CURRICULUM VITAE

Name **Mohammed Rasool Qtaishat**
Term Address Chemical Engineering Department
The University of Jordan
Amman 11942, Jordan
Telephone (+962) 776 349696
E-mail m.qtaishat@ju.edu.jo

Current Position

2014 -Present Associate Professor at Chemical Engineering Department, the University of Jordan

2022-Present: Chief Technology Officer (CTO) at AGSHYA Company Ltd.
www.agshya.co
King Abdullah University of Science and Technology
Innovation & Economic Development
Bldg # 24, Innovation Cluster 3, # 3-355
Thuwal 23955-6900, Saudi Arabia

Previous positions

2021-2022 Director of Arab Open University, Jordan

2016-2021: Chief Technology Officer (CTO) at Saudi Membrane Distillation Desalination (SMDD) Company Ltd.

2015- 2016 Director of Water, Energy and Environment Center, The University of Jordan

2014 -Present Associate Professor at Chemical Engineering Department, the University of Jordan

2009- 2014 Assistant Professor at Chemical Engineering Department, the University of Jordan

2005- 2009	Research and Teaching Assistant at University of Ottawa, Industrial Membrane Research Center Group.
2007	Visiting Researcher at the Membrane research group, department of applied Physics, University Complutense, Madrid, Spain
2003- 2004	Process Engineer at Jordan Petroleum Refinery Company, Jordan
2001 –2003	Researcher and Teaching Assistant at Jordan University of Science and Technology (JUST), Jordan

EDUCATION

2005 - 2008 ***Ph.D. in Chemical Engineering***
University of Ottawa, Ottawa, Ontario, Canada.
Thesis title: *Design of Novel Membranes for Desalination by Direct Contact Membrane Distillation*

2001 - 2004 ***M.Sc. in Chemical Engineering***
Jordan University of Science and Technology, Irbid, Jordan.
Thesis title: *Use of Vacuum Membrane Distillation for Concentrating Sugars and Dyes from their Aqueous Solutions*

1996 - 2001 ***B.Sc. in Chemical Engineering***
Jordan University of Science and Technology, Irbid, Jordan.
Thesis title: *Removal of Heavy Metals from Wastewater by Adsorption Using Waste Tires as an Adsorbent*

AWARDS AND SCHOLARSHIPS

- Technology Venture Challenge Award, first prize winner 2008, Ottawa, Ontario, Canada

.

- University of Ottawa Doctoral Research Award, 2006-2008.
- Middle East Desalination Research Center scholarship (MEDREC) for PhD, 2005 – 2008.
- EUROMED 2008, DEAD SEA 9-13 November 2008, Best Poster presentation Award.

RESEARCH ACTIVITIES

Today the shortage of drinking water is a serious world-wide concern due to population growth and the increased demand for drinking water that exceeds readily available water resources. My research is focusing on finding more adequate solutions for the global water crisis by developing novel membranes (Flat-sheet, Hollowfibers and Nanofibers) for seawater desalination and wastewater treatment by membrane distillation. Most impportantly, my research have attracted private investors funds that are used to commercilize my patents, which are enlisted herein. Moreover, the experience that I have gained in the world of entrepreneurship and technology transfer is priceless. It is worth mentioning that my research was not limited to membrane distillation, I have highly cited publications in the fields of electro-coagulation, membrane bioreactor, and wastewater treament by adsorption.

Citations (Google Scholar): **3337*; h-index*: 19**
https://scholar.google.com/citations?hl=en&user=DVgzYdMAAAAJ

TEACHING ACTIVITIES

2007 Supervising Graduation Project Course at the University of Ottawa, Canada.
2009-2014 Assistant Professor at the University of Jordan, Amman, Jordan.
2014-2016 Associate Professor at The University of Jordan, Amman, Jordan.

My teaching duties at the University of Jordan included the following courses:

- **Undergraduate Courses:** *Chemical Reaction Engineering Petroleum Refining Engineering, Desalination, Chemical Industries, Process Safety Engineering, Mass Transfer, Transport Phenomena*
- **Graduate Courses:** *Advanced Mass Transfer, Advanced Thermodynamics, Wastewater Treatment, Membrane Science and Technology*

PATENTS

[1]. **M. Qtaishat,** A. Alsamhouri**,** T. Matsuura, N. Ghaffour, J. Lee "DESIGN OF SUPER-HYDROPHOBIC NANO-POROUS/MICRO-POROUS COMPOSITE MEMEBRANES FOR MEMBRANE DISTILLATION" **WO Patent: WO 2019/119125 A1, (2019).**

