



## **MOHAMED ABDALLAH, PhD, PEng**

**Research Interests:** Environmental Engineering: Integrated Solid Waste Management | Waste-to-Energy | Advanced Water/Wastewater Treatment | Microbial Fuel Cells | Sustainability | Climate Change Mitigation | Life Cycle Assessment | Smart Cities

**Professional Affiliations:** Professional Engineers Ontario (PEO) | American Society of Civil Engineers (ASCE) | Canadian Society for Civil Engineering (CSCE)

**ID:** ORCID (0000-0002-4304-723) | SCOPUS (26325379200) | Web of Science (AAP-7254-2020)

### **ACADEMIC CREDENTIALS**

- Ph.D.** Environmental Engineering October **2011**  
Faculty of Engineering, University of Ottawa, Canada  
Research: Solid waste management; waste-to-energy; intelligent control
- M.Sc.** Environmental Engineering March **2007**  
Faculty of Engineering, Ain Shams University, Cairo, Egypt  
Research: Anaerobic digestion; advanced wastewater treatment; hybrid bioreactors
- B.Sc.** Civil Engineering June **2004**  
Faculty of Engineering, Ain Shams University, Cairo, Egypt

### **WORK EXPERIENCE**

- Program Coordinator** May **2020** – To Date  
MSc in Environmental Science and Engineering, University of Sharjah, UAE
- Assistant Professor** Feb **2016** – To Date  
Department of Civil & Environmental Engineering, University of Sharjah, UAE
- Project Manager / Technical Lead** Jun **2015** – Jan **2016**  
AECOM Middle East, Abu Dhabi, UAE
- Research & Development Consultant** Oct **2014** – May **2015**  
Clearford Industries Inc., Ottawa, Canada
- Environmental Engineer** Oct **2013** – Sept **2014**  
LRL Associates Ltd., Canada
- Environmental Consultant** Mar **2013** – Sept **2013**  
Design Group Inc., Canada
- Postdoctoral Fellow** Sept **2011** – Mar **2013**  
University of Ottawa, Canada
- Research & Development Engineer** Jan **2009** – Dec **2009**  
Lafèche Environmental Inc., Canada
- Teaching Assistant** Sept **2007** – Dec **2011**  
Ottawa-Carleton Institute for Environmental Engineering, Canada

**Design Engineer – Wastewater Treatment**

Feb 2006 – Feb 2007

EnviroCivic Consultant Office, Egypt

**PUBLICATIONS**

**Book Chapters**

1. Abdallah, M., Rahmat-Ullah, Z., Metawa, A. (2021) Dynamic Multi-Objective Optimization of Integrated Waste Management using Genetic Algorithms. In: Karri, R., Dehghani, M., Gobinath, R. (Eds.) *Soft Computing Techniques in Solid Waste and Wastewater Management*, Elsevier, USA.
2. Abdallah, M., Kennedy, K. (2013) Advanced Monitoring and Control of Anaerobic Digestion in Bioreactor Landfills. In: Chamy R. (Eds.) *Biodegradation*, InTech, New York, USA.

**Articles in Journals & Conference Proceedings**

1. Shanableh, A., Abdallah, M., Tayara, A., Ghenai, C., Kamil, M., Inayat, A., Shabib, A. (2021) Experimental Characterization and Assessment of Bio- and Thermo-Chemical Energy Potential of Dromedary Manure. *Biomass & Bioenergy*, 148, 106058. (Q1, 2019 Impact factor = 3.551)
2. Shanableh, A., Khalil, M., Abdallah, M., Darwish, N., *et al.* (2021) Assessment and Reform of Greywater Reuse Policies and Practice: A Case Study from Sharjah, United Arab Emirates. *Water Policy*, 1-21. (Q2, 2019 Impact factor = 1.093)
3. Shabib, A., Abdallah, M., Shanableh, A., Sartaj, M. (2021) Design Configurations and Operating Parameters of Bio-electrochemically Enhanced Anaerobic Digestion. *International Journal of Environmental Science and Development*, 12(2), 63-68.
4. Abdallah, M., Hamdan, S., Shabib, A. (2021) Development of a Dynamic Optimization Model for Waste Management Systems. *MethodsX*, 8, 101203. (Q2, 2019 Impact factor = 3.782)
5. Abdallah, M., Elfeky, A. (2021) Impact of the Fate of Waste Processing By-products on the Carbon Footprint of Waste Management Strategies. *Journal of Environmental Management*, 280, 111839. (Q1, 2018 Impact factor = 4.87)
6. Shanableh, A., Bhattacharjee, S., Alani, S., Darwish, N., Abdallah, M., Mousa, M., Semreen, M. (2021) Assessment of Sulfamethoxazole Removal by Nanoscale Zerovalent Iron. *Science of the Total Environment*, 761, 143307. (Q1, 2019 Impact factor = 6.551)
7. Abdallah, M., Hamdan, S., Shabib, A. (2020) A Multi-Objective Optimization Model for Strategic Waste Management Master Plans. *Journal of Cleaner Production*, 284, 124714. (Q1, 2019 Impact factor = 7.246)
8. Abdallah, M., Arab, M., Shabib, A., El-Sherbiny, R., El-Sheltawy, S. (2020) Characterization and Advanced Management Strategies of Municipal Solid Waste in Egypt. *Clean Technologies and Environmental Policy*, 22(6), 1371-1383. (Q2, 2019 Impact factor = 2.429)
9. Abdallah, M., Abu Talib, M., Feroz, S., Nasir, Q., Abdalla, H., Mahfood, B. (2020) Artificial Intelligence Applications in Solid Waste Management: A Systematic Research Review. *Waste Management*, 109, 231-246. (Q1, 2019 Impact factor = 5.448)
10. Shabib, A., Abdallah, M., Shanableh, A., Sartaj, M. (2020) Design Configurations and Operating Parameters of Bio-electrochemically Enhanced Anaerobic Digestion. *Proceedings*

- of the 5<sup>th</sup> International Conference on Water Pollution and Treatment (ICWPT 2020), Frankfurt, Germany, July 14-16, 2020.
11. Tayara, A., Shanableh, A., Atieh, M.A., Abdallah, M., et al. (2020) Feasibility and Impact of Greywater Recycling in Four Types of Buildings in Sharjah, United Arab Emirates. 8<sup>th</sup> International Conference on Sustainable Environment and Agriculture (ICSEA 2020), Lisbon, Portugal, October 22-24, 2020.
  12. Abdallah, M., Shanableh, A., Elshazly, D., Feroz, S. (2020) Techno-Economic and Environmental Assessment of Wastewater Management Systems: Life Cycle Approach. *Environmental Impact Assessment Review*, 82, 106378. (Q1, 2019 Impact factor = 4.135)
  13. Adghim, M., Abdallah, M., Shanableh, A., Saad, S., Sartaj, M. (2020) Comparative Life Cycle Assessment of Anaerobic Co-Digestion for Dairy Waste Management in Large-Scale Farms. *Journal of Cleaner Production*, 256, 120320. (Q1, 2019 Impact factor = 7.246)
  14. Shabib, A., Abdallah, M. (2020) Life Cycle Analysis of Waste Power Plants: Systematic Framework. *International Journal of Environmental Studies*, 77:5, 786-806. (Q3, 2019 Impact factor = 0.84)
  15. Shanableh, A., Khalil, M.A, Mustafa, A., Abdallah, M., *et al.* (2020) Greywater Reuse Experience in Sharjah, United Arab Emirates: Feasibility, Challenges & Opportunities. *Desalination and Water Treatment*, 179, 211-222. (Q2, 2019 Impact factor = 0.854)
  16. Adghim, M., Abdallah, M., Shanableh, A., Saad, S., Sartaj, M. (2020) Assessment of Biochemical Methane Potential of Mono- and Co-digested Dairy Farm Wastes. *Waste Management & Research*, 38(1), 88-99. (Q2, 2019 Impact factor = 2.771)
  17. Alani, S., Shanableh, A., Bhattacharjee, S., Darwish, N., Mousa, M., Abdallah, M., Harb, M. (2019) Rate of Removal of a Selected Antibiotic from Water using Nanoscale Zero Valent Iron, 12th International Conference on Sustainable Energy and Environmental Protection (SEEP2019), 18-21 November, UAE.
  18. Abdallah, M., Feroz, S., Alani, S., Sayed, E.T., Shanableh, A. (2019) Continuous and Scalable Applications of Microbial Fuel Cells: A Critical Review. *Reviews in Environmental Science and Bio/Technology*, 18(3), 543-578. (Q1, 2019 Impact factor = 4.957)
  19. Abdallah, M., Adghim, M., Maraqa, M., Aldahab, E. (2019) Simulation and Optimization of Dynamic Waste Collection Routes. *Waste Management & Research*, 37(3): 1-10. (Q2, 2019 Impact factor = 2.771)
  20. Abdallah, M., Shanableh, A., Arab, M., Shabib, A., Adghim, M., El-Sherbiny, R. (2019) Waste to Energy Potential in Middle Income Countries of MENA Region based on Multi-scenario Analysis for Kafr El-Sheikh Governorate, Egypt. *Journal of Environmental Management*, 232: 58-65. (Q1, 2019 Impact factor = 5.647)
  21. Shanableh, A., Semreen, M., Semerjian, L., Abdallah, M., Mousa, M., Darwish, N. (2019) Contaminants of Emerging Concern in Sharjah Waste Water Treatment Plant, Sharjah, UAE. *Journal of Environmental Engineering and Science*, 14(4): 225-234. (Q3, 2019 Impact factor = 1.034).
  22. Shanableh, A., Khalil, M., Tayara, A., Mustafa, A., Abdallah, M., *et al.* (2019) Feasibility of Greywater Reuse for Toilet Flushing and Cooling Towers in High-rise Buildings in Sharjah, UAE, Proceedings of the 6<sup>th</sup> International Conference on Water, Energy, and Environment (ICWEE19), Sharjah, UAE.

