow in Micro-channels	Chemical Engineering	MNNIT Allahabad	Sandeep Yadav (2020CL10)	Dr. Shabih-Ul Hasan, ChED	2022
15.	Process alternatives via reactive & pressure swing distillation for the production of propylene glycol monomethyl ether acetate	Chemical Engineering	MNNIT Allahabad	Sparsh Batla (2020CL14)	Dr. Shabih-Ul Hasan, ChED	2022
16.	Study of electro-coagulation technique for waste water treatment and process optimization by using response surface methodology.	Chemical Engineering	MNNIT Allahabad	Mona Singh (2020CL07)	Dr. Parul Katiyar, ChED	2022

### C. Details of U.G. Projects supervised:

S. No.	Title of Project	Institute	Name of student[s]	Session
1.	Study of Performance of Tray Column for Multicomponent Distillation	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Ravi Pandey 20067051</li> <li>• Sonam Gupta 20067037</li> <li>• Siddharth Khare 20069004</li> <li>• Saurabh Umrao 20069027</li> <li>• Devendra Prakash 20069009</li> </ul>	2009-10
2.	Heat Transfer in Nucleate Pool Boiling: A Semi Theoretical Analysis	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Ravi Pandey 20067051</li> <li>• Sonam Gupta 20067037</li> <li>• Siddharth Khare 20069004</li> <li>• Saurabh Umrao 20069027</li> </ul>	2009-10

			• Devendra Prakash 20069009	
3.	Optimization of Heat Load Using Steam In Multi-component Distillation	MNNIT Allahabad	• Dheerendra Singh 20077031 • Anurag Dwivedi 20077044 • Manas Aswal 20079014 • Sabir Khan 20077015 • Shobhit Kumar 20079026	2010-11
4.	Effect of Rotation and Surface Roughness on Heat Transfer Rate	MNNIT Allahabad	• Ankit Garg 20077022 • Ishan Nanda 20077033 • Abhishek Sati 20079009 • Atyab Ali Zaidi 20079027 • Moushumi Daimari 20079002	2010-11
5.	Modeling and Simulation of a Continuous Catalytic Reforming Unit	MNNIT Allahabad	• Ankit Garg 20077022 • Ishan Nanda 20077033 • Abhishek Sati 20079009 • Atyab Ali Zaidi 20079027 • Moushumi Daimari 20079002	2010-11
6.	Comparative Study of Packed Distillation Column	MNNIT Allahabad	• Kanupriya Sharma 20087047 • Abhinav Verma 20087107 • Devansh Kumar Srivastava 20087043 • Nitin Kumar 20080044 • Vidya Nand Kr. Raushan 20089019	2011-12
7.	Design of Heat Exchanger for Waste Heat Utilization in Thermal Power Station	MNNIT Allahabad	• Kanupriya Sharma 20087047 • Abhinav Verma 20087107 • Devansh Kumar Srivastava 20087043 • Nitin Kumar 20080044 • Vidya Nand Kr. Raushan 20089019	2011-12
8.	Study of the Performance of a Cooling Tower	MNNIT Allahabad	• Mohammad Khalid 20087049 • Priyanshu Singh 20086027 • Shantanu Kunwar 20087058 • Ahmad Khubaib Adnan 20089034	2011-12
9.	Simulation of Coal Gasification Process Using ASPEN PLUS	MNNIT Allahabad	• Himanshu Srivastava 20099012 • Mayank Jaiswal 20099044 • Sunil Kumar Gupta 20097004 • Brijesh Kumar Singh 20089022	2012-13
10.	Analysis of convective heat Transfer rate with nanofluids on modified surfaces	MNNIT Allahabad	• Gargi Agrahari 20109058 • Yazdan Khan 20100045 • Harshat Arya 20109023 • Akshat Pancholi 20109044	2013-14
11.	Boiling of Nanofluids on Copper Surface	MNNIT Allahabad	• Shivam Mishra 20110032 • Satyam Gangwar 20110009 • Varsha Meena 20119046 • Vishal Diwaker 20119039 • Praveen Gupta 20110020	2014-15
12.	Boiling Heat Transfer Performance and Phenomena of Al <sub>2</sub> O <sub>3</sub> -water Nanofluids in Pool Boiling Test Rig	MNNIT Allahabad	• Priyanka Agarwal (20120037) • Hari Hara Prasad Manem (20129008) • Akar Gupta (20120031) • Saurabh Kamal (20129041) • Raja Ram (20129040)	2015-16
13.	Boiling Heat Transfer Performance of Nanofluids: Modeling and Experimental Analysis	MNNIT Allahabad	• Sushmana Saxena (20130003) • Mayank Singh(20139007) • Sagar Yadav(20139040) • Sayani Halder,(20139002) • Deepak Chaudhary (20139001)	2016-17
14.	Nucleate Boiling of Methanol-Al <sub>2</sub> O <sub>3</sub> Nanofluid on Copper Surfaces	MNNIT Allahabad	• Amit Kumar 20140020 • Deepak Kumar Patel 20149032 • Aditya Singh 20149029 • Sudhakar Yadav 20149042 • Shyam Datt 20109028	2017-18 (06/2018)
15.	Optimization of surfactant concentration in nanofluid for boiling	MNNIT Allahabad	• Pransi Rastogi (20150016) • Madhav Bansal (20150016)	2018-19 Dec 2018

