

BILAL ALAM KHAN

Assistant Professor (Chemical and Energy)

Pak-Austria Fachhochschule, IAST, Haripur

Email: DrBilal@outlook.it

<https://www.linkedin.com/in/drabilaal>



Highly skilled and dedicated Chemical Engineer Turned Researcher with expertise in Hydrogen production methods, Fuel Cell technology, Atmospheric, Metrology for trace gas measurements & experimental modeling. Along with academic research, I have been actively engaged in EU-funded EMPIR projects, MetClim VOC and KEY-VOCs.

EDUCATION

Doctor of Philosophy (PhD), Chemical Engineering

Department of Applied Science and Technology (DISAT)

Politecnico di Torino, Italy

Nov 2017 -Nov 2021

Master of Petroleum Engineering | (102/110)

Department of Environment, Land, and Infrastructure Engineering (DIATI)

Politecnico di Torino, Italy

Oct 2015 -Oct 2017

Bachelor of Engineering (B.E), Chemical Engineering | (3.42/4.0)

Department of Chemical Engineering

Dawood UET, Khi, Pak

Jan 2011-March 2015

RESEARCH INTEREST

- Metrology of trace gas mixture for climate change and indoor air
- Green Hydrogen and Fuel Cell technology
- Hydrogen production from methane cracking and water electrolysis
- CO2 Capture processing and Process optimization

PROFESSIONAL EXPERIENCE

Assistant Professor (Department of Chemical)

Pak-Austria Fachhochschule, IAST

Haripur, Pakistan

Nov 2024—Current

- Teaching responsibilities
- Research on renewables energy resources

Research Engineer (R&D Chemical)

E. Hy. Energy Hydrogen Solution S.p.A, PISA

PISA, Italy

Feb 2023—Feb 2024

- Developing methods for green Hydrogen and Mixture gases.
- Establishing R&D Laboratory for Chemical Standards and certifications
- Design and development of Fuel Cell and other hydrogen reactors.

Research Assistant

Gas Analysis Laboratory, DISAT, Politecnico di Torino (PoliTo), Italy.

Torino, Italy

Sep 2017—Nov 2022

- Quantified the contribution of Gas Solid interactions in metrology for Climate change and Air quality by Developing measurements models and methods.
- Defined the role of sampling losses to get target of uncertainty of $\leq 5\%$ in VOC measurements using Surface chemistry, Gas mixture analysis, metrological Analysis, and gas solid interactions.
- Calibration, Validation and maintenance of different lab equipment and methods.

LANGUAGES

- ✓ ENGLISH (Professional),
- ✓ ITALIAN (Professional),
- ✓ URDU (Native),
- ✓ DUTCH (Basic)

SKILLS

- ✓ Computational Fluid Dynamics CFD, ANSYS Fluent, ASPEN HYSYS
- ✓ Programming (Python, C, C++, MATLAB, TEX/LATEX)
- ✓ Laboratory Skills, Chemical Analysis, Gas Chromatography, Metrological Analysis, Risk Analysis
- ✓ Interpersonal Skills, Team Leader, Time management, Research writings and Presentation

PROJECTS AND THESIS

Metrology for climate relevant volatile organic compounds (MetClim) **PoliTo, Italy**

<https://metclimvoc.eu/default.html>

- EMPIR project Aims to improve quality of reference gas mixture standards and techniques
- Lead the first publication for the project and surface interaction's role in sampling of VOCs

PhD Thesis **PoliTo, Italy**

Measurement Methods of Gas-Solid Interactions

<https://iris.polito.it/handle/11583/2942142>

- Designed the measurement system and models to quantify of surface interactions as bias for measurements of trace gas mixture (VOCs) and its application in Climate change, semiconductor industry, Indoor air quality and Breath analysis.
- Evaluated different constants and its sensitivity for prediction of reaction rate and measurements of maximum interacted mass of gas mixtures (VOCs) on solid surfaces.
- Quantified the Losses with total uncertainty of $\leq 5\%$, using Accuracy and uncertainty budget estimation, calibration, and validation of various laboratory instruments, and monitoring physical parameters.

Investigation on crude oil transport under non-isothermal condition **Miskolc Egytem, Hungary**

- Designed the Pipeline for oil transportation under non isothermal conditions.
- Developed the models for prediction of viscosity, energy, and Temperature along the line.

Life Cycle Assessment of Normal Plastic bag vs Biodegradable on Sima-Pro **PoliTo, Italy**

- Suggestion based on LCA with the help of Sima Pro and Gabbi On environmental impacts.
- LCA from Cradle to Grave of Biodegradable Plastic bags vs Non-biodegradable.

Risk Analysis of Gas Processing Plant **PoliTo, Italy**

- HAZOP, FMECA, FTA, ETA, RBD
- Availability and Reliability Analysis were done for a natural gas plant.

CPEC Oil and water transportation Design **PoliTo, Italy**

- Designed the Pipeline as part of China–Pakistan Economic Corridor
- Transportation of Oil and Water from Gwadar port to Quetta city.

