

# Fady Badran Abdelaal, Ph.D., P.Eng.

Assistant Professor

Phone: 613-533-3352

Department of Civil Engineering

Email: [fady.abdelaal@queensu.ca](mailto:fady.abdelaal@queensu.ca)

Queen's University

Address: 58 University Avenue, Kingston, ON, Canada, K7L 3N6

---

## CURRICULUM VITA

### 1. EDUCATION

---

#### **Doctor of Philosophy (September 2008-October 2013): Queen's University, Canada**

*Thesis title:* "Durability of HDPE geomembranes for municipal solid waste landfill applications."

*Supervisor:* R. Kerry Rowe

#### **Master of Applied Science (December 2004-April 2008): Ain Shams University, Egypt**

*Thesis title:* "Utilization of clay and geomembrane liners in landfills."

*Supervisors:* Mona Eid and Mohamed Taha

#### **Batchelor of Applied Science (September 1999-July 2004): Ain Shams University, Egypt**

*Department:* Structural Department, Faculty of Engineering.

*Cumulative Grade:* Excellent with High Honor, ranked 5<sup>th</sup> (Class of 419 successful students).

*Graduation Project:* Steel Structures, Grade 198/200; Ranked 1<sup>st</sup>.

### 2. EMPLOYMENT HISTORY

---

#### **January 2017 – present: Tenure-Track Assistant Professor, Department of Civil Engineering, Queen's University, Canada**

*Duties and responsibilities:*

- Teaching Civil Engineering courses.
- Conducting research in Geoenvironmental Engineering.
- Supervising the training of highly qualified personnel (HQP).
- Contributing services to the Department, Faculty, University, and Community.

#### **October 2015 – December 2016: Tenure-Track Assistant Professor of Geotechnical Engineering, Ain Shams University, Egypt (<http://www.asu.edu.eg/>)**

*Duties and responsibilities:*

- Taught undergraduate and postgraduate Geotechnical Engineering courses.
- Conducted research in Geotechnical and Geoenvironmental Engineering.
- Supervised graduate students.

#### **November 2015 – November 2016: Project Manager, Ardaman-ACE, Egypt**

*Duties and responsibilities:*

- Supervised the preparation of Geotechnical reports and factual reports.
- Provided consultation and reviewed technical design.
- Designed field and laboratory investigation programs.

**January 2015 – April 2015: Adjunct Assistant Professor, Queen’s University, Canada**

Duties and responsibilities:

- Instructor CIVL215-Materials for Civil Engineers (*100% responsibility*).
- Prepared course materials, managed tutorials, and supervised laboratory sessions.
- Prepared and graded quizzes and examinations.

**December 2013 – September 2015: Post-Doctoral Fellow, Queen’s University, Canada**

Duties and responsibilities:

- Investigated the performance of geomembranes used in the barrier systems of heap leach pads to maximize mineral recovery (optimization) and minimize environmental/social impact.
- Assisted with the supervision of new PhD students.
- Managed the geosynthetics testing laboratory.
- Assisted in the preparation of grant proposals (a research contract and an NSERC Strategic grant).

**September 2008 – October 2013: PhD student: Queen’s University, Canada**

Duties and responsibilities:

- Researched the long-term performance of polymeric geomembranes in municipal solid waste landfills.
- Presented at Queen’s annual Barrier System Workshops.
- Presented at conferences.
- Supervised the periodic/preventive maintenance of laboratory equipment.

**January 2007 – January 2008: Landfill auditor, Engineering and Contracting Department - AMA Arab Environment Company (AAEC), Egypt**

Duties and responsibilities:

- Prepared landfill manual used by supervisors and workers.
- Prepared landfill management plan.
- Participated in the preparation of AAEC composting plant upgrade plan.
- Supervised landfill site operations and wrote monthly progress reports.
- Procured landfill supplies and mechanical equipment spare parts.
- Presented progress reports to the stakeholders including the Ministry of Environment.

**December 2004 – December 2006: Structural Design Engineer, International Arab Consulting Group, Egypt**

Duties and responsibilities:

- Designed Concrete and Steel structures.
- Conducted site investigations and prepared geotechnical reports and factual reports.

**December 2004 – April 2008: MAsc student and Assistant lecturer: Ain Shams University, Egypt**

Duties and responsibilities:

- Conducted research into low hydraulic conductivity soil barriers for municipal solid waste landfill liners.
- Conducted laboratory experiments on sand bentonite mixtures and compacted clay liners.
- Assisted in teaching Geotechnical Engineering undergraduate courses.
- Assisted in supervising Geotechnical Engineering projects for the fourth-year students.