	applications		<ul style="list-style-type: none"> <li>• Vivek Gupta (20159050)</li> <li>• Ankita (20159030)</li> <li>• Prabhat Kumar (20159012)</li> </ul>	
16	Enhanced boiling of Alumina/Water based nanofluid with optimized surfactant concentration	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Pransi Rastogi (20150016)</li> <li>• Madhav Bansal (20150016)</li> <li>• Vivek Gupta (20159050)</li> <li>• Ankita (20159030)</li> <li>• Prabhat Kumar (20159012)</li> </ul>	2018-19 May 2018
17	Heat Transfer Performance of Nanofluids	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Rozy Kumari (20169013)</li> <li>• Vaibhav Sharma (20169043)</li> <li>• Paras Shukla (20159033)</li> </ul>	2019-20 June 2020
18	Nanofluids and Their effect on Heat Transfer Characteristics of a Heat Exchanger	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Branzil (20179009)</li> <li>• Sachin Sachan (20179032)</li> <li>• Parikshit Pandey (20179019)</li> <li>• Nishant K. Motghare (20179042)</li> </ul>	2020-21 June 2021
19	Enhancement of Heat Transfer Behavior in Plate Heat Exchanger using Nanofluids	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Rishabh Sharma, (20189025)</li> <li>• Srijan Pandey, (20189008)</li> <li>• Mahendra Pratap Singh, (20189015)</li> <li>• Mayank Upadhyay, (20189014)</li> </ul>	2021-22 May 2022
20.	Measurement of Thermophysical Properties of Alumina/Water based Nanofluids for Heat Exchange Operations	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Anand Kumar (20199017)</li> <li>• Harsh Mishra (20199043)</li> <li>• Piyush Suhas Mane (20199013)</li> <li>• Shubham Kumar Singh (20199004)</li> </ul>	2022-23 December 2022
21	Measurement of Thermophysical Properties of Copper Oxide/Water & CNT/Water based Nanofluids for Heat Exchange Operations	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Anand Kumar (20199017)</li> <li>• Harsh Mishra (20199043)</li> <li>• Piyush Suhas Mane (20199013)</li> <li>• Shubham Kumar Singh (20199004)</li> </ul>	2022-23 May 2023
22	Modelling & CFD Analysis of Compact Heat Exchangers	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Shradha Kedia (20201109)</li> <li>• Sakshi Pathak (20209047)</li> <li>• Shikha Patel (20209051)</li> <li>• Sumit Kumar (20209056)</li> </ul>	2023-24 December 2023
23	Thermal Management & CFD Analysis of Li-ion Batteries	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Shradha Kedia (20201109)</li> <li>• Shikha Patel (20209051)</li> <li>• Sumit Kumar (20209056)</li> </ul>	2023-24 May 2024
24	Hydrodynamics of Blood Flow & Impact of Microplastic	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Deepti Dixit (20218038)</li> <li>• Neelansh Agrawal (20218028)</li> <li>• Sheetal (20218021)</li> <li>• Shivangi Sonkar (20211093)</li> </ul>	2024-25 December 2024
25	Blood Flow Dynamics in Coronary Artery with Microplastic	MNNIT Allahabad	<ul style="list-style-type: none"> <li>• Deepti Dixit (20218038)</li> <li>• Sheetal (20218021)</li> <li>• Shivangi Sonkar (20211093)</li> </ul>	2024-25 May 2025
26.	Effects of Microplastic on the hemodynamics of cerebral blood flow through the circle of Willis		<ul style="list-style-type: none"> <li>• Shaniya Mulla (20222047)</li> <li>• Priya Gautam (20222038)</li> <li>• Pal Pawan (20222036)</li> <li>• Alok Kumar (20222007)</li> </ul>	2025-26 December 2025