[2]. **M. Qtaishat,** S. Al-Muttiri "NOVEL TECHNIQUES FOR PREPARING MULTI-LAYER POLYMERIC AND MIXED MATRIX MEMBRANES AND A DEVICE FOR MEMBRANE DISTILLATION". **WO Patent: WO/2014/111889, (2014).**

[3]. **M. Qtaishat**, T. Matsuura, M. Khayet "COMPOSITE MEMBRANES FOR MEMBRANE DISTILLATION AND RELATED METHODS OF MANUFACTURE". **WO Patent: WO/2012/100318, (2012).**

[4]. **M. Qtaishat**, T. Matsuura, M. Khayet, S. Al-Muttiri "COMPOSITE MIXED MATRIX MEMBRANES FOR MEMBRANE DISTILLATION AND RELATED METHODS OF MANUFACTURE". **WO Patent: WO/2012/100326 (2012).**

JOURNAL PUBLICATIONS

[1]. **MR Qtaishat**, M Obaid, T Matsuura, A Al-Samhouri, JG Lee, S Soukane, N. Ghaffour, "Desalination at ambient temperature and pressure by a novel class of biporous anisotropic membrane", ***Nature: Scientific Reports***, 12 (1), 1-8, 2022.

[2]. **MR Qtaishat**, H Choomani, T Matsuura, D Rana, CQ Lan, "Modeling of the movement of two immiscible liquids in membrane pores", ***Int. J. of Multiphase Flow***, 140282, 2022.

[3]. E Fontananova, E Tocci, R Abu-Zurayk, V Grosso, C Meringolo, C Muzzi, A Al Bawab, **MR Qtaishat**, G De Filpo, E Curcio, E Drioli, G Di Profio, "An environmental-friendly electrostatically driven method for preparing graphene oxide composite membranes with amazing stability in aqueous solutions", ***Journal of Membrane Science***, 655, 120587, 2022.

[4]. NC Kusuma, M Purwanto, J Jaafar, MD Othman, M H Abd Aziz, Y Raharjo, **MR Qtaishat**, "Fabrication and characterization of modified PVDF hollow fiber membrane coated with hydrophobic surface modifying macromolecules for desalination application", ***J. of Environmental Chemical Engineering***, 9(4), 105582.

[5]. M Khayet, M Essalhi, **MR Qtaishat**, T Matsuura, "Robust surface modified polyetherimide hollow fiber membrane for long-term desalination by membrane distillation", ***Desalination***, 466, 107-117, 2019.

[6]. NE Salim, N. Nor, J. Jaafar, AF Ismail, **MR Qtaishat**, T Matsuura, M. Othman, M.A Rahman, F Aziz, N Yusof, "Effects of hydrophilic surface macromolecule modifier loading on PES/Og-C3N4 hybrid photocatalytic membrane for phenol removal", ***Applied Surface Sciences***, 485, 180-191, 2019.

[7]. N. Salim, N. Nor, J. Jaafar, A. Ismail, T. Matsuura, **MR Qtaishat**, M. Othman, M. Rahman, F. Aziz, N. Yusof, "Performance of PES/LSMM-OGCN Photocatalytic Membrane for Phenol Removal: Effect of OGCN Loading", ***Membranes***, 8(3), 42, 2018.

[8]. N. Salim, J. Jaafar, AF Ismail, MHD Othman, M.A Rahman, N Yusof, **MR Qtaishat**, T Matsuura, F Aziz, WNW Salleh "Preparation and characterization of hydrophilic surface modifier macromolecule modified poly (ether sulfone) photocatalytic membrane for phenol removal" ***Chemical Engineering Journal,*** 335, 236-247, 2018.

[9]. **M. Qtaishat**, F. Banat "Desalination by solar powered membrane distillation systems", ***Desalination***, 308, 186-197, 2013.

[10]. K. Bani-Melhem, Z. Al-Qodah, M. Al-Shannag, A. Qasaimeh, **M. Qtaishat,** M. Alkasrawi "On the performance of real grey water treatment using a submerged membrane bioreactor system" ***Journal of Membrane Science***, 476, 40-49, 2014.

[11]. M. Matouq, N. Jildeh, M. Qtaishat, M. Hindiyeh, M.Q. Al Syouf, "The adsorption kinetics and modeling for heavy metals removal from wastewater by Moringa pods" ***J. of Environmental Chemical Engineering***, 3(2), 775-784, 2015.

[12]. M. Al-Shannag, Z. Al-Qodah, K. Bani-Melhem, **M. Qtaishat,** M. Alkasrawi "Heavy metal ions removal from metal plating wastewater using electrocoagulation: Kinetic study and process performance" ***Chemical Engineering Journal***, 260, 749-756, 2015.

[13]. **M. Qtaishat**, M. Khayet, T. Matsuura, K.C. Khulbe "Effect of Casting Conditions on SMM Blended Polyethersulfone

Hydrophobic/Hydrophilic Composite Membranes: Characteristics and Desalination Performance in Membrane Distillation", ***Journal of Applied Membrane Science and Technology***, 11, 1-8, 2010.

[14]. **M. Qtaishat**, T. Matsuura, B. Kruczek, M. Khayet, "Heat and mass transfer analysis in direct contact membrane distillation", ***Desalination***, 219, 272-292, 2008.

[15]. **M. Qtaishat**, D. Rana, M. Khayet, T. Matsuura, "Preparation and characterization of novel hydrophobic/hydrophilic polyetherimide composite membranes for desalination by direct contact membrane distillation", ***Journal of Membrane Science***, 327, 264-273, 2009.

[16]. **M. Qtaishat**, M. Khayet, T. Matsuura, "Guidelines for preparation of higher flux hydrophobic/hydrophilic composite membranes for membrane distillation", ***Journal of Membrane Science***, 327, 193-200, 2009.

[17]. **M. Qtaishat**, K.C. Khulbe, T. Matsuura, M. Khayet, "Comparing the desalination performance of SMM blended polyethersulfone to SMM blended polyetherimide membranes by direct contact membrane distillation", ***Desalination and Water Treatmen*t,** 5, 91-98, 2009.

[18]. **M. Qtaishat**, M. Khayet, T. Matsuura, "Novel porous composite hydrophobic/hydrophilic polysulfone membranes for desalination by direct contact membrane distillation", ***Journal of Membrane Science***, 341, 139-148, 2009.

[19]. **M. Qtaishat**, T. Mastuura, M.Khayet "Effect of surface modifying macromolecules stoichiometric ratio on composite hydrophobic/hydrophilic membranes characteristics and performance in membrane distillation", ***AICHE Journal***, 55(12), 3145-3151, 2009.

[20]. Mohamad Khayet, Takeshi Matsuura, **Mohammed R. Qtaishat**, Juan I. Mengual, "Porous hydrophobic/hydrophilic composite membranes preparation and application in DCMD desalination at higher temperatures", ***Desalinatio****n*, 199, 180-181, 2006.

[21]. M. Khayet, T. Matsuura, J. Mengual, **M. Qtaishat**, "Design of novel direct contact membrane distillation membranes", ***Desalination***, 192, 105-111, 2006.

[22]. F. Banat, S. Al-Asheh, **M. Qtaishat**, "Treatment of waters colored with methylene blue dye by vacuum membrane distillation", ***Desalination***, 174, 87-96, 2005.

[23]. S. Al-Asheh, F. Banat, **M. Qtaishat**, M. Al-Khateeb, "Concentration of sucrose solutions via vacuum membrane distillation", ***Desalination***, 195, 60-68, 2006.

Book Chapters

[1]. Rund Abu-Zurayk, **Mohammed Rasool Qtaishat**, Abeer Al Bawab, "Desalination membranes: Characterization techniques". In: Membrane Desalination: From Nanoscale to Real World Applications, **CRC Press**, **2020**.

[2]. **Mohammed Rasool Qtaishat,** Takeshi Matsuura "Modeling of pore wetting in membrane distillation compared to pervaporation". In: *Pervaporation, Vapour permeation and Membrane Distillation,* **Taylor and Francis group, Oxford, UK, 2015.**

[3]. Takeshi Matsuura, Dipak Rana, **Mohammed Rasool Qtaishat**, Gurdev Singh, "Recent advances in membrane science and technology in sea water desalination –With technology development in the middle east and Singapore". In: *Encyclopaedia of Life Support Systems (EOLSS)*, Developed under the Auspices of the **UNESCO, Eolss Publishers, Oxford, UK, (2011).**

[4]. **M. Qtaishat,** M. Khayet, T. Matsuura**,** Integrating hydrophobic surface modifying macromolecules into hydrophilic polymers to produce membranes for membrane distillation, In: Membrane Modification, Technology and Application (Eds. N. Hilal, M. Khayet, C. Wright), **Taylor and Francis group, Oxford, UK, 2012.**

CONFERENCES

[1]. **M.Qtaishat**, "Assymetric temperature and concentration polarization in membrane distillation membranes" at the

International Conference on Desalination Using Membrane Technology, Barcelona, Spain, April 2-7, 2017.

[2]. **M.Qtaishat**, "Novel mixed matrix nano-composite membranes for membrane distillation" Presented at the International Workshop on Membrane Distillation and Water Reuse, Ravello (SA), Italy, July 4-7, 2015

[3]. **M. Qtaishat** "Novel Membranes for desalination by membrane distillation", Presented at the International Conference on Desalination Using Membrane Technology, Barcelona, Spain, April 7-10, 2013.

[4]. **M. Qtaishat,** T. Mastuura, M.Khayet "Effect of surface modifying macromolecules stoichiometric ratio on composite hydrophobic/hydrophilic membranes characteristics and performance in membrane distillation", Presented at ICOM 2008, July12-18, 2008.

[5]. **M. Qtaishat**, K.C. Khulbe, T. Matsuura, M. Khayet, "Comparing the desalination performance of SMM blended polyethersulfone to SMM blended polyetherimide membranes by direct contact membrane distillation", Presented at EUROMED 2008, Dead Sea, November 9-13 2008.

[6]. **M. Qtaishat**, M. Khayet, T. Matsuura, K.C. Khulbe "Effect of Casting Conditions on SMM Blended Polyethersulfone Hydrophobic/Hydrophilic Composite Membranes: Characteristics and Desalination Performance in Membrane Distillation", Presented at The 7th international conference on membrane science and technology (MST 2009), Kuala Lumpur, Malaysia May 12-15, 2009.

[7]. **M. Qtaishat,** M. Khayet, T. Matsuura "Novel porous composite hydrophobic/hydrophilic polysulfone membranes for desalination by direct contact membrane distillation: Effect of membrane casting conditions", Presented at the 2nd International chemical engineering conference, Amman, Jordan, October 11-13, 2010.

[8]. **M. Qtaishat**, M. Khayet, T. Matsuura "Design of novel hydrophobic/hydrophilic composite membranes for desalination by membrane distillation", Presented at the International Workshop on Membrane Distillation and Related Technologies, Ravello (SA), Italy, October 9-12, 2011.

SUPERVISION OF GRADUATE STUDENTS

1 PhD students (ongoing); and
6 MSc students (Alumni)

Industrial Engagement project

Al-Faleh group, Saudi Arabia, invested a total fund of **$5 million** in the development of my patented membranes into commercial products. A company named **SMDD** was established in Jeddah, Saudi Arabia accordingly. The development process of the patented membranes was successful and the company signed trade agreements with AQUASTILL Co. Ltd. (the Netherlands) and MEMBRANE SOLUTIONS Co. Ltd. (China).

Research Support

[1]. **Title of funded project**:Development of a solar powered, zero liquid discharge integrated desalination membrane system to address the needs for water of the Mediterranean region, with partners from **Greece, Italy, France, Cyprus, Egypt, Algeria and Jordan.**
Funding Agency: European Union, ERAMED program.
Performance period: 3 years, (***Ongoing***)
Funded amount: **€250,000**

[2]. **Title of funded proposal:** Development and Optimization of Modified Hollow Fiber Membranes with Surface Modifying Macromolecules for Industrial Desalination by Membrane Distillation
Funding Agency: Spanish Ministry of higher education
Performance Period: 36 Months **(Ongoing)**
Funded amount: € 50,000.00

[3]. **Title of funded project**: Photocatalytic performance of composite PVDF-based membrane consists of graphitic carbon nitride and surface modifying macromolecules for phenol removal.
Funding Agency: Ministry of Higher Education, Malaysia
Performance period: 2 years, (***Ongoing***)

Funded amount: **$ 40,000**

[4]. **Title of funded proposal:** Comparing the Membrane Distillation Desalination Performance of the Hydrophobic/Hydrophilic Membranes to the Commercial Membranes
Funding Agency: Support to Research and Technological development & Innovation Initiative & Strategies in Jordan (SRTD) and Spanish Cultural Bureau
Performance Period: 18 months (***Completed project***)
Funded amount: € 30,000 from SRTD & € 29,000 from the Spanish cultural bureau

[5]. **Title of funded proposal:** Novel mixed matrix membranes for membrane distillation.
Funding Agency: Membrane Distillation Desalination Co. Ltd. (Jordan)
Performance Period: 36 months (***Completed project*)**
Funded amount: $ 300,000.00

REFERENCES

Prof. Takeshi Matsuura, Professor, Department of Chemical Engineering, University of Ottawa, Ottawa, Ontario, K1N 6N5 Telephone: (613) 562 5800 Ex. 6114, Fax: (613) 562 5172, matsuura@eng.uottawa.ca

Prof. Mohamad Khayet, Professor, Department of Applied Physics I, University Complutense of Madrid, 28040 Madrid, Spain. Telephone: +34-91-3944454, Fax: +34-91-3945191,
Email: khayetm@fis.ucm.es

Prof. Boguslaw Kruczek, Professor, Chairman of the Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, Ontario, K1N 6N5.

Telephone: (613) 562 5800 Ex. 6302, Fax: (613) 562 5172,
Email: kruczek@eng.uottawa.ca