

# DR. MUHAMMAD HARIS HAMAYUN

ASSISTANT PROFESSOR, DEPARTMENT OF CHEMICAL ENGINEERING,  
COMSATS UNIVERSITY ISLAMABAD, LAHORE CAMPUS



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## EDUCATION

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<b>Ph.D.</b>	Department of Chemical Engineering University of Engineering and Technology, Lahore (CGPA: 3.95/4.00)	Aug 2022
<b>M.Sc.</b>	Institute of Chemical Engineering and Technology University of the Punjab, Lahore (CGPA: 3.93/4.00)	Nov 2017
<b>B.Sc.</b>	Institute of Chemical Engineering and Technology University of the Punjab, Lahore (CGPA: 3.95/4.00)	May 2013
<b>F.Sc.</b>	Govt. Islamia College, Civil Lines Lahore Grade (%): A+ (81%)	Aug 2008
<b>Matric</b>	Sharaf Foundation High School, Lahore Grade (%): A+ (87%)	Aug 2006

## PROFESSIONAL EXPERIENCE

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<b>Assistant Professor</b>	Jan 2023 – to date
Department of Chemical Engineering COMSATS University Islamabad, Lahore Campus.	
<b>Lecturer</b>	Feb 2020 – Jan 2023
Department of Chemical Engineering COMSATS University Islamabad, Lahore Campus.	

<b>Research Associate</b>	Aug 2015 – Feb 2020
Department of Chemical Engineering	
COMSATS University Islamabad, Lahore Campus.	
<b>Assistant Manager Utilities and Process</b>	Aug 2014 – Jul 2015
Engro Eximp Agri Products (Pvt.) Ltd.	
<b>Graduate Trainee Engineer</b>	Aug 2013 – Aug 2014
Engro Eximp Agri Products (Pvt.) Ltd.	
<b>Graduate Trainee Engineer</b>	May 2013 – Aug 2013
Nimir Chemicals (Pvt.) Ltd.	

#### **HONORS AND AWARDS**

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<b>Gold Medalist</b>	2013
B.Sc. Chemical Engineering	
<b>Silver Medalist</b>	2017
M.Sc. Chemical Engineering	
<b>Aspen HYSYS User Certification</b>	2022
AspenTech	

#### **RESEARCH EXPERIENCE**

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- Research Interests include Process Simulation, Design, and Optimization.
- MS Research Project: Generation of 5 MW Electricity using Liquid Organic Hydrogen Carriers (LOHC) – A simulation study was carried out to integrate dehydrogenation, hydrogenation, water electrolysis and steam generation system and the power requirements of energy intensive process, i.e., dehydrogenation was met without any external utilities requirement. Two manuscripts published from this research-work.
- PhD Research Project: Process Optimization of Heat-Integrated LNG Regasification with Air Separation Units – A simulation study was carried out to integrate LNG regasification process with air separation unit, followed by performance analysis using

exergy, advanced exergy and exergoeconomic analyses. Three manuscripts are published from this research-work.

- Member of Catalysis and Reaction Engineering Research Group; published overall fourteen (14) research articles in internationally reputed journals with a cumulative impact factor of 59.302 and an h-index of 10.
- Supervised/Co-supervised three MS research dissertations and currently supervising two MS research-work. Also, serving as an approved reviewer for various internationally reputed journals.

**Journal Publications (Cumulative Impact Factor = 59.302, h-index = 10):**

**Published / Accepted:**

- **Hamayun, M.H.;** Ramzan, N.; Faheem, M.; **2023**, Exergoeconomic Analysis of an LNG Integrated – Air Separation Process, *Korean Journal of Chemical Engineering*, Vol.: 40, Pages: 3017-3028, <https://doi.org/10.1007/s11814-023-1567-z> (**Impact Factor = 2.6**).
- **Hamayun, M.H.;** Ramzan, N.; Hussain, M.; Faheem, M.; **2022**, Conventional and Advanced Exergy Analyses of an Integrated LNG Regasification – Air Separation Process, *Industrial & Engineering Chemistry Research*, Vol.: 61, Issue: 07, Pages: 2843 – 2853, <https://doi.org/10.1021/acs.iecr.1c03730> (**Impact Factor = 4.2**).
- **Hamayun, M.H.;** Hussain, M.; Shafiq, I.; Ashfaq, A.; Park, Y-K.; **2022**, Investigation of the thermodynamic performance of an existing steam power plant via energy and exergy analyses to restrain the environmental repercussions: A simulation study, *Environmental Engineering Research*, Vol.: 27, Issue: 01, Pages: 170 – 177, <https://doi.org/10.4491/eer.2020.683> (**Impact Factor = 3.5**).
- **Hamayun, M.H.;** Ramzan, N.; Hussain, M.; Faheem, M.; **2021**, Reply to Variny et al. Comment on “Hamayun et al. Evaluation of Two-Column Air Separation Processes Based on Exergy Analysis. *Energies* 2020, 13, 6361”, *Energies*, Vol.: 14, Issue: 20, Article: 6445, <https://doi.org/10.3390/en14206445> (**Impact Factor = 3.252**).
- **Hamayun, M.H.;** Ramzan, N.; Hussain, M.; Faheem, M.; **2020**, Evaluation of Two-Column Cryogenic Air Separation Processes Based on Exergy Analysis, *Energies*,

- Vol.: 13, Issue: 23, Article: 6361, <https://doi.org/10.3390/en13236361> (Impact Factor = 3.004).
- **Hamayun, M.H.**; Maafa, I.H.; Hussain, M.; Aslam, R.; **2020**, Simulation study to investigate the effect of operational conditions on Methylcyclohexane dehydrogenation, *Energies*, Vol.: 13, Issue: 01, Article: 206, <https://doi.org/10.3390/en13010206> (Impact Factor = 3.004).
  - **Hamayun, M.H.**; Hussain, M.; Maafa, I.H.; Aslam, R.; **2019**, Integration of hydrogenation and dehydrogenation systems for hydrogen storage and electricity generation-Simulation Study, *International Journal of Hydrogen Energy*, Vol.: 44, Issue: 36, Pages: 20213 – 20222, <https://doi.org/10.1016/j.ijhydene.2019.06.053> (Impact Factor = 4.939).
  - Maqbool, M.A.; Khan, J.; **Hamayun, M.H.**; Ahmed, F.; Hussain, M.; **2023**, Optimal Retrofitting of MCH-Toluene Dehydrogenation system: Energy and Technoeconomic Analysis, *Energy Conversion and Management*, Vol.: 286, <https://doi.org/10.1016/j.enconman.2023.117049> (Impact Factor = 9.8).
  - Oyewo, A.T.; Oluwole, O.O.; Ajide, O.O.; Omoniyi, T.E.; Akhter, P.; **Hamayun, M.H.**; Kang, B.S.; Park, Y-K.; Hussain, M.; **2023**, Physico–chemical, Thermal and Micro- structural Characterization of Four Common Banana Pseudo-Stem Fiber Cultivars in Nigeria, *Journal of Natural Fibers*, Vol.: 20, Issue: 01, <https://doi.org/10.1080/15440478.2023.2167031> (Impact Factor: 3.4).
  - Oyewo, A.T.; Oluwole O.O.; Ajide, O.O.; Omoniy, T.E.; **Hamayun, M.H.**; Hussain, M.; **2022**, Experimental and Theoretical Studies to Investigate the Water Absorption Behavior of Carbon/Banana Fibre Hybrid Epoxy Composite, *Materials Chemistry and Physics*, Vol.: 285, <https://doi.org/10.1016/j.matchemphys.2022.126084> (Impact Factor = 4.6).
  - Shafiq, I.; Shafique, S.; Mudassir, M.; **Hamayun, M.H.**; Hussain, M.; **2022**, Recommendations on the Firefighting System Design, Erection and Safe Operation, *Journal of Pipeline Systems Engineering and Practice*, Vol.: 13, Issue: 01, [https://doi.org/10.1061/\(ASCE\)PS.1949-1204.0000592](https://doi.org/10.1061/(ASCE)PS.1949-1204.0000592) (Impact Factor = 2.0).
  - Shafiq, I.; Hussain, M.; Shafique, S.; **Hamayun, M.H.**; Mudassir, M.; Nawaz, Z.; Ahmed A.; Park, Y-K.; **2021**, A comprehensive numerical design of firefighting

systems for onshore petroleum installations, *Korean Journal of Chemical Engineering*, Vol.: 38, Issue: 09, Pages: 1768 – 1780, <https://doi.org/10.1007/s11814-021-0820-6> (**Impact Factor = 3.146**).

- Rashid, R.; Shafiq, I.; Iqbal, M.J.; Shabir, M.; Akhter, P.; **Hamayun, M.H.**; Ahmed, A.; Hussain, M.; **2021**, Synergistic effect of NS co-doped TiO<sub>2</sub> adsorbent for removal of cationic dyes, *Journal of Environmental Chemical Engineering*, Vol.: 09, Issue: 04, <https://doi.org/10.1016/j.jece.2021.105480> (**Impact Factor = 7.968**).
- Asif, F.; **Hamayun, M.H.**; Hussain, M.; Hussain, A.; Maafa, I.M.; Park, Y-K.; **2021**, Performance Analysis of the Perhydro-Dibenzyl-Toluene Dehydrogenation System – A Simulation Study, *Sustainability*, Vol.: 13, Issue: 11, Article: 6490, <https://doi.org/10.3390/su13116490> (**Impact Factor = 3.889**).

#### **Under Review/Submitted:**

- Rashad, M.R.; Jamil, F.; Hussain, M.; Akhter, P.; **Hamayun, M.H.**; Ahsan, A.; Chew, K.W.; Park, Y-K.; **2025**, Zero-Carbon Solution: Microalgae as a Low-Cost Feedstock for Fuel Production and Carbon Sequestration, *Critical Reviews in Environmental Science and Technology* (Minor Revisions Submitted).
- Rashad, M.R.; Hussain, M.; Akhter, P.; **Hamayun, M.H.**; Ahsan, A.; Jamil, F.; Lee, D.; Park, Y-K.; **2025**, Transforming Municipal Solid Waste Management: Current Status of Segregation Challenges, Waste-to-Energy Technologies, and Circular Economy Strategies, *Journal of Industrial and Engineering Chemistry* (Manuscript ID: JICE-D-24-03574, Revisions Submitted).

#### **Conference Papers:**

- **Hamayun, M.H.**; Ramzan, N.; Hussain, M.; Faheem, M.; **2020**. A Comparison of Cryogenic Air Separation Processes Based on Exergy Analysis, *2020 Virtual AIChE Annual Meeting*, San Francisco, CA.
- **Hamayun, M.H.**; Omar Q.M.; Ijaz, A.; Saleem, M.; **2016**. Energetic and Exergetic Analysis of 2.97 MW Rice Husk Fired Steam Turbine Power Plant in an Existing Fertilizer Industry by Using Aspen HYSYS® V8.8, *3<sup>rd</sup> Conference on Sustainability in Process Industry (SPI 2016)*, pp: 200.

- Saleem, M.; Omar Q.M.; **Hamayun, M.H.**; 2016. Entropy Generation and Work Lost Analysis of Rice Husk Fired Thermal Power Plant: A Case Study, *3<sup>rd</sup> Conference on Sustainability in Process Industry (SPI 2016)*, pp: 50.

### **Reviewer Role:**

Approved reviewer of the three journals namely (1) Processes, (2) Energies, and (3) Sustainability. Reviewed multiple articles received from the following journals:

- International Journal of Hydrogen Energy (Impact Factor = 8.1)
- Cleaner Engineering and Technology (Impact Factor = 5.3)
- Industrial & Engineering Chemistry Research (Impact Factor = 3.8)
- Chemical Engineering Research and Design (Impact Factor = 3.7)
- Sustainability (Impact Factor = 3.3)
- Processes (Impact Factor = 2.8)
- Reactions (Impact Factor = 2.2)
- Hydrogen (ISI Indexed)

### **Research Dissertation Supervised/Co-Supervised:**

#### **MS in Chemical Engineering:**

- **Muhammad Naeem Khalid:** Techno-economic analysis of Air Separation Units Integrated with LNG Regasification (Role: Supervisor, In-Progress, **2024**).
- **Shazam Ali:** Simulation-Based Development of Deep Eutectic Solvent-Driven Extractive Distillation for Butanol Separation (Role: Co-Supervisor, In-Progress, **2024**).
- **Muhammad Anas Maqbool:** Parametric Optimization of Heat Integrated LOHC System (Role: Co-Supervisor, Completed, **2023**).
- **Farea Asif:** Dehydrogenation of Perhydro-dibenzyltoluene for Hydrogen Storage: A Simulation Study (Role: Co-Supervisor, Completed, **2021**).

### **MS in Energy and Environmental Engineering:**

- **Moeen Ali Rashad:** Biodiesel production using waste cooking oil by novel heterogeneous catalyst synthesized from waste biomass (Role: Supervisor, Completed, 2024).

### **TEACHING EXPERIENCE**

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#### **COMSATS University Islamabad, Lahore Campus**

**Assistant Professor**, Department of Chemical Engineering Jan 2023 – to date

**Lecturer**, Department of Chemical Engineering Feb 2020 – Jan 2023

**Research Associate**, Department of Chemical Engineering Aug 2015 – Feb 2020

- Incharge of Process Modeling and Simulation Lab and Chemical Reaction Engineering Lab.
- Currently, working as Incharge Marketing Committee, Co-Incharge Admissions Committee and Senior Student Advisor.
- Worked as a vital member/secretary of Continual Quality Improvement Cell (CQIC), responsible for preparing OBE related documentation i.e., PLO and PEO Attainment Mechanism, moderation of course-folder, lab folders and their audits, conducting OBE training etc. Preparation of agenda and minutes of meetings. Key Member of the team which conducted two successful visits of the Pakistan Engineering Council (PEC) to assess the education system under Washington Accord Level II OBE Accreditation, resulting in the 3 years and 4 years (highest-possible) accreditation for the department in 2019 and 2023 respectively.
- Worked in Final year design project committee, developed infrastructure of FYDP as per OBE mechanism, conducted various evaluations, and preparation of result. Supervised / Co-Supervised of 8 dissertations of BS Chemical Engineering.
- Worked as Batch Advisor of the department, resolved critical issues of students, done students registration on time, monitored the progress of critical students and fortnightly meetings with them. Organized Intra-Department Sports Gala for Spring-2017 and Fall-2017.

- Worked as Safety Officer in the department. Implementation of safety standards in labs as per the OBE system.
- Worked as a member of the Curriculum Review Committee, prepared and revised curriculums of various engineering programs, which include: (1) BS Chemical Engineering, (2) BS Polymer and Petrochemical Engineering, (3) BS Process Systems and Automations, (4) BS Process Systems Engineering, (5) MS Process Systems Engineering, (6) MS Chemical Engineering, and (7) Ph.D. Chemical Engineering.

### **Courses Taught:**

- Process Modeling and Simulation (Theory and Lab)
- Chemical Reaction Engineering (Theory and Lab)
- Chemical Process Design and Simulations
- Chemical Engineering Plant Design
- Simultaneous Heat and Mass Transfer Operations (Theory and Lab)

### **Thesis Supervised/Co-Supervised:**

#### **BS in Chemical Engineering:**

- A plant design project on the production of 100,000 tons per annum of n-butanal from hydroformylation of propylene, **2025 (In process)**.
- A plant design project on the production of 100 metric tons per day of sustainable ammonia using renewable energy, **2024**.
- A plant design project on petrol and diesel production from 100 metric tons/day of waste plastic, **2024**.
- A plant design project on the production of 500 metric tons per day of nitric acid from ammonia, **2023**.
- A plant design project on the production of 100 metric tons per day of cyclohexane from benzene, **2023**.
- A plant design project on the production of 20 metric tons per day of cumene by UP Q-Max process, **2022**.



- A plant design project on the production of 2500 metric tons per day of ammonia by holder topsoe process, **2022**.
- A plant design project on the production of 200 metric tons per day of styrene via catalytic dehydrogenation of ethylbenzene, **2021**.
- A plant design project on the production of 30,000 barrels per day of ultra-low sulfur diesel by diesel hydrodesulfurization process, **2021**.
- A plant design project on production of 1200 kmol per day of hydrogen from biogas, **2020**.
- A plant design project on gasification of 30 tons per day of bagasse to produce syngas, **2016**.

#### **TRAINING / WORKSHOP ATTENDED**

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- Workshop on Entrepreneurship for Engineers organized by Pakistan Engineering Council (1 CPD point)
- Workshop on Development of Technical Team & Execution of a Project, organized by Pakistan Engineering Council (0.5 CPD point)
- Workshop on Development of Technical Team & Execution of a Project – more on the implementation side, organized by Pakistan Engineering Council (0.5 CPD point)
- Workshop on Complex Engineering Problem, organized by DUET, Karachi (0.5 CPD point)
- Workshop on Entrepreneurship Development by Managing Technology and Innovation in Water and Wastewater Treatment Projects, organized by Pakistan Engineering Council (0.5 CPD point)
- Workshop on HI-Tech Enterprises and Supervisory Control and Data Acquisition (SCADA) System Software, organized by Pakistan Engineering Council (0.5 CPD point).

#### **LANGUAGES**

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- **Urdu:** Native Language
- **English:** Intermediate Listener, Novice Speaker, Advanced Reading, and Writing

## COMPUTER SKILLS

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- ASPEN (Aspen Plus, Aspen HYSYS, Aspen Exchanger Design and Rating, Aspen Plus Dynamics, Aspen Economic Analyzer)
- MS Office (Excel, Word, PowerPoint, Visio)

## INTERESTS / HOBBIES

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- Cricket
- Football
- Newspaper reading

## REFERENCES

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**Dr. Muhammad Faheem**, (Associate Professor/Director Postgraduate Studies)

Department of Chemical Engineering,

University of Engineering and Technology, Lahore.

Email: [faheem@uet.edu.pk](mailto:faheem@uet.edu.pk)

**Dr. Murid Hussain**, (Associate Professor/Chairperson and Former HoD)

Department of Chemical Engineering,

COMSATS University Islamabad, Lahore Campus.

Email: [drmhussain@cuilahore.edu.pk](mailto:drmhussain@cuilahore.edu.pk)

**Dr. Asim Laeeq Khan**, (Associate Professor/ Former Head of the Department)

Department of Chemical Engineering,

COMSATS University Islamabad, Lahore Campus.

Email: [alaeqkhan@cuilahore.edu.pk](mailto:alaeqkhan@cuilahore.edu.pk)