### 3. AWARDS & RECOGNITIONS

1. **Geosynthetics International Award for the best paper published in the journal in 2019:** Abdelaal, F.B. and Rowe, R.K. (2019). Degradation of an HDPE geomembrane without HALS in chlorinated water. *Geosynthetics International*, 26(4):354-370.
2. **Geosynthetics International Award for one of the best three papers published in the journal in 2014:** Abdelaal, F. B., Rowe, R. K., and Brachman, R. W. I. (2014). Brittle rupture of an aged HDPE geomembrane at local gravel indentations under simulated field conditions. *Geosynthetics International*, 21(1): 1-23.
3. **Geosynthetics International Award for the best paper published in the journal in 2013:** Rowe, R.K., Abdelaal, F.B. & Brachman, R.W.I. (2013). Antioxidant depletion of HDPE geomembrane with sand protection layer. *Geosynthetics International*, 20, No. 2, 73-89.
4. **Editor's choice for Canadian Geotechnical Journal in 2020:** Rowe, R.K., Abdelaal, F.B., **Zafari, M.**, **Morsy, M.**, and Priyanto, D. (2020). An approach to geomembrane selection to meet challenging design requirements. *Canadian Geotechnical Journal*, 57(10): 1550-1565.
5. **Editor's choice for Geosynthetics International in 2015:** Abdelaal, F.B., Rowe, R.K, Hsuan, Y.G. and **Awad, R.** (2015). Effect of high temperatures on the physical and mechanical properties of HDPE geomembranes in air, *Geosynthetics International*, 22(3):207-224.
6. **Graduate Student Presentation Award:** Canadian Geotechnical Society's (CGS) national competition for 2012 (2<sup>nd</sup> Prize). <http://www.cgs.ca/awards-2012.php>
7. **High Honors** for the B.Sc. degree at Ain Shams University, 2004.

### 4. PARTNERSHIPS

Project Type	Investigator(s)	Partner(s)
<i>Research Contract</i>	Abdelaal	Arcadis Canada/Vale Canada
<i>Research Contract</i>	Abdelaal	BGC Engineering
<i>NSERC Alliance</i>	Abdelaal, Rowe	Layfield
<i>NSERC Alliance</i>	Moore, Hoult, Abdelaal, Genikomsou	AECOM, City of Hamilton, City of Toronto, Peel Region, Robinson Consulting, Utilities Kingston, WSP Canada Inc.
<i>NSERC Alliance/Mitacs</i>	Abdelaal	Titan Environmental Containment
<i>NSERC Alliance</i>	Abdelaal, Rowe	Canadian Nuclear Laboratories
<i>Research Contract</i>	Abdelaal	Canadian Nuclear Laboratories
<i>NSERC Strategic Grant</i>	Rowe, Brachman, Abdelaal	Klohn Crippen Berger, Golder Associates (currently WSP), SNC-Lavalin Inc, Wood (currently WSP), Knight Piésold Ltd., CTT group, Solmax, Layfield, Titan Environmental Containment, Terrafix Geosynthetics Inc.
<i>NSERC CRD</i>	Abdelaal, Rowe	Titan Environmental Containment
<i>Research Contract</i>	Abdelaal, Rowe	Titan Environmental Containment

## 5. LIST OF RESEARCH FUNDING

### Summary of Funding:

Status	Role				Total
	Sole Investigator	PI*	Co-PI**	Collaborator	
Current awarded	\$908,556	\$458,000	\$680,500	0	\$2,047,056
Past awarded	\$450,300	\$62,400	\$587,351	\$22,100	\$1,122,151
<b>Total Awarded</b>	<b>\$1,358,856</b>	<b>\$520,400</b>	<b>\$587,351</b>	<b>\$22,100</b>	<b>\$2,488,707</b>
Under Review	0	\$1,210,976	0	0	\$1,210,976

\*PI = Principal Investigator and \*\*Co-PI = Co-Investigator.

## 6. CONTRIBUTION TO HIGHLY QUALIFIED PERSONNEL (HQP) TRAINING

### Summary of HQP

Role	Current		Completed		Total
	Sole Supervised	Co Supervised	Sole Supervised	Co Supervised	
Post Doctoral	0	0	0	1	1
PhD	4	4	1	1	10
MASc	0	1	1	0	2
MEng	0	0	1	0	1
Undergraduate*	9	1	7	2	20
Research Technicians	0	1	0	2	3
<b>Total HQP</b>					<b>36</b>

\*Undergraduate students may have different roles such as research associate, undergraduate thesis (CIVL500 student), and Graduate student. In this Table, the same student is counted under the different roles they had.

## 7. LIST OF PUBLICATIONS<sup>1</sup>

---

### **Journal Papers Published**

1. Abdelaal, F.B and **Samea, A.** (2023b). The long-term performance of an elastomeric bituminous geomembrane (BGM) under single-sided conditions. *Canadian Geotechnical Journal*, In Press, *I.F.*= 4.754, [DOI](#).
2. Abdelaal, F.B, **Zafari, M.**, Rowe, R.K. (2023). Assessment of Stress Crack Resistance of Multilayered Textured HDPE Geomembranes. *Geosynthetics International Journal*, In Press, *I.F.*= 4.565, [DOI](#).
3. **Arif, A.M.**, and Abdelaal, F.B, (2023). Diffusion of volatile organic compounds (VOCs) through elastomeric bituminous geomembranes (BGMs). *Geotextiles and Geomembranes Journal*, 51(6): 41–55, *I.F.*= 5.839, [DOI](#).
4. Abdelaal, F.B and **Samea, A.** (2023a). Chemical durability of elastomeric bituminous geomembranes (BGMs) in heap leach pad applications. *Geosynthetics International Journal*, In Press, *I.F.*= 4.565, [DOI](#).
5. **Samea, A.** and Abdelaal, F.B. (2023b). Durability of two bituminous geomembranes (BGMs) with different thicknesses in synthetic MSW leachate. *Waste Management Journal*, 165(15): 179–188, *I.F.*= 8.816, [DOI](#).
6. **Samea, A.** and Abdelaal, F.B. (2023a). Effect of elevated temperatures on the degradation behaviour of elastomeric bituminous geomembranes. *Geotextiles and Geomembranes Journal*, 51 (1) 219–232, *I.F.*= 5.839, [DOI](#).
7. Abdelaal, F.B, Rowe, R.K., **Morsy, M.**, and **E Silva, R.** (2023). Degradation of high, linear low, and blended polyethylene geomembranes in extremely low and high pH mining solutions at 85°C. *Geotextiles and Geomembranes Journal*, 51(5) 27–38, *I.F.*= 5.839, [DOI](#).
8. Abdelaal, F.B, and Rowe, R.K. (2023). Physical and mechanical performance of a HDPE geomembrane in ten mining solutions with different pHs. *Canadian Geotechnical Journal*, 60(7): 978–993, *I.F.*= 4.754, [DOI](#).
9. **Zafari, M.**, Rowe, R.K. and Abdelaal, F.B, (2023c). Longevity of multi-layered textured HDPE geomembranes in low-level waste applications. *Canadian Geotechnical Journal*, In Press, *I.F.*= 4.754, [DOI](#).
10. **Zafari, M.**, Abdelaal, F.B, and Rowe, R.K. (2023b). Long-term performance of conductive-backed multi-layered HDPE geomembranes. *Geotextiles and Geomembranes Journal*, 51(4): 137–155, *I.F.*= 5.839, [DOI](#).
11. **Zafari, M.**, Abdelaal, F.B, and Rowe, R.K. (2023a). Degradation behaviour of two multi-layered textured white HDPE geomembranes and their smooth edges. *ASCE, Journal of Geotechnical and Geoenvironmental Engineering* (ASCE-JGGE), 149(5): 04023020, *I.F.*= 4.106, [DOI](#).
12. Abdelaal, F.B. and **Solanki, R.** (2022). Effect of geotextile ageing and geomembrane surface roughness on the geomembrane-geotextile interfaces for heap leaching applications, *Geotextile and Geomembranes Journal*, 50(1): 55–68, *I.F.*= 5.839, [DOI](#).
13. Abdelaal, F.B. and **Solanki, R.** (2021). Shear strength of geomembrane-subgrade interface in heap leaching applications, *Environmental Geotechnics Journal*, *I.F.*=2.516, [DOI](#).
14. **Morsy, M.**, and Rowe, R.K., Abdelaal, F.B. (2021). Longevity of twelve geomembranes in chlorinated water. *Canadian Geotechnical Journal*, 58(4): 479–495, *I.F.*= 4.754, [DOI](#).

---

<sup>1</sup> Names in bold show HQP trained by Abdelaal and Co-authors.

\* = Award winning papers and \*\* Papers selected as the Editor's Choice.

I.F = Journal Impact Factor as of June 2023.

15. \*\*Rowe, R.K., Abdelaal, F.B., **Zafari, M., Morsy, M.**, and Priyanto, D. (2020). An approach to geomembrane selection to meet challenging design requirements. *Canadian Geotechnical Journal*, 57(10): 1550–1565, **I.F.= 4.754**, [DOI](#).
16. Abdelaal, F.B. **Morsy, M.**, and Rowe, R.K. (2020). Long-term performance of a HDPE geomembrane stabilized with HALS in chlorinated water. *Geotextile and Geomembranes Journal*, 47(6): 815–830, **I.F.= 5.839**, [DOI](#).
17. \*Abdelaal, F.B. and Rowe, R.K. (2019). Degradation of an HDPE geomembrane without HALS in chlorinated water. *Geosynthetics International Journal*, 26(4):354–370, **I.F.= 4.565**, [DOI](#).
18. Abdelaal, F.B. and Rowe, R.K. (2017). Effect of high pH found in low-level radioactive waste leachates on the antioxidant depletion of a HDPE geomembrane. *ASCE, Journal of Hazardous, Toxic, and Radioactive Waste*, 21(1): D4015001, **I.F.= 2.442**, [DOI](#).
19. Rowe, R.K. and Abdelaal, F.B. (2016). Antioxidant depletion stage of a HDPE geomembrane with HALS in low pH heap leach pad environment. *Canadian Geotechnical Journal*, 53(10): 1612–1627, **I.F.= 4.754**, [DOI](#).
20. \*\*Abdelaal, F.B., Rowe, R.K, Hsuan, Y.G. and **Awad, R.** (2015). Effect of high temperatures on the physical and mechanical properties of HDPE geomembranes in air, *Geosynthetics International Journal*, 22(3):207–224, **I.F.= 4.565**, [DOI](#).
21. Abdelaal, F.B. and Rowe, R.K. (2015). Durability of three HDPE geomembranes immersed in different fluids at 85°C, *ASCE, Journal of Geotechnical and Geoenvironmental Engineering (ASCE-JGGE)*, 141(2): 04014106-1, **I.F.= 4.106**, [DOI](#).
22. Abdelaal, F.B. and Rowe, R.K. (2014). Effect of high temperatures on antioxidant depletion from different HDPE geomembranes. *Geotextiles and Geomembranes Journal*, 42(4): 284–301, **I.F.= 5.839**, [DOI](#).
23. \*Abdelaal, F. B., Rowe, R. K., and Brachman, R. W. I. (2014). Brittle rupture of an aged HDPE geomembrane at local gravel indentations under simulated field conditions. *Geosynthetics International Journal*, 21(1): 1–23, **I.F.= 4.565**, [DOI](#).
24. Abdelaal, F.B., Rowe, R.K. and Islam, M.Z. (2014). Effect of leachate composition on the long-term performance of a HDPE geomembrane. *Geotextiles and Geomembranes Journal*, 42(4): 384–362, **I.F.= 5.839**, [DOI](#).
25. Rowe, R.K., Abdelaal, F.B. and Islam, M.Z. (2014). Aging of HDPE geomembrane of three different thicknesses, *ASCE, Journal of Geotechnical and Geoenvironmental Engineering*, (ASCE-JGGE), 140(5): 04014005, **I.F.= 4.106**, [DOI](#).
26. \*Rowe, R.K., Abdelaal, F.B. and Brachman, R.W.I. (2013). Antioxidant depletion of HDPE geomembrane with sand protection layer, *Geosynthetics International*, 20(2):73–89, **I.F.= 4.565**, [DOI](#).

### **Journal Papers Under Review**

27. **Ali, M.**, Rowe, R.K., and Abdelaal, F.B, (2023). Using strain hardening to predict the stress crack resistance of unaged and aged HDPE geomembranes. Submitted May 13, 2023, to *Geotextiles and Geomembranes Journal*, (GTGM-D-23-00113), **I.F.= 5.839**.

### **Peer-Reviewed Conferences Papers**

1. **Hojjati, F.**, Abdelaal, F.B., and Bhat, S. (2024). Short-term durability of elastomeric bituminous geomembranes at 70°C: A comparison of the effect of immersion methods, **Accepted to be published in GeoAmericas 2024**, Toronto, ON, April 2024.

2. **Arif, A.M., Abdelaal, F.B., and Bhat, S.** (2024). Evaluation of the performance of bituminous geomembranes (BGMs) as vapour barriers, **Accepted to be published in *GeoAmericas 2024***, Toronto, ON, April 2024.
3. **Asim, M., Solanki, R., Abdelaal, F.B., and Bhat, S.** (2023). Investigating the shear behaviour of bituminous geomembrane (BGM)-overliner interface in heap leach applications, *Proceedings of the Canadian Geotechnical Conference*, GeoSaskatoon 2023, Saskatoon, Canada.
4. **E Silva, R., Morsy, M., Abdelaal, F.B., and Rowe, R.K.R.** (2023). Comparison between the environmental stress-crack resistance of unaged and aged HDPE and LLDPE geomembranes. *Proceedings of the 12<sup>th</sup> International Conference on Geosynthetics*, Rome, Italy, 2023, pp. 753-759. [LINK](#).
5. **E Silva, R., Abdelaal, F.B., and Rowe, R.K.R.** (2022). Antioxidant depletion from a HDPE geomembrane immersed in unsaturated pore waters and heap leaching solutions. *Canadian Geotechnical Conference*, GeoCalgary 2022, Calgary, Canada.
6. Rowe, R.K., Jefferis, S., (2022) Contributors: **Abdelaal, F.B., Dominijanni, A., Legge, K., Palmeira, E.M., Scheirs, J., Shackelford, C.D., Scalia IV, J., Zhan, T.L.T., Benson, C.H., Bouazza, A., Di Emidio, G., Evans, J.C., Fratolocci, E., Gardoni, M.G., Katsumi, T., and Manassero, M., Parra, D.** Protecting the environment from contamination with barrier systems: advances and challenges. *Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE)*, Sydney 2022, 108p. [LINK](#).
7. **E Silva, R., Abdelaal, F.B., and Rowe, R.K.R.** (2021). Antioxidant depletion of a HDPE geomembrane in arsenic-bearing tailings. *Canadian Geotechnical Conference*, GeoNiagara 2021, Niagra, Canada
8. **Zafari, M. and Abdelaal, F.B.** (2020). Antioxidant depletion from textured conductive and non-conductive HDPE geomembranes in chlorinated water. *GeoAmericas 2020*, Virtual conference.
9. **Morsy, M.S., Abdelaal, F.B., and Rowe, R.K.** (2019). Performance of blended polyolefin and LLDPE geomembranes in heap leach pads based on OIT. *Geosynthetics 2019 Conference*, Houston, TX, USA.
10. **Samea, A. and Abdelaal, F.B.** (2019). Chemical durability of bituminous geomembranes in heap leaching applications at 55°C. *Geosynthetics 2019 Conference*, Houston, TX, USA.
11. **Zafari, M. and Abdelaal, F.B.** (2019). Antioxidant depletion from single-sided and double-sided textured geomembranes in two different immersion solutions. *Geosynthetics 2019 Conference*, Houston, TX, USA.
12. Priyanto, D., Whitelaw, B., Rowe, R.K., Barone, F., **Abdelaal, F., Zafari, M., Buckley, J.** (2019) Implementation of R&D results in the design of liner system for the Near Surface Disposal Facility (NSDF). *WM2019 Conference*, March 3 – 7, 2019, Phoenix, Arizona, US.
13. **Abdelaal, F.B., Rowe, R.K., and Brachman, R.W.I.** (2018). Effect of liner temperature on the long-term stress cracking of HDPE geomembranes under simulated field conditions. *Proceedings of the 11<sup>th</sup> International Conference of Geosynthetics*, Seoul, Korea.
14. **Morsy, M.S., Rowe, R.K. and Abdelaal, F.B.** (2016). Antioxidant depletion from HDPE and LLDPE geomembranes in chlorinated water. *3<sup>rd</sup> Pan-American Conference on Geosynthetics*, GeoAmericas 2016, 10-13 April 2016-Miami Beach, USA
15. **Abdelaal, F.B. and Rowe, R.K.** (2014). Effect of chlorinated water on the antioxidant depletion of HDPE geomembrane without HALS. *Proceedings of the 10<sup>th</sup> International Conference on Geosynthetics*, Berlin, September 2014 CD-ROM Paper #83, 7p.
16. **Abdelaal, F.B., and Rowe, R.K.** (2014). Application of a four-parameter exponential decay model for modelling antioxidant depletion in HDPE geomembranes. *Proceedings of the 10<sup>th</sup> International Conference on Geosynthetics*, Berlin, September 2014 CD-ROM Paper #274, 8p.

17. Abdelaal, F.B. and Rowe, R.K. (2014). Antioxidant depletion from a LLDPE geomembrane in an extremely high pH solution. *Proceedings of Geosynthetics Mining Solutions 2014*. 8-11 September 2014, Vancouver, BC, Canada, CD-ROM, pp. 225-235.
18. Abdelaal, F.B. and Rowe, R.K. (2013). Antioxidant depletion of HDPE geomembrane without HALS in an extreme environment. *Proceedings of Geosynthetics 2013 Conference*, Long Beach, CA, USA. CD-ROM, pp. 127-133.
19. Abdelaal, F.B., Rowe, R.K., Smith, M., Brachman, R.W.I. and Thiel, R. (2012). Antioxidant depletion from HDPE and LLDPE geomembranes without HALS in an extremely low pH solution. *The 2<sup>nd</sup> Pan American Geosynthetic Conference and Exhibition*, GeoAmericas 2012, Lima, Peru, CD-ROM, 9p.
20. Abdelaal, F.B., Rowe, R.K., Smith, M. and Thiel, R. (2011). OIT depletion in HDPE geomembranes used in contact with solutions having very high and low pH. *Proceedings of the 14<sup>th</sup> Pan-American Conference on Soil Mechanics and Geotechnical Engineering*, Toronto, Canada, CD-ROM, 7p.
21. Rowe, R.K., Abdelaal, F.B., Islam, M.Z., and Hsuan Y.G. (2010). The strange effect of increasing temperature in accelerated ageing of HDPE GMBs immersed in liquids. *Proceedings of the 9<sup>th</sup> International Conference on Geosynthetics*, Guarujá, Brazil, pp. 793-798.
22. Eid, M.M., Abdelrahman, M.T., and Abdelaal, F.M.B. (2009). Sand bentonite mixture as secondary liners in landfills. *Proceedings of the 17<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering*, Alexandria, Egypt, 2009, pp. 225-228.

### **Technical Reports**

1. **Daciolo, L.V.P.**, Abdelaal, F.B., and Rowe, R.K. (2023). Chemical durability of reinforced and nonreinforced polymeric geomembranes in PFAS and chlorinated water. 34p. *Layfield*, 30 June 2023.
2. **Asim, M, Arif, A., Hojjatti, F.**, and Abdelaal, F.B. (2022). Report on the BGM interface friction, diffusion characteristics and durability in different applications. 36p. *Titan Environmental Containment Ltd.*, 19 October 2022.
3. **Clinton, M., Francey, W., Samea, A.**, Abdelaal, F.B., and Rowe, R.K. (2019). Progress Report on BGM Research. 20p. *Titan Environmental Containment Ltd.*, 24 November 2019.
4. **Zafari, M.** and Abdelaal, F.B. (2018a). Report 5: HDPE Geomembranes-Long-Term Performance Measurement Testing Near Surface Disposal Facility Project. 349p. *Canadian Nuclear Laboratories Ltd.*, 02 December 2018.
5. **Zafari, M.** and Abdelaal, F.B. (2018b). Report 4: HDPE Geomembranes-Long-Term Performance Measurement Testing Near Surface Disposal Facility Project. 220p. *Canadian Nuclear Laboratories Ltd.*, 12 April 2018.
6. **Zafari, M.** and Abdelaal, F.B. (2018c). Report 3: HDPE Geomembranes-Long-Term Performance Measurement Testing Near Surface Disposal Facility Project. 137p. *Canadian Nuclear Laboratories Ltd.*, 08 March 2018.
7. **Zafari, M.** and Abdelaal, F.B. (2017a). Report 2: HDPE Geomembranes-Long-Term Performance Measurement Testing Near Surface Disposal Facility Project. 90p. *Canadian Nuclear Laboratories Ltd.*, 12 October 2017.
8. Abdelaal, F.B. (2017b). Report 1: HDPE Geomembranes-Long-Term Performance Measurement Testing Near Surface Disposal Facility Project. 63p. *Canadian Nuclear Laboratories Ltd.*, 24 July 2017.
9. Rowe, R.K., **Awad, R.** Abdelaal, F.B. and **AbdelRazek, A.** (2014). Ageing of geomembranes in a high concentration salt solution. 62p. *CONFIDENTIAL*.



## 8. TEACHING EXPERIENCE AS A COURSE INSTRUCTOR

---

### As a Faculty Member at Queen's:

#### • **Graduate courses:**

- *Geosynthetics in Geotechnical Engineering (CIVL847)*: Fall 2023
- *Polymer Microstructure and Testing in Civil Engineering Applications (CIVL849)*: Fall 2021, 2022, Winter 2024
- *Master's Project Course Supervisor (CIVL898)*: Summer 2022

#### • **Undergraduate courses:**

- *Materials for Civil Engineers (CIVL215)*: Winter 2017- 2024 (100% responsibility)
- *Geotechnical Engineering II (CIVL341)*: Winter 2019 (100% responsibility)
- *Geotechnical Engineering I (CIVL340)*: Fall 2019, 2020, 2022 (50% responsibility)
- *Geotechnical Engineering I (CIVL340)*: Fall 2021 (100% responsibility)
- *Faculty Advisor for Engineering Practice (APSC100)*: 2017, 2018, 2019, 2023
- *Faculty Advisor for Professional Skills( CIVL200)*: 2017-2023
- *Faculty Advisor for Civil Engineering Thesis ( CIVL500)*: 2018-2023

### Before Appointment at Queen's:

#### • **Graduate courses:**

- *Environmental Geotechnique (CES646)*: Winter 2016-Ain Shams University (60% responsibility)
- *Engineering Properties of Soil (CES540)*: Winter 2016-Ain Shams University (30% responsibility)

#### • **Undergraduate courses:**

- *Foundation Engineering (CES451)*: Fall 2015, Winter 2016-Ain Shams University
- *Geotechnical Engineering (CES351)*: Winter 2016-Ain Shams University
- *Geological & Geotechnical Engineering (CES251)*: Winter 2016-Ain Shams University
- *Materials for Civil Engineers (CIVL215)*: Winter 2014-Queen's University

## 9. PUBLIC PRESENTATIONS

---

### Invited Speaker

- **2023**
  1. "BGMs in barrier systems of various geoenvironmental application" Invited speaker for the webinar series organized by *International Geosynthetics Society-Australian Chapter* ([ACIGS](#)-14 Nov 2023).
  2. "Performance of geomembranes in mining applications." Invited speaker at the *4<sup>th</sup> African Regional Conference on Geosynthetics* (GeoAfrica), Cairo, Egypt (Feb 2023).
  3. "Shear strength and durability of different geosynthetic interfaces." Invited speaker at the *GeoEngineering Centre* (Queen's-RMC), Kingston, Canada (Jan 2023).

- **2022**
  - 4. “An approach to geomembrane selection for challenging design requirements.” Invited speaker for the webinar series organized by *International Geosynthetics Society-Technical Committee barriers* ([IGS-TC B-2022](#)).
  - 5. “Using geosynthetics to protect the environment in a changing climate.” Invited speaker at the *FEAS Research Symposium*, Queen’s University, Canada (October 2022).
- **2021**
  - 6. “Long-term performance of different polymeric geomembranes in extreme high and low pH mining solutions.” Invited speaker for the webinar series organized by *International Geosynthetics Society-Technical Committee barriers* ([IGS-TC B-2021](#)).
- **2020**
  - 7. “Durability of Geomembrane liners: The difference between time to nominal failure and service life.” Theme speaker at the *GeoAmericas 2020 conference*. Online Conference.
- **2019**
  - 8. “Durability of polymeric geomembranes in different geoenvironmental applications.” Theme speaker at the *GeoMeast 2019 conference*. Cairo, Egypt.
  - 9. “Waste containment and mineral extraction in a changing climate.” Invited speaker at the *FEAS Research Symposium*, Queen’s University, Canada (October 2019).
- **2018**
  - 10. “Durability of polymeric geomembranes in landfill applications.” Theme speaker at the *Eleventh Annual Engineers’ Professional Development Day*, Ministry of Environment and Climate Change, Toronto, Ontario, Canada.

### Conference presentations

- **2023**
  - 11. “Comparison between the environmental stress-crack resistance of unaged and aged HDPE and LLDPE geomembranes”. **12<sup>th</sup> International Conference on Geosynthetics**, Rome, Italy.
- **2019**
  - 12. “Chemical durability of bituminous geomembranes in heap leaching applications at 55°C.” *Geosynthetics 2019 Conference*, Houston, TX, USA.
  - 13. “Antioxidant depletion from single-sided and double-sided textured geomembranes in two different immersion solutions.” *Geosynthetics 2019 Conference*, Houston, TX, USA.
- **2018**
  - 14. “Effect of liner temperature on the long-term stress cracking of HDPE geomembrane under simulated field conditions.” *11<sup>th</sup> International Conference of Geosynthetics*, Seoul, Korea.
- **2014**
  - 15. “Antioxidant depletion from a LLDPE geomembrane in an extremely high pH solution.” *Geosynthetics Mining Solutions 2014 Conference*, Vancouver, BC, Canada, September 2014.
- **2013**
  - 16. “Antioxidant depletion of HDPE GMB in extreme applications.” *Geosynthetics 2013*: Long Beach, CA, USA, April 2013.
- **2011**
  - 17. “OIT Depletion in HDPE geomembranes used in contact with solutions having high and low pH.” *64<sup>th</sup> Canadian Geotechnical Conference*, Toronto, ON, Canada, October 2011.

## **Queen's Annual Barrier System Workshops**

*(Attended by Academics, consultants, regulators, and Geosynthetics manufacturers)*

- **2023** 18. “BGMs: What do we know about diffusion, interface behaviour, leakage, and service life”  
19. “A new look at stress crack resistance and some testing implications”
- **2022** 20. “BGMs: how long they will last in different Geoenvironmental applications?”
- **2021** 21. “BGMs - Where are we and where are we going?”  
22. “Shear strength of different geosynthetics interfaces”  
23. “Update on Cold-temperature resistance of GMB and SL with tailings”
- **2020** 24. “Durability of Geomembrane liners: The difference between time to nominal failure and service life”  
25. “An approach to geomembrane selection for challenging design requirements”  
26. “Cold-temperature resistance of GMB and SL with tailings”
- **2019** 27. “Performance of HDPEs & LLDPEs in heap leaching.”  
28. “Long-term performance of bituminous & modern geomembrane liners with high interface shear strength.”  
29. “Cold-temperature resistance of GMB and SL with tailings.”
- **2018** 30. “Role of HP-OIT with respect to ageing of buried GMBs and Influence of chlorine on GMB degradation.”
- **2017** 31. “Difference between time to nominal failure and service-life predictions for PE geomembranes.”
- **2015** 32. “Durability of HDPE geomembranes in heap leach applications.”  
33. “Means of converting nominal failure to service life for landfill applications.”
- **2014** 34. “Durability of HDPE geomembranes in MSW landfill applications.”  
35. “Long-term performance of HDPE & LLDPE GMBs in heap leaching & chlorinated water.”  
36. “More thoughts on how we can extend service life of geomembrane bottom liners.”
- **2013** 37. “Updated results on Cracking of HDPE geomembranes.”  
38. “Antioxidant depletion of GMBs in heap leaching and potable water applications.”  
39. “How do we extend service life of geomembrane liners?”
- **2012** 40. “Cracking of HDPE geomembranes.”  
41. “HDPE and LLDPE antioxidant depletion in heap leaching.”
- **2011** 42. “Durability of HDPE GMBs in immersion and under simulated field conditions for MSW landfill applications.”  
43. “Antioxidant depletion of HDPE GMBs in mining applications.”
- **2010** 44. “Long-term performance of HDPE in MSW landfill applications.”  
45. “HDPE geomembranes in heap leaching applications.”

## Invited Lectures

- **2019** “Durability of geomembrane liners.” CIVL443- Geoenvironmental Design- Department of Civil Engineering, Queen’s University, Canada.
- **2009** “The use of sand bentonite mixtures in landfill liners.” CIVL443 - Geoenvironmental Design- Department of Civil Engineering, Queen’s University, Canada.

## 10. PROFESSIONAL AND EDUCATIONAL ACTIVITIES

---

### Service to the Profession

- **2023–present** *Vice-President* International Geosynthetics Society, North American Chapter (IGS-NA).
- **2021–2024** *Chair* of the Geosynthetics Division at the Canadian Geotechnical Society (CGS).
- **2021–2024** *CGS liaison* at the International Geosynthetics Society, North American Chapter (IGS-NA).
- **2017–present** *Co-Organizer* of Queen’s Annual Barrier System Workshops attended by industry leaders, academics, and regulators in the field. These workshops involve presenting the latest findings in the research conducted at Queen’s.
- **2022** *Reviewer NSERC Grant* for the Idea to Innovation (I2I) Program
- **2019** *Judge for CGS Undergraduate Group Reports*: Served as one of the Judges for the 2019 CGS and Canadian Foundation for Geotechnique (CFG) Student Award Categories.
- **2017** *Instructor* at the Educate the Educators: A Geosynthetics Education Training Program to Civil Engineering instructors organized by the International Geosynthetic Society -North America (IGS-NA).
- **2016** *Member* of the National Solid Waste Management Programme (NSWMP) aiming at preparing strategic plans to control the generated waste through affordable, professional, sustainable, and inclusive integrated solid waste management in Egypt. The programme is under the supervision of the Ministry of Environment and involves cooperation between Egypt and foreign agencies represented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).
- **2014** *Text Interview*: Geomembranes in Mining: the State of Research ([Link](#))

### Services to Queen’s University (Department, Faculty, and University)

- **2023-2026** *Member* of the Faculty of Engineering Operation Committee.
- **2017–2023** *Chair* of the Civil Engineering Department Safety Committee.
- **2023–present** *Member* of the Civil Engineering Department Safety Committee.

- **2017–present** *Member of the examination committee of PhD, MASc and PhD comprehensive oral exams as an examiner, chair, or head delegate.*
- **2022–present** *Student Advisor 2<sup>nd</sup> Year Civil Engineering.*
- **2023** *Student Advisor 3<sup>rd</sup> Year Civil Engineering (June-August).*
- **2023–2024** *Member of the Civil Department Appointment Committee (Equity representative).*
- **2023** *Member of the Civil Headship Search Committee (Equity representative).*
- **2021–2022** *Member of the Queen’s University Academic and Curricular Diversity Sub-council.*
- **2022** *Judge for the Graduate Student Poster Competition at the FEAS Research Symposium 2022.*
- **2021** *Member of the adjudication committee for the Wicked Ideas funding competition at Queen’s University.*
- **2021** *Civil Engineering representative at the Discipline Fair Open House, Queen's Engineering.*
- **2017, 2018 & 2023** *Lab tour guide during the Civil Homecoming Event hosted by the Civil Engineering Department (Leading Lab tours for the Alumni).*
- **2017-2018, 2019 & 2021** *Participated in the Civil Night Event attended by 1<sup>st</sup> year Engineering students to select their future discipline.*
- **2017, 2018 & 2020** *Reviewer Queen’s Major Admission Award.*
- **2019** *Representative of the Faculty of Engineering and Applied Sciences for 2 days at the Ontario University Fair in Toronto.*
- **2019–2020** *Member of Queen’s University Faculty Association (QUFA) Council.*
- **2018** *Member of the Minerva Safety Committee meeting.*
- **2018** *Member of a focus group meeting to give feedback on the orientation sessions for new Engineering faculty members.*

## **Conferences**

- **2023** *Session Chair for two different sessions at the 4<sup>th</sup> African Regional Conference on Geosynthetics (GeoAfrica), Cairo, Egypt.*
- **2022–present** *Educational Committee Co-Chair [GeoAmericas 2024](#) Conference, Toronto, ON*
- **2022** *Working with IGS-NA to prepare the bid for Canada to host the 13<sup>th</sup> International Conference on Geosynthetics in Montreal 2026.*
- **2021** *ICSMGE State-of-the-Art Paper: Serving as a topic lead for State-of-the-Art paper on the *environmental geotechnics of maintaining clean water and sustainable**

*cities*. I led two topics related to polymeric and bituminous geomembranes. This involves leading the preparation of the content of these topics and coordinating between the different co-authors.

- **2020**            *Session Chair* at the GeoAmericas Conference 2020 held online.
- **2019**            *Session Chair* for two different sessions at the Geosynthetics Conference 2019 held in Houston Texas, USA in February 2019.

### **Consulting**

- **2023–present**    Confidential, Overseas  
Reviewer of the material testing program and material long-term performance.
- **2018–2019**      Canadian Nuclear Laboratories, Chalk River, Ontario, Canada  
Reviewer of the Geomembrane Relative Performance Report for the design of the near-surface disposal Facilities.
- **2013–2014**      Veolia, Australia  
Design of laboratory program for material testing and service life evaluation.

## **11. PROFESSIONAL AFFILIATIONS**

---

- **2017–present**    *Member*-International Geosynthetic Society.
- **2017–present**    *Member*-The Canadian Geotechnical Society.
- **2017–present**    *Member*-American Society of Civil Engineers.
- **2017–present**    *Member*-The North American Chapter of the International Geosynthetics Society.
- **2014–present**    *Member*-Professional Engineers Ontario.

## **12. JOURNAL EDITORSHIPS**

---

- **2023–present**    *Member* of the Editorial Board of the Frontiers in Built Environment Journal.
- **2019- present**    *Associate Editor/Assessor* of the Environmental Geotechnics Journal.
- **2017- present**    *Member* of the Editorial Board of the Geotextiles and Geomembranes Journal.
- **2017- present**    *Reviewer* for journal papers submitted to (**Total of 41 Papers**):
  - Geotextiles and Geomembranes,
  - Geosynthetics International,
  - Waste Management,
  - Polymer Degradation and Stability,

- Environmental Geotechnics,
- ASCE Journal of Geotechnical and Geoenvironmental Engineering,
- