**Sher Jamal Khan**

**Assistant Professor in Environmental Engineering**

Institute of Environmental Science and Engineering (IESE)

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**ACADEMIC QUALIFICATIONS**

**PhD, Environmental Engineering and Management** *2004-2008*

*Asian Institute of Technology (AIT), Bangkok, Thailand*

**MS, Civil and Environmental Engineering** *2001 2003 Portland State University, Portland, USA*

**Graduate Certificate in Hydrology** *2001-2003*

*Portland State University, Portland, USA*

**BS, Civil Engineering** *1996-2000 University of Engineering & Technology, Taxila, Pakistan*

**PROFESSIONAL EXPERIENCE**

**Assistant Professor** *Feb.08-Present*

*Institute of Environmental Science and Engineering (IESE)*

*National University of Sciences and Technology (NUST)*

*Islamabad, Pakistan*

**Lecturer** *Dec.03-Jan.08*

*Institute of Environmental Science and Engineering (IESE)*

*National University of Sciences and Technology (NUST)*

*Rawalpindi, Pakistan*

**COURSES TAUGHT**

**Undergraduate-Environmental Engineering**

* ENE-121: Introduction to Environmental Engineering
* ENE-321: Water Treatment and Distribution
* ENE-326: Wastewater Collection and Treatment

**Postgraduate-Environmental Engineering**

* ENE-805: Water Resources Management
* ENE-809: Wastewater Treatment and Design
* ENE-924: Special Topics in Environmental Engineering (Membrane Technology for Water and Wastewater Treatment)

**AREAS OF INTEREST**

* Membrane based systems for water reclamation and reuse
* Hybrid membrane bioreactor (MBR) technology (Moving Biofilm-MBR, Forward Osmosis-MBR)
* Brackish water desalination (Forward Osmosis Membrane Systems)

**PROJECTS**

1. ***Principal Investigator (PI) of WaterAid, UK project title “WASH Action Research with Academia”***

The project through WaterAid-NUST partnership is to develop appropriate and low cost WASH solutions. Project learning will be documented and incorporated into the teaching curriculum. The duration of project is from 15 June 2013 to March 2014 with total budget of Rs. 1.85 Million **(In progress)**.

1. ***Principal Investigator (PI) of research project titled “Establishment of Pilot Scale Membrane Bioreactor (MBR) at NUST”***

PI collaborated with Cheil Industries (Samsung Corporation Subsidiary), South Korea to establish the state-of-the-art fully automated “NUST Pilot-Scale Membrane Bioreactor (MBR) Plant” having 51 m3/d capacity at NUST Campus, Sector H-12, Islamabad. Cheil Industries agreed to provide technical support by providing piping and instrumentation (P&ID) drawing as well as equipment support worth Rs. 3 Million by providing items including three immersed hollow fiber modules, one cassette, one stainless steel membrane tank. These items are in addition to the approved budget of Rs. 31 Million including capital cost as well as 2-year recurring budget by NUST R&D Fund **(In progress)**.

1. ***Pakistani team leader of INSPIRE project titled “Wastewater Reclamation and Reuse at Bench Scale Using Advanced Biological Treatment Technologies”***

This project is jointly funded under British Council, UK and Higher Education Commission (HEC), Pakistan. The UK team leader is Dr Nick Hankins from Department of Engineering Science, University of Oxford, UK. The total budget of the project is   
£56,800 (£ 32,000-NUST and £ 24,800-University of Oxford). This project was among the 17 out of 123 proposals jointly submitted by UK and Pakistani top ranking universities which got selected. Under this project, bench-scale studies are being conducted at the University of Oxford, UK and NUST, Pakistan, utilizing conventional membrane bioreactor (MBR) and forward osmosis MBR (FO-MBR) processes. NUST PhD scholar went to University of Oxford as an exchange student under this program from Feb to May 2012 **(In progress)**.

1. ***Principal Investigator (PI) of research project titled “Action learning in environmental engineering to develop employability skills and experience-the use of UK employer sponsored virtual summer placement via Brunel University for undergraduate and postgraduate students in Pakistan”***

This project is funded under British Council: Strategic Partnership Extension Knowledge Exchange (SPEKE) Grant. The total budget of the project is Rs. 2.1 Million (£ 15,000). Under the SPEKE Grant, the PI collaborated with Dr. Parneet Paul from Department of Civil Engineering, Brunel University, UK to develop the “Virtual Internship Program” for the undergraduate environmental engineering students to gain employment skills and training via the UK whilst still continuing their Pakistani studies during the summer break **(Completed)**.