Risk Management in Export compliance **PoliTo, Italy**

- Identification and mitigation of dual use items and risk associated to it in export
- Creation of framework to create standards for exporting or importing items

Energy minimization and design of turbo expander for NGLs by using aspen HYSYS **DUET, Pak**

- Designed Natural Gas Liquids NGLs recovery plant using HYSYS from Natural Gas
- Energy minimization of turbo expander and enhancement of efficiency

INTERNSHIPS

Internee (E&P)	Pakistan Petroleum Limited (PPL), Pak https://www.ppl.com.pk
Internee (Oil Refinery)	BYCO Petroleum Pakistan Limited, Pak http://www.byco.com.pk
Internee (Processing)	Fauji Fertilizer Bin Qasim Limited, Pak https://www.ffbl.com
Internee (Processing)	Novatex Limited, Pak https://gatronova.com

TRAININGS & MOBILITY

Erasmus+ Mobility Exchange	Miskolc Egyetem, Hungary
Sino European Engineering Education Platform (SEEEP)	KTH Sweden & T/U Eindhoven
Science Among Youth by Young Guru Academy (YGA)	Ozyegin university Istanbul, Turkey
NathyaGali Summer College	National Center for Physics, Islamabad, Pak

NETWORKS AND MEMBERSHIPS

Italian Aerosol Society (IAS) https://www.iasaerosol.it	Italy Jan 2020-Current
European Citizen science association (ECSA) https://www.iasaerosol.it	Germany Feb 2020-Current
Pakistan Engineering Council https://www.pec.org.pk	Pakistan April 2015-Current
Society of Petroleum engineers (SPE) https://www.iasaerosol.it	Italy Aug 2015-Dec 2017

AWARDS

- ✓ Received merit-based master's and Ph.D. scholarship from HEC.
- ✓ Mobility for Master thesis by Erasmus+

PUBLICATIONS SUMMARY (Detailed Publications can be seen in Annex A)

Journal Articles (Web of Science/ISI indexed)	7
Conferences	02
Total Citations (Google Scholar) May 2023	56
h-index	4
i-10 Index	2
https://scholar.google.com/citations?user=QHfGkAAAAAJ&hl=en&oi=ao	
https://orcid.org/0000-0002-1794-9517	

Annex A
(List of Publications)

Sr. No.	References	DOIs/ Links
1.	Sassi, Guido, Bilal Alam Khan , and Maricarmen Lecuna. "Reproducibility of the Quantification of Reversible Wall Interactions in VOC Sampling Lines." <i>Atmosphere</i> 12, no. 2 (2021): 280.	https://doi.org/10.3390/atmos12020280
2.	Khan, Bilal Alam , Asad Ullah, Muhammad Wajid Saleem, Abdullah Nawaz Khan, Muhammad Faiq, and Mir Haris. "Energy minimization in piperazine promoted MDEA-based CO2 capture process." <i>Sustainability</i> 12, no. 20 (2020): 8524.	https://doi.org/10.3390/su12208524
3.	Khoja, Asif Hussain, Abul Kalam Azad, Faisal Saleem, Bilal Alam Khan , Salman Raza Naqvi, Muhammad Taqi Mehran, and Nor Aishah Saidina Amin. "Hydrogen production from methane cracking in dielectric barrier discharge catalytic plasma reactor using a nanocatalyst." <i>Energies</i> 13, no. 22 (2020): 5921.	https://doi.org/10.3390/en13225921
4.	Ullah, Asad, Mujeeb Iqbal Soomro, Woo-Seung Kim, Bilal Alam Khan , Salman Memon, and Saddam Hussain Soomro. "Integration of CO2 capture unit with membrane distillation technology: CO2 mitigation and freshwater production." <i>Chemical Engineering and Processing-Process Intensification</i> 158 (2020): 108185.	https://doi.org/10.1016/j.cep.2020.108185
5.	Ali, Azam, Mariyam Sattar, Tauqeer Riaz, Bilal Alam Khan , Muhammad Awais, Jiri Militky, and Muhammad Tayyab Noman. "Highly stretchable durable electro-thermal conductive yarns made by deposition of carbon nanotubes." <i>The Journal of The Textile Institute</i> 113, no. 1 (2022): 80-89.	https://doi.org/10.1080/00405000.2020.1863569
6.	Ali, Rehmat, Um Karamat, Hafiza Saba Nazir, Mirza Muhammed Baig, Bilal Alam Khan , Asad Ullah, Osama Usman, Tanya Waseem, And Muhammad Farrukh Tahir. "Antimicrobial activity of cotton fibres treated with particles extracted from citrus plants: a review."	https://doi.org/10.15240/tul/008/2023-2-008
7.	Zaffar, A., B. A. Khan , A. H. Khoja, M. T. Mehran, S. R. Naqvi, and M. Ali. "PARTIAL OXIDATION OF METHANE USING ASH DERIVED Co/Zeolite CATALYST FOR HYDROGEN RICH SYNGAS PRODUCTION." <i>Sustainable Energy & Catalysis (ICSEC 2021)</i> .	https://fkt.utm.my/icsec2021/wp-content/uploads/sites/213/2021/02/R12-Full-Proceedings-ICSEC2021.pdf#page=56
8.	Zaffar, Amer, Bilal Alam Khan , Asif Hussain Khoja, Uneeb Masood Khan, Qassam Sarmad, Muhammad Taqi Mehran, Salman Raza Naqvi, and Majid Ali. "Synthesis of ash derived co/zeolite catalyst for hydrogen rich syngas production via partial oxidation of methane." <i>Bulletin of Chemical Reaction Engineering & Catalysis</i> 16, no. 3 (2021): 507-516.	https://doi.org/10.9767/bcrec.16.3.10614.507-516
9.	Amin Ul Hasnat, Asif H. Khoja, Nida Naeem, Abdulaziz Al-Anazi, Rabia Liaquat, Bilal Alam Khan , Israf Ud Din "Thermocatalytic partial oxidation of methane to syngas (H2, CO) production using Ni/La2O3 modified biomass fly ash supported catalyst." <i>Results in Engineering</i> , 2023, 101333, ISSN 2590-1230,	https://doi.org/10.1016/j.rineng.2023.101333