

Dr. Asmat Ullah

Associate Professor

Department of Chemical Engineering, University of Engineering and Technology Peshawar, Pakistan

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Education

Postdoc Research Fellowship

02 February 2015 to 03 September, 2015

School of Chemical and Biomedical Engineering (SCBE), Nanyang Technological University (NTU), Singapore

Research Topic: Membrane Fouling Mitigation Techniques for Oily Waste Waters,

Supervisors: Dr. Jia Wei Chew and Prof. Anthony Fane

PhD in Chemical Engineering

August, 2014

Loughborough University, United Kingdom

Dissertation Title: Separation of Oil Drops from Produced Water using a Slotted Pore Membrane, Supervisors: Prof. Victor Starov and Prof. Richard Holdich

Bachelor of Science in Chemical Engineering

May, 2007

University of Engineering & Technology, Peshawar KPK, Pakistan

Work Experience

Associate Professor

31 August, 2022 till Date

Department of Chemical Engineering, UET Peshawar, KPK, Pakistan

- Teaching at undergraduate level
- Teaching at PhD and Master levels
- Courses Taught: Transport Phenomena, Heat Transfer, Chemical Engineering Principles
- Research supervision at Postgraduate level
- Research Supervision of Final Year Projects at undergraduate level
- Batch advisor 2020-2024 session
- Team member for developing and implementation of OBE system in the department

Assistant Professor**01 Oct, 2014 to 30 Aug, 2022**

Department of Chemical Engineering, UET Peshawar, KPK, Pakistan

- Teaching at undergraduate level
- Teaching at PhD and Master levels
- Courses Taught: Mass Transfer, Fluid Flow, Chemical Engineering Calculations, Mathematical Modelling in Chemical Engineering, Membrane Technology, Chemical Engineering Thermodynamics
- Research supervision at Postgraduate level
- Research Supervision of Final Year Projects at undergraduate level
- Batch advisor 2016-2020 session
- Team member for developing and implementation of OBE system in the department

Postdoc Research Fellow**02 Feb, 2015 to 03 Sept, 2015**

School of Chemical and Biomedical Engineering (SCBE), Nanyang Technological University (NTU), Singapore

- Research and writing peer reviewed articles.
- Research supervision of PhD, Masters and Undergraduate student

Term Time University Lecturer**July, 2009 to July, 2014**

Department of Chemical Engineering, Loughborough University, UK.

- Teaching labs to 1st and 2nd semester undergraduate students. The labs include fluid flow and computing labs (MS office and Comsol software)

Courses Taught

- Transport Phenomena
- Heat Transfer lab
- Mass Transfer
- Fluid flow
- Chemical Engineering Principles
- Membrane Separation Technology
- Chemical Engineering Thermodynamics

Research Supervision

- Computational analysis of membrane oscillation and fouling (MSc, Completed)

- Comparative study of size distribution of crude oil drops in permeate of converging and non-converging slotted pore membrane (MSc, Completed)
- Statistical analysis of membrane oscillation and its influence on blocking of membrane pores (MSc, Completed)
- Use of Marble Waste as Additive in Fired Clay Bricks (MSc, Completed)
- Artificial Intelligence based membrane technology for produced water treatment (PhD, In Progress)
- Characterization of produced water based on Geography and age of the oil and gas fields (MSc, In Progress)
- Metal Organic Framework (MOF) for oil water separation (MSc, In Progress)

Honors and Awards

- Awarded Postdoc fellowship at the School of Chemical and Biomedical Engineering (SCBE), Nanyang Technological University (NTU), Singapore.
- Awarded fully funded PhD Scholarship to pursue studies at the Department of Chemical Engineering, Loughborough University, UK.
- HEC Approved Supervisor from 2017-20 and 2020-2023.
- Chaired session at the Virtual International Conference on Membrane Science and Technology, ICM-2020 July 20-22, 2020.
- Chaired session at the International Conference on Sustainability in Process industry (SPI-2018) on 24th-25th October, 2018, University of Engineering and Technology, Peshawar.
- Invited speaker at the spring school “wastewater treatment and reuse by membrane separation technologies” at Ege University, Izmir, Turkey, 2018.
- Invited Speaker in Web Conference on Membrane Process Modelling, 2-4 December 2020, Organized by Gubkin Russian State University of Oil and Gas.