1. **Principal Investigator of research project titled “Nestle Wastewater Treatability Studies”**

This project was funded by 3W Group (Pakistan). The total budget was Rs. 0.7 Million. Nestle Limited plans to construct a new wastewater treatment plant in Sheikhpura, Pakistan based on the biological oxidation ditch system and for this purpose they awarded the lab-scale treatability project to the PI. Under the treatability study, batch systems as well as sequencing batch reactors (SBRs) were operated for a period of 2 months to investigate the operating conditions of the biological process in order to achieve the desired treatment efficiency **(Completed)**.

1. ***Principal Investigator (PI) of research project titled “Membrane bioreactor technology (MBR) for wastewater treatment and reuse”***

This project was funded by the Higher Education Commission (HEC) National Research Grant Program. The total budget for the project was Rs. 4.0 Million.The research work (2009-2012) led to the first of its kind bench-scale MBRs setup at the Water and Wastewater Laboratory at NUST, Pakistan including conventional MBR (C-MBR), moving biofilm MBR (MB-MBR) and anoxic/oxic MBR (A/O-MBR). So far, this research activity has resulted in two peer-reviewed publications with impact factor and three international conference oral presentations **(Completed)**.

**JOURNAL PUBLICATIONS(IF: 45.637)**

1. **Jamal Khan, S.** and Visvanathan, C. (2008) “Influence of mechanical mixing intensity on a biofilm structure and permeability in a membrane bioreactor”, Desalination, 231 (253-267)**IF: 2.590**
2. **Jamal Khan, S.**, Visvanathan, C., Jegatheesan, V., and Ben Aim, R. (2008) “Influence of mechanical mixing rates on sludge characteristics and membrane fouling in MBRs”, Separation Science and Technology, 43 (1-13)**IF: 1.088**
3. **Jamal Khan, S.**, Visvanathan, C. and Jegatheesan, V. (2009) “Prediction of membrane fouling in MBR systems using empirically estimated specific cake resistance”, Bioresource Technology, 100 (6133-6136) **IF: 4.980**
4. **Jamal Khan, S.**, Ilyas, S., Javid, S., Visvanathan, C. and Jegatheesan, V. (2011) “Performance of suspended and attached growth MBR systems in treating high strength synthetic wastewater”,Bioresource Technology, 102 (5331-5336) **IF: 4.980**
5. Ali, M., **Jamal Khan, S.**,Aslam, I, and Khan, Z. (2011) “Simulation of the impacts of land-use change on surface runoff of Lai Nullah Basin in Islamabad, Pakistan”, Landscape and Urban Planning, 102 (271-279) **IF: 2.173**
6. **Jamal Khan, S.**, Zohaib-Ur-Rehman, Visvanathan, C. and Jegatheesan, V. (2012)“Influence of biofilm carriers on membrane fouling propensity in moving biofilm membrane bioreactor”, Bioresource Technology,113 (161-164)**IF: 4.980**
7. **Jamal Khan, S.**, Visvanathan, C. and Jegatheesan, V. (2012) “Effect of powdered activated carbon (PAC) and cationic polymer on biofouling mitigation in hybrid MBRs”. Bioresource Technology, 113 (165-168)**IF: 4.980**
8. Saba, B., Hashmi, I., Nasir, H., **Jamal Khan, S.** and Khalid, A. (2012) "Comparison of soxhlet and direct ultrasonic techniques for determination of polycyclic aromatic hydrocarbons in agricultural and urban soils of Pakistan", Journal of the Chemical Society of Pakistan, Volume 34, No. 5, (1312-1316) **IF: 1.377**
9. Saba, B., Hashmi, I., Awan, M.A., Nasir, H., and **Jamal Khan, S.** (2012) “Distribution, toxicity level and concentration of polycyclic aromatic hydrocarbons (PAHs) in surface soil and groundwater of Rawalpindi, Pakistan”, Desalination and Water Treatment, 49 (240-247).**IF: 0.614**
10. Fatima, S.S. and **Jamal Khan, S.** (2012) “Evaluating the treatment performance of a full scale Activated Sludge Plant in Islamabad, Pakistan”, Water Practice and Technology, Volume 7, No. 1, doi: 10.2166/wpt.2012.016
11. Saba, B., Mahmood, T., Zaman, B., Khalid, A., **Jamal Khan, S.** (2012) “Treatment of high strength wastewater in sequencing batch bioreactors (SBBRs)”, International Journal of Agriculture & Applied Sciences, Volume 4, No. 1
12. Nawaz, S., Gadelha, G., **Jamal Khan, S.**, Hankins, N. (2013) “Microbial Toxicity Effects of Reverse Transported Draw Solute in the Forward Osmosis Membrane Bioreactor (FO-MBR)”, Journal of Membrane Science, 429 (323-329)**IF: 3.850**
13. Nawaz, S. and **Jamal Khan, S.** (2013) “Effect of HRT on SBR Performance for Treatability of Combined Domestic and Textile Wastewaters”, Journal of the Chemical Society of Pakistan, Volume 35, No. 4, JCSP-[270712-9388](tel:270712-9388" \t "_blank). **IF:1.377**
14. **Jamal Khan, S.,**Parveen, F., Ahmad, A., Hashmi, I. and Hankins, N. (2013) “Performance evaluation and bacterial characterization of membrane bioreactors”, Bioresource Technology, In Press, Available online 4 February 2013. **IF 4.980.**
15. **Jamal Khan, S.,**Ilyas, S., and Zohaib-Ur-Rehman (2013) “Impact of nitrogen loading rates on treatment performance of domestic wastewater and fouling propensity in submerged membrane bioreactor (MBR)”, Bioresource Technology, In Press, Available online 6 April 2013. **IF 4.980.**
16. **Jamal Khan, S.**, Ali, S., Visvanathan, C., and Pillay, V.L. (2013) "Membrane fouling characterization in membrane based septic tank", Desalination and Water Treatment, In Press, Available online 20 May 2013. **IF 0.614.**
17. Waheed, H., Hashmi, I., Naveed, A.K., **Jamal Khan, S.** (2013) “Molecular detection of microbial community composition in a nitrifying and denitrifying activated sludge system”, International Biodeterioration& Biodegradation, Accepted 13 May 2013. **IF 2.074.**

**INTERNATIONAL CONFERENCE PROCEEDINGS**

1. Wells, S.A., Berger, C.J., Annear, R.L., McKillip, M. and **Jamal, S.** (2003) “Willamette River Basin Temperature TMDL Modeling Study”, Proceedingsof the Water Environment Federation, National TMDL Science and Policy 2003,28 (1337-1364)
2. Wells, S.A., Berger, C.J., Annear, R.L., McKillip, M. and **Jamal, S.** (2004) “Willamette River Basin Temperature TMDLModeling Study”, Proceedingsof the Water Environment Federation, Watershed 2004, 30 (1236-1265)

**ORAL PRESENTATIONS DELIVERED AT INTERNATIONAL CONFERENCES**

1. **Khan, S.J.**, Visvanathan, C., Jegatheesan, V., and Ben Aim, R. “Influence of mechanical mixing rates on sludge characteristics and membrane fouling in MBRs”, presented at the International Water Association (IWA) Conference on Particle Separation (PS-IWA 2007), Toulouse, France, 9-12 July, 2007
2. **Khan, S.J.**, Visvanathan, C. and Jegatheesan, V. “Prediction of membrane fouling in MBR systems using empirically estimated specific cake resistance”, presented at the 2nd International Conference Challenges in Environmental Science and Engineering (CESE-2009), Townsville, Australia, 14-17 July, 2009
3. **Khan, S.J.**, Ilyas, S., Javid, S., Visvanathan, C. and Jegatheesan, V. “Performance of suspended and attached growth MBR systems in treating high strength synthetic wastewater”,presented at the 3rd International Conference Challenges in Environmental Science and Engineering (CESE-2010), Cairns, Australia, 26 Sepember-1 October, 2010
4. **Khan, S.J.**, Rehman, Z., Visvanathan, C. and Jegatheesan, V. “Influence of biofilm carriers on membrane fouling propensity in moving biofilm membrane bioreactor”,presented at the 4th International Conference Challenges in Environmental Science and Engineering (CESE-2011), Tainan, Taiwan, 25-30 September, 2011
5. **Khan, S.J.**, Parveen, F., Ahmed, A., Hashmi, I., and Hankins, N. “Performance Evaluation and Bacterial Characterization of Membrane Bioreactors”, presented at the 5th International Conference Challenges in Environmental Science and Engineering (CESE-2012), Melbourne, Australia, 9-13 September, 2012
6. **Khan, S.J.,** Ali, S., Visvanathan, C., and Pillay, V.L. “Membrane biofouling characterization in membrane based septic tank”, International Workshop on Membrane Fouling and Monitoring, University of Oxford, UK, 21-22 September, 2012
7. **Khan, S.J.** and Hankins, N. “Collaboration between NUST and University of Oxford: A Success Story”, presented at International Conference-Going Global 2013 (British Council), Dubai, UAE, 4-6 March, 2013

**ORGANIZER AND/OR RESOURCE PERSON**

1. Resource person at Two-Day Training Workshop on “Hydraulic Design of Water Supply Schemes”, PDC-NUST, Rawalpindi (25-26 November 2008)
2. Principal organizer and speaker at International Workshop on “Membrane Technology for Wastewater Reclamation and Reuse”, NIT (SCEE)-NUST, Islamabad (13-14 May, 2009).
3. Invited speaker at Training program on “Application of Membrane Technology for Water and Wastewater Treatment”, Ho Chi Minh City University of Technology, Ho Chi Minh City, Vietnam (22 December 2010)
4. Invited speaker at National Symposium on “Emerging Challenges and Advances in Wastewater Management”, University of Gujrat, Punjab (23 June, 2011)
5. Principal organizer and speaker at International Workshop on “Technological Advances and Challenges in Water Reclamation and Reuse”, NIT (SCEE)-NUST, Islamabad (8-9 December, 2011).
6. Principal organizer and speaker at International Workshop on “Advanced Technologies for Global Water Scarcity and Security”, IESE (SCEE)-NUST, Islamabad (2 July, 2012).
7. Speaker at Centenary Celebrations-2012 Pakistan Engineering Congress on “Performance Evaluation of Bench-Scale Membrane Bioreactor (MBR) Systems”, Lahore (31 December 2012-2 January 2013)

**INVITED REVIEWER**

1. Bioresource Technology (Elsevier, Netherlands)
2. Journal of Membrane Science (Elsevier, Netherlands)
3. Process Biochemistry (Elsevier, Netherlands)
4. Water Science and Technology (International Water Association, UK)
5. Water Environment Research (Water Environment Federation, USA)

**SCHOLARSHIPS AND AWARDS**

* Recipient of Research Productivity Award for the year 2012 in category “G” by Pakistan Council for Science and Technology (PCST)
* Recipient of Asian Institute of Technology (AIT)-Higher Education Commission (HEC) scholarship for PhD in Environmental Engineering and Management (2004-2007) at AIT, Bangkok, Thailand
* Recipient of financial assistance (2004-2007) for PhD study at AIT under NUST Faculty Development Program
* Recipient of financial assistance (2001-2003) for MS study at Portland State University under Teacher Assistantship Program

**PROFESSIONAL MEMBERSHIPS**

* Member of International Water Association (IWA), UK
* Member of Water Environment Federation (WEF), USA
* Professional Engineer (PE) certified by Pakistan Engineering Council (PEC)
* Higher Education Commission (HEC) Approved Supervisor
* Member of Pakistan Engineering Council (PEC) Examination Curriculum Experts

**GRADUATE STUDENTS SUPERVISION**

**Master of Science in Environmental Engineering (Completed)**

1. Muhammad Ali (2007-NUST-MSPhD-Env-06) “Impacts of Land Use Change on Surface Runoff of Lai Nullah Basin”, 2009
2. ShaziaIlyas (2008-NUST-MS-PhD-Env-03) “Effects of COD/N Ratios on Treatment Performance and Fouling Propensity in an Membrane Bioreactor (MBR)”, 2010
3. SadafJavid (2008-NUST-MSPhD-Env-04) “Influence of Nitrogen Loading Rate on Nutrients Removal in an Attached Growth Membrane Bioreactor”, 2010
4. Zohaib-Ur-Rehman(2009-NUST-MSPhD-Env E-05**)**“Influence of biofilm carriers on membrane fouling propensity in moving biofilm membrane bioreactor”, 2011
5. SyedaSumaira Fatima (2009-NUST-MSPhD-Env E-07) “Evaluation of Optimization of Sewage Treatment Plant (STP) Performance at Sector I-9, Islamabad”, 2011
6. Aman Ahmed (2010-NUST-MSPhD-Env E-01) “Comparing performance and fouling behavior of MBRs for domestic wastewater treatment”, 2012
7. MoazzamShahzad (2010-NUST-MSPhD-Env E-05)“Evaluation of Treatment Performance of Sewage Treatment Plant, Sector I-9, Islamabad”, 2012
8. Saadat Ali (2010-NUST-MSPhD-Env E-09) “Development of Membrane Based Septic Tank in Treating Domestic Wastewater”, 2012
9. Fozia Parveen (2010-NUST-MSPhD-Env S-08) “Investigation of Sludge Characteristics and Bacterial Diversity of MBR systems”, 2012