23. Abdallah, M., Shanableh, A., Shabib, A., Adghim, M. (2018) Financial Feasibility of Waste to Energy Strategies in the United Arab Emirates. *Waste Management*, 82: 207-219. (Q1, 2019 Impact factor = 5.448).
24. Abdallah, M., Shanableh, A., Adghim, M., Ghenai, C., Saad, S. (2018) Biogas production from different types of cow manure. *Proceedings of the International Conference on Advances in Science and Engineering Technology (ASET) Renewable and Sustainable Energy*, Dubai, UAE.
25. Shanableh, A., Abdallah, M., Al-Ruzouq, R., Merabtene, T. (2018) Greywater reuse policies and practice in the city of Sharjah, UAE. *Proceedings of the 10<sup>th</sup> International Water Sensitive Urban Design and Hydropolis Conference*, Perth, Australia. ISBN: 978-1-925627-03-9.
26. Ahmadifar, M., Sartaj, M., Abdallah, M. (2015) Investigating the performance of aerobic, semi-aerobic, and anaerobic bioreactor landfills for MSW management in developing countries. *Journal of Material Cycles and Waste Management*, 03: 1-12. (Q2, 2019 Impact factor = 1.974).
27. Abdallah, M., Kennedy, K., Narbaitz, R. Warith, M. (2014) A new computational control strategy for leachate management in bioreactor landfills. *Environmental Technology*, 35(3): 300-312. (Q2, 2019 Impact factor = 2.213).
28. Abdallah, M., Kennedy, K., Narbaitz, R. Warith, M., Sartaj, M. (2014) Influence of supplemental heat addition on performance of pilot-scale bioreactor landfills. *Bioprocess and Biosystems Engineering*, 37(2): 301-310. (Q2, 2019 Impact factor = 2.419)
29. Abdallah, M., Neilson, M., Kennedy, K. (2013) Impact of leachate age on the treatment efficiency and power generation of microbial fuel cells. *Proceedings of the 28th International Conference on Solid Waste Technology and Management*, March 10-13, Philadelphia, USA.
30. Abdallah, M., Petriu, E., Kennedy, K., Narbaitz, R., Warith, M. (2011) Intelligent control of bioreactor landfills. *Proceedings of the IEEE International Conference on Computational Intelligence for Measurement Systems and Applications*, Ottawa.
31. Abdallah, M., Petriu, E., Kennedy, K., Narbaitz, R., Warith, M. (2011) Application of fuzzy logic in modern landfills. *Proceedings of the IEEE International Conference on Computational Intelligence for Measurement Systems and Applications*, Ottawa.
32. Abdallah, M., Kennedy, K., Warith, M., Petriu, E. (2011) Combining fuzzy logic and neural networks in modeling landfill gas production. *International Journal of Civil, Environmental, Structural, Construction and Architectural Engineering*, 5(6), 273-279. (Q4, 2019 Impact factor = 0.26)
33. Abdallah, M., Fernandes, L., Warith, M., Rendra S. (2009) A fuzzy logic model for biogas generation in bioreactor landfills. *Journal of Environmental Engineering and Science*, 36(4): 701–708. (Q3, 2019 Impact factor = 1.034).
34. Abdallah, M., Fernandes, L., Warith, M. (2008) Linguistic modeling of biogas generation in simulated anaerobic bioreactor landfills. *Proceedings of the 61<sup>st</sup> Canadian Geotechnical Conference*, Edmonton.
35. Abdallah, M., Fernandes, L., Warith, M. (2008) Modeling of biogas generation in bioreactor landfills using neuro-fuzzy system. *Proceedings of the International Conference on Modeling and Simulation*, Quebec.

36. Abdallah, M. (2011) A Novel Computational Approach for the Management of Bioreactor Landfills. Ph.D. Thesis, University of Ottawa, Ottawa.
37. Abdallah, M. (2007) Applications and modifications of the Upflow Anaerobic Sludge Blanket (UASB) Reactor. M.Sc. Thesis, Ain Shams University, Cairo.

### **Posters & Symposia & Workshops**

- Abdallah, M. (2016) Innovation in Environmental Engineering: Waste-to-Energy. Presentation at the UAE Innovation week, 28 November 2016, Sharjah.
- Abdallah, M. (2012) Green energy generation and waste treatment in microbial fuel cells. Presentation at the Alternative Energy Workshop, NSERC–NRC-IRAP Industry/Researcher Connector Event, 21 November 2012, Ottawa.
- Abdallah, M. (2009) The SMART bioreactor landfill. Poster at the University of Ottawa Fostering Clean-tech Collaborations, 9 June 2009, Ottawa.
- Abdallah, M., Shahriari, H. (2008) Eco-industrial waste management park. Presentation at the Ontario Centres of Excellence Annual Student Symposium. 3-5 February 2008, Guelph.

### **RESEARCH FUND**

- University of Sharjah – Competitive Research Grant – 2021 – \$110k / 3-year.  
*Project: An Innovative IoT-based Solution for Smart Waste Collection based on Artificial Intelligence and Big Data Analytics*
- University of Sharjah – Competitive Research Grant – 2021 – \$30k / 2-year.  
*Project: Integrated Wastewater Management through Onsite Treatment and Unconventional Collection*
- Dubai Electricity & Water Authority (DEWA) R&D Center – 2019 – \$8k / 1-year.  
*Project: Prediction of Utility Demand through Artificial Intelligence and Big Data Analytics*
- University of Sharjah – Targeted Research Grant (Co-PI) – 2019 – \$70k / 3-year.  
*Project: Using Microbial inspired Techniques to improve the Geotechnical Properties of Sand Dunes in UAE*
- University of Sharjah – Competitive Research Grant (Co-PI) – 2019 – \$30k / 2-year.  
*Project: Circulation and Water Quality Modeling in and around Al-Hamriyah Lagoon*
- Innogy (UAE) & Uniper (UK) – Collaborative Research Project – 2018 – \$10k / 1-year.  
*Project: Biogas Production from Anaerobic Digestion of Camel Farm Wastes*
- University of Sharjah – Competitive Research Grant – 2018 – \$30k / 2-year.  
*Project: Experimental Assessment and Life Cycle Analysis of State-of-the-art Manure Management Technologies in the UAE*
- Al-Rawabi Dairy Company (UAE) – Collaborative Research Project – 2018 – \$20k / 1-year.  
*Project: Biogas Production from Anaerobic Digestion of Dairy Farm Substrates*

- University of Sharjah – Competitive Research Grant – 2017 – \$30k / 2-year.  
*Project: Continuous Pilot-scale Operation of Microbial Fuel Cells for Simultaneous Energy Production and Wastewater Treatment under Realistic Operating Conditions*
- University of Sharjah – Seed Research Grant – 2017 – \$10k / 1-year.  
*Project: Assessment of Waste to Energy Technologies for Municipal Solid Waste Management in the UAE*
- Ontario Centres of Excellence (OCE) & Ottawa Technology Transfer Network (OTTN) – Research & Development Fund – 2010 – \$18k / 4-month.  
*Project: Sensor-based Monitoring & Remote-control Technology (SMART) Ecosystems*

## THESIS SUPERVISION

- Hadeer Abdalla (2020-202x) Experimental Assessment of Nutrient Recovery using Microbial Fuel Cells.
- Amal Elfeky (2020-202x) Socio-Eco-Efficiency Analysis of Waste-to-Energy Strategies.
- Mhamd S. Oyoun Alsoud (2020-202x) Machine Learning based Drought Index for Arid and Semi-Arid Regions.
- Fatemah H. Farwah (2019-202x) A Novel Green Synthesis of Iron Nanoparticles Using Date Seeds Extract and its Potential for Heavy Metals Removal.
- Adel Tayara (2019-2020) Experimental Evaluation of Selected Greywater Treatment Systems.
- Ahmad Shabib (2018-2020) Investigating the Effect of the Chemical Composition of Substrates on the Performance of Bio-electrochemical Anaerobic Digestion.
- Sama Alani (2018-2019) Removal of Selected Pharmaceutical Compounds from Water using Nanomaterials.
- Mohamad Adghim (2017-2018) Life Cycle Assessment of Anaerobic Digestion in Dairy Waste Management.

## ENTREPRENEURIAL PROJECTS

- **Project: Atmospheric Water Generation Device (WaterPalm)**  
Recognition: Sharjah Sustainability Award 2017 (1<sup>st</sup> place), University of Sharjah Innovation Award 2017 (1<sup>st</sup> place) & 10<sup>th</sup> MIT Pan Arab Competition (Finalist, 20 over the Middle East).
- **Project: Sensor-based Optimization of Waste Collection Routes (SmartCollect)**  
Recognition: 10<sup>th</sup> MIT Pan Arab Competition (Finalist, 20 over the Middle East)

## TECHNICAL ACTIVITIES

- University Service

Member, University Sustainability Tracking, Assessment & Rating System (STARS) Committee – **2019/2021**

Lead, Waste Management Circle, Sustainability Office, University of Sharjah – **2018/2020**

Member, University Campus Sustainability Committee, University of Sharjah – **2017/2019**

Advisor, ASCE Civil Engineering Students Club, University of Sharjah, UAE - **2016/2017**

- Participation in Academic Accreditation

MSc Environmental Science & Engineering Program, University of Sharjah, Accreditation of the Ministry of Higher Education – **2019-2020**

PhD Civil Engineering Program, University of Sharjah, Accreditation of the Ministry of Higher Education – **2017-2019**

MSc Civil Engineering Program, University of Sharjah, Re-accreditation of the Ministry of Higher Education – **2017**

BSc Civil Engineering Program, University of Sharjah, Accreditation Board for Engineering and Technology (ABET) – **2016**

- Organization Committee – Symposium Chair & Founder

Annual Student Symposia on Contemporary Environmental Technologies – **2015-2020**

- Scientific and Technical Committee - Member

International Conference on Advances in Sustainable Construction Materials & Civil Engineering Systems, April **2017**

Geotechnical Hazards and Risks Conference, Ottawa, Canada, December **2012**

- Scientific and Technical Committee – Judge

ThinkScience Annual National Competition, UAE, **2016-2019**

Gordon McRostie Award, Ottawa, Canada, December **2012**

- Panel Discussion Moderator

Food Security and Environment Symposium, Chamber of Commerce, Dubai, April **2017**

- Scientific and Technical Committee – Chair

IEEE International Conference on Virtual Environments, Human-Computer Interfaces and Measurement Systems, Ottawa, Canada, 19-21 September **2011**

- Publication Referee Centre – Reviewer

Transportation Research: Emerging Technologies – Elsevier – ISSN: 0968-090X – **2020**

Waste and Biomass Valorization – Elsevier – ISSN: 1877-265X – **2020**

Journal of Cleaner Production – Elsevier – ISSN: 0959-6526 – **2020**

Resources, Conservation & Recycling – Elsevier – ISSN: 0921-3449 – **2020**

Waste Management & Research – SAGE – ISSN: 0734-242X – **2018**

Waste Management – Elsevier – ISSN: 0956-053X – **2016**

Environmental Technology – Taylor & Francis – ISSN: 0959-3330 – **2013**

## **TEACHING COURSES**

### **Graduate Courses (PhD)**

University of Sharjah, UAE

- Life Cycle Assessment (0401703)
- Soft Computing Applications in Civil Engineering (0401704)

### **Graduate Courses (MSc)**

University of Sharjah, UAE

- Waste-to-Energy and Material Recovery (0401568)
- Advanced Topics in Environmental Engineering (0401569)
- Environmental Impact Assessment & Risk Analysis (0401535)

### **Undergraduate Courses (BSc)**

University of Sharjah, UAE

- Water & Wastewater Treatment (0401448)
- Solid & Hazardous Waste Management (0401443)
- Introduction to Environmental Engineering (0401345)
- Introduction to Environmental Engineering Laboratory (0401346)
- Senior Design Project (0401498-9)

University of Ottawa, Canada

- Fundamentals of Environmental Engineering (CVG 2132)
- Physical / Chemical Unit Operations of Water and Wastewater Treatment (CVG 3132)
- Advanced Environmental Engineering (CVG 4130)

Ain Shams University, Egypt

- Fundamental Sanitary Engineering (CEP 341)
- Advanced Sanitary Engineering (CEP 441)
- Environmental Impact Assessment Studies (CEI 473)

## **EXTERNAL TRAINING**

Center for Continuing Education and Professional Development, University of Sharjah

- Title: Environmental Sampling & Inspection (March **2019** & November **2017**)

*Trainee: Sharjah Environmental Protection Agency (EPA)*

- Title: Eco-tourism (October & December **2017**)

*Trainee: Sharjah Environmental Protection Agency (EPA)*



## PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE Licensed Engineer Member), USA **2014**
- Association of Energy Engineers (AEE - Member), USA **2014**
- Professional Engineers Ontario (PEO - Professional Engineer Member), Canada **2012**
- Canadian Society for Civil Engineers (CSCE - Member), Canada **2011**
- Egyptian Engineers Syndicate (EES - Licensed Engineer Member) **2004**

## AWARDS & ACHIEVEMENTS

- Most Inspirational Professor Award (Women Engineering Society) **2021**
- First Place in SIB Research Award - Supervisor (Sharjah Islamic Bank) **2020**
- Annual Incentive Award for Distinguished Faculty Members (University of Sharjah) **2018**
- First Place Award in Senior Design Competition - Supervisor (College of Engineering, University of Sharjah) **2018**
- First Place Award in Sharjah Sustainability Award - Applied Research - Supervisor (Environment & Protected Areas Authority (EPAA)) **2017**
- First Place Award in 2<sup>nd</sup> UAE Innovation Week Competition - Supervisor (UAE Innovates, Prime Minister's Office) **2016**
- Steve Hart Annual Award by the Air & Waste Management Association **2011**
- Ottawa Startup Award by Ontario Centers of Excellence & Ottawa Technology Transfer Network **2010**
- Best Presentation Award by Ottawa Carleton Institute for Environmental Engineering **2010**
- Best Master Degree Thesis Award by Ain Shams University **2007**

## PROFESSIONAL DEVELOPMENT

- Life Cycle Assessment using Umberto LCA+ Software, Germany **2020**
- Course Design, Institute of Leadership in Higher Education, UoS, UAE **2017**
- Data Acquisition & Measurements Seminar, National Instruments, UAE **2016**
- Advanced Blackboard Training, University of Sharjah, UAE **2016**
- Interactive Learning Management Systems, Coursemodo, Canada **2014**
- Laboratory Safety Training, University of Ottawa, Canada **2012**
- Waste-to-Energy Strategic Network, Carleton University, Canada **2010**
- Workplace Hazardous Materials Information System (WHMIS), Canada **2007**
- Undergraduate Teaching Workshop, University of Ottawa, Canada **2007**