**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)

## Annexure-V: Details of Conferences /workshops/Short Term Courses organized

### A. Details of Conferences organized

S. No.	Details
1	<ol style="list-style-type: none"><li>Title: International Conference on Technological Interventions for Sustainability, CHEM-CONFLUX 22.</li><li>Sponsored by: MNNIT Allahabad + Other agencies</li><li>Period: 03 Days (April 14-16, 2022)</li><li>Number of participants attended: 633 Research Papers</li><li>Role in organizing the <b>Conference: Organizing Secretary</b></li></ol>
2.	<ol style="list-style-type: none"><li>Title: International conference on Energy and Environmental Technologies for Sustainable Development (CHEM-CONFLUX20)</li><li>Sponsored by: MNNIT Allahabad+ Other agencies</li><li>Period: 03 Days (14-16 February 2020)</li><li>Number of participants attended: 161 Research Papers</li><li>Role in organizing the <b>Conference: Chairperson</b></li></ol>
3	<ol style="list-style-type: none"><li>Title: National conference on Industrial Application of Nano-Science &amp; Nanotechnology (IANN-2019)</li><li>Sponsored by: MNNIT Allahabad+ Other agencies</li><li>Period: 02 Days (November 15-16, 2018)</li><li>Number of participants attended: 50 Research Papers</li><li>Role in organizing the <b>Conference: Chairperson</b></li></ol>
4	<ol style="list-style-type: none"><li>Title: 6<sup>th</sup> International and 43<sup>rd</sup> National Conference on Fluid Mechanics and Fluid Power (FMFP-2016)</li><li>Sponsored by: MNNIT Allahabad</li><li>Period: 03 Days (December 15-17, 2016)</li><li>Number of participants attended: 633 Research Papers</li><li>Role in organizing the <b>Conference: Coordinator (Technical Session)</b></li></ol>

### B. Details of workshops/Short Term Courses organized

S. No.	Details
1.	<ol style="list-style-type: none"><li>Opportunity and challenge for employment and entrepreneurship in Chemical Bio Process (OCEE-2021)</li><li>Sponsored by: MNNIT Allahabad Financed</li><li>Period: 05 Days (March 16-20, 2021)</li><li>Role in organizing the <b>Short-Term Course: Coordinator</b></li><li><b>Budget: Rs. 1.0 Lacs</b></li></ol>
2.	<ol style="list-style-type: none"><li>Research aspects in chemical engineering (RACE – 2019)</li><li>Sponsored by: Self-Financed</li><li>Period: 43 Days (May 24- July 06, 2019)</li><li>Role in organizing the <b>Work shop: Chairperson &amp; Coordinator</b></li><li><b>Budget: Rs. 0.5 Lacs</b></li></ol>
3.	<ol style="list-style-type: none"><li>New trends in wastewater treatment and its reuse (NTWT – 2019)</li><li>Sponsored by: TEQIP-III Financed</li><li>Period: 05 Days (March 12-16, 2019)</li><li>Role in organizing the <b>Short-Term Course: Chairperson &amp; Coordinator</b></li></ol>

	5. <b>Budget: Rs. 1.0 Lacs</b>
4.	1. Title: Industrial Applications of Heat Transfer Operations (IAHTO - I:2018) 2. Sponsored by: TEQIP-III Financed 3. Period: 05 Days (October 10-14, 2018) 4. Number of participants attended: 49 5. Role in organizing the <b>Short-Term Course: Chairperson &amp; Convener</b> 6. <b>Budget: Rs. 1.35 Lacs</b>
5.	1. Title: <b>तकनीकी शिक्षा के क्षेत्र में हिन्दी भाषा का महत्व</b> 2. Sponsored by: MNNIT Allahabad 3. Period: 01 Days (June 27, 2018) 4. Number of participants attended: 64 5. Role in organizing the <b>Workshop: Convener</b> 6. <b>Budget: Rs. 0.46 lacs</b>
6.	1. Title: National conference on Industrial Application of Nano-Science & Nanotechnology (IANN-2019) 2. Sponsored by: MNNIT Allahabad+ Other agencies 3. Period: 02 Days (November 15-16, 2018) 4. Number of participants attended: 50 Research Papers 5. Role in organizing the <b>Short-Term Course: Chairperson</b>
7.	1. Title: Modeling and Optimization of Chemical & Biochemical Processes 2. Sponsored by: Self-Financed 3. Period: 06 Days (January 16-21, 2017) 4. Number of participants attended: 37 5. Role in organizing the <b>Short-Term Course: Convener</b>
8.	1. Title: Experimental Approach in Analytical Electrochemistry 2. Sponsored by: MNNIT Allahabad 3. Period: 01 Days (January 28, 2017) 4. Number of participants attended: 57 5. Role in organizing the <b>Workshop: Coordinator</b>
9.	1. Title: Energy Efficiency Management 2. Sponsored by: MNNIT Allahabad 3. Period: 02 Days (24-25 March 2017) 4. Number of participants attended: 47 5. Role in organizing the <b>Workshop: Coordinator</b>
10.	1. Title: Application of Multiphysics and Inverse Modeling to Industrial Problems 2. Sponsored by: MNNIT Allahabad 3. Period: 02 Days (December 18-19, 2016) 4. Number of participants attended: 59 5. Role in organizing the <b>Workshop: Technical (Chair)</b>
11.	1. Title: Hindi Typing Workshop 2. Sponsored by: MNNIT Allahabad 3. Period: 01 Days (December 30, 2016) 4. Number of participants attended: 63 5. Role in organizing the <b>Workshop: Convener</b>