Research Grants

1. **Produced Water Treatment using Artificial Intelligence based Renewable Energy Powered Membrane Technology: A Novel Approach (09 Million PRK, NRPU, HEC Pakistan).**

Research Collaboration

- Department of Chemical Engineering, Loughborough University, Professor Victor Starov, UK.
- Department of Chemical & Biomedical Engineering, Nanyang Technological University (NTU), Dr. Jia Wei Chew & Professor Anthony Fane, Singapore.

- Centre for Water Advanced Technology and Environmental Research, College of Engineering, Swansea University, Professor Nidal Hilal, Swansea, Wales, United Kingdom.
- Institute for Advanced Membrane Technology (IAMT), Karlsruhe Institute of Technology, Professor Andrea Iris Schaefer, Karlsruhe, Germany.
- Department of Chemical Engineering, Ege University, Professor Nalan Kabay, Izmir, Turkey.
- Department of Chemical Engineering, Masdar Institute of Technology, Khalifa University, Dr. Shadi W. Hasan, UAE.
- Department of Environmental Engineering, National University of Science and Technology (NUST), Professor Sher Jamal Khan, Islamabad, Pakistan.
- Department of Chemical Engineering, COMSATS University Lahore, Dr. Asim Laeeq Khan, Pakistan.

Research Interests

- Produced Water Treatment using membranes
- Coupling to Artificial Intelligence with membrane treatment technologies
- Arsenic removal from drinking water using renewable energy powered membrane technology system
- Membrane synthesis and characterization
- Modelling of liquid flow through membrane pores
- CO₂ Capture
- Mineral Processing

Peer Reviewed Journal Papers

1. Hammad Khan, Saad Ullah Khan, Sajjad Hussain, **Asmat Ullah**, Modelling of transmembrane pressure using slot/pore blocking model, response surface and artificial intelligence approach, Chemosphere 290, (2022), 133313. <https://doi.org/10.1016/j.chemosphere.2021.133313>
2. Soma Safeer, Ravi P. Pandey, Bushra Rehman, Tuba Safder, Iftikhar Ahmad, Shadi W. Hasan, **Asmat Ullah**, Artificial intelligence in water purification and wastewater treatment: Recent advancements, Journal of Water Process Engineering 49 (2022) 102974, <https://doi.org/10.1016/j.jwpe.2022.102974>
3. **Asmat Ullah**, The influence of interfacial tension on rejection and permeation of the oil drops through a slit pore membrane, Separation and Purification Technology 266, (2021), 118581. <https://doi.org/10.1016/j.seppur.2021.118581>
4. **Asmat Ullah**, Henry J. Tanudjaja, Mariam Ouda, Shadi W. Hasan, Jia WeiChew, Membrane fouling mitigation techniques for oily wastewater: A short review, Journal of Water Process Engineering 43, (2021), 102293. <https://doi.org/10.1016/j.jwpe.2021.102293>

5. **Asmat Ullah**, Saad Ullah Khan, Kamran Alam, Umar Wahid, Victor M Starov, Crude Oil Drop Penetration into Permeates Using a Slotted Pore Membrane, *ACS Omega* 6 (42), (2021), 27763–27772. <https://doi.org/10.1021/acsomega.1c03227>
6. Kamran Alam, Abid Ullah; **Asmat Ullah**; Saddam A Khan; Saad Ullah; Asad Ali; Sajjad Hussain, A novel route to prepare superhydrophilic and antireflective double layer coating for solar PV module based on aerosol impact deposition assembly, *Thin Solid Films* 721, (2021), 138518. <https://doi.org/10.1016/j.tsf.2021.138518>
7. **Asmat Ullah**, Saad Ullah Khan, Kamran Alam, Hayat Khan, A novel analytical approach for estimating shear in the oscillatory membrane microfiltration, *Environmental Challenges* 4, (2021) 100066. <https://doi.org/10.1016/j.envc.2021.100066>
8. Xi Quan Cheng, Songwei Li, Hongfei Bao, Xiaobin Yang, Zhixing Li, Yingjie Zhang, Kai Wang, Jun Ma, **Asmat Ullah**, Lu Shao, Poly(sodium-p-styrenesulfonate)-grafted UiO-66 composite membranes boosting highly efficient molecular separation for environmental remediation, *Advanced Composites and Hybrid Materials* 289 (2021). <https://doi.org/10.1007/s42114-021-00253-w>
9. Farah Syed, **Asmat Ullah**, Estimation of economic benefits associated with the reduction in the CO₂ emission due to COVID-19, *Environmental Challenges* 3 (2021), 100069. <https://doi.org/10.1016/j.envc.2021.100069>
10. **Asmat Ullah**, Khan Shahzad, Sajjad Wali Khan, Victor Starov, Purification of produced water using oscillatory membrane filtration, *Desalination* 491, (2020), 114428. DOI: [10.1016/j.desal.2020.114428](https://doi.org/10.1016/j.desal.2020.114428)
11. F. Subhan, M. Naeem, Z. Yan, S. Aslam, M. Ibrahim, M. Khan, N. Shah, D. F. Shams, **A. Ullah**, A. Khan, S. Ullah, Effective performance of CeO₂ based silica for preparation of octanal, accepted for publication in *Journal of Porous Materials* 2020. DOI: [10.1007/s10934-020-00886-0](https://doi.org/10.1007/s10934-020-00886-0)
12. **Asmat Ullah**, Jamil Ahmad, Hayat Khan, Sajjad Wali Khan, Farhad Zamani, Victor M. Starov, Jia Wei Chew, Membrane Oscillation and slot (pore) blocking in oil-water separation, *Chemical Engineering Research and Design* 142, (2019), 111-120. DOI: [10.1016/j.cherd.2018.12.007](https://doi.org/10.1016/j.cherd.2018.12.007)

13. S.W. Khan, Bora Gencturk, Khan Shahzada, **Asmat Ullah**, Bending Behavior of Axially Preloaded Multilayered Spiral Strands, *Journal of Engineering Mechanics*, 144 (12), (2018), 1-19. DOI: [10.1061/\(ASCE\)EM.1943-7889.0001535](https://doi.org/10.1061/(ASCE)EM.1943-7889.0001535)
14. Hayat Khan, Imran Swati, Mohammad Younas, **Asmat Ullah**, Chelated Nitrogen-Sulphur-Codoped TiO₂: Synthesis, Characterization, Mechanistic, and UV/Visible Photocatalytic Studies, *International Journal of Photoenergy*, (2017), 1-17. DOI: [10.1155/2017/7268641](https://doi.org/10.1155/2017/7268641)
15. Farhad Zamani, **Asmat Ullah**, Ebrahim Akhondi, Henry J Tanudjaja, Emile R Cornelissen, Andrei Honciuc, Anthony G Fane, Impact of the surface energy of particulate foulants on membrane fouling, *Journal of Membrane Science* 510 (2016) 101-111. <http://dx.doi.org/10.1016/j.memsci.2016.02.064>
16. Muddasar Habib, QaziSohaib, **Asmat Ullah**, Unsia Habib, Abdullah Khan, Mechanical strength evaluation of composites made from waste printed boards, *Particulate Science and Technology* 34 (3) 2016 301-307. DOI: [10.1080/02726351.2015.1075638](https://doi.org/10.1080/02726351.2015.1075638)
17. Muhammad Imran Ahmad, Muhammad Sajjad, Irfan Ahmed Khan, Amina Durrani, Ali Ahmad Durrani, Saeed Gul, **Asmat Ullah**, Sustainable production of blended cement in Pakistan through addition of natural pozzolana, *Chemical Industry and Chemical Engineering Quarterly* 22 (1) 2016 41-45 DOI: [10.2298/CICEQ141012017A](https://doi.org/10.2298/CICEQ141012017A)
18. **A.Ullah**, M. Habib, S.W. Khan, I. Ahmad, V.M. Starov, Membrane oscillation and oil drop rejection during produced water treatment, *Separation and Purification Technology* 144 (2015) 16-23. DOI:[10.1016/j.seppur.2015.02.022](https://doi.org/10.1016/j.seppur.2015.02.022)
19. **A. Ullah**, R.G. Holdich, M. Naeem, S.W. Khan, V.M. Starov, Prediction of size distribution of crude oil drops in the permeate using a slotted pore membrane, *Chemical Engineering Research and Design* 92 (2014) 2775-2781. <http://dx.doi.org/10.1016/j.cherd.2014.02.017>
20. **A. Ullah**, S.W. Khan, A. Shakoar, V.M. Starov, Passage and deformation of oil drops through non-converging and converging micro-sized slotted pore membranes, *Separation and Purification Technology* 119 (2013) 7-13. <http://dx.doi.org/10.1016/j.seppur.2013.08.041>

21. **A. Ullah**, V.M. Starov, M. Naeem, R.G. Holdich, S. Semenov, Filtration of suspensions using slit pore membranes, Separation and Purification Technology 103 (2013) 180-186. <http://dx.doi.org/10.1016/j.seppur.2012.10.038>
22. **A. Ullah**, R.G. Holdich, M. Naeem, V.M. Starov, Shear enhanced microfiltration and rejection of crude oil drops through a slotted pore membrane including migration velocities, Journal of Membrane Science 421-422 (2012) 69-74. <http://dx.doi.org/10.1016/j.memsci.2012.06.040>
23. **A. Ullah**, R.G. Holdich, M. Naeem, V.M. Starov, Stability and deformation of oil droplets during microfiltration on a slotted pore membrane, Journal of Membrane Science 401-402 (2012) 118-124. <http://dx.doi.org/10.1016/j.memsci.2012.01.034>
24. **A. Ullah**, M. Naeem, R.G. Holdich, V.M. Starov, S. Semenov, Microfiltration of deforming droplets, Progress in Colloids and Polymers Science 139 (2012) 107-110. DOI: [10.1007/978-3-642-28974-3_18](http://dx.doi.org/10.1007/978-3-642-28974-3_18)
25. **A. Ullah**, V.M. Starov, M. Naeem, R.G. Holdich, Microfiltration of deforming oil droplets on a slotted pore membrane and sustainable flux rates, Journal of Membrane Science 382 (2011) 271-277. <http://dx.doi.org/10.1016/j.memsci.2011.08.017>.

Conference Publications

1. Kamran Alam, **Asmat Ullah**, Ahmad Atta Ur Rahman, Waleed Ahmad, Muhammad Hashir, SaimSaher, Anti-Soiling nano particulate coating on PV-modules, INTERNATIONAL CONFERENCE ON ENERGY CONSERVATION & EFFICIENCY, 2019, Lahore, Pakistan.
2. Umar Wahid, **Asmat Ullah**, Computational analysis of an oscillating membrane, 1st International conference on separation processes, 2017, COMSATS Lahore, Pakistan.
3. Saad Ullah Khan, **Asmat Ullah**, Prediction of Size Distribution of Crude Oil Drops Through a Non Converging Slotted Pore Membrane, 1st International conference on separation processes, 2017, COMSATS Lahore, Pakistan.
4. Waseem Qadar, Saad Ullah Khan, **Asmat Ullah**, Converging, non-converging slotted pores membranes and oil drops deformation, 3rd Conference on Sustainability in Process Industry (SPI-2016), UET Peshawar, Pakistan.
5. **A. Ullah**, J.W. Chew, 2015, Membrane oscillation and slot blocking, 2nd International Conference on Desalination using Membrane Technology, Singapore.
6. **A. Ullah**, 2013, Deformation based on interfacial tension during microfiltration of oil drops on a slotted pore membrane, American Chemical Engineering Society (AIChE) annual meeting, San Francisco, CA, USA.

7. **A. Ullah**, R.G. Holdich, V.M. Starov, 2012, Shear enhanced vibrating microfiltration and membrane pore blocking, 12 International Conference on Inorganic Membranes, Enschede, The Netherlands.
8. **A. Ullah**, 2012, Shear enhanced vibratory microfiltration with slotted pore membranes” UK PT Forum, Loughborough University UK.
9. **A. Ullah**, R.G. Holdich, V.M. Starov, 2011, Effect of applying shear rates to a membrane on flux rates and trans-membrane pressure during microfiltration of oil/water emulsions, PSA Conference, Edinburgh UK.

References

1. Prof. Victor Starov (BSc, MSc, PhD, DSc, FRSC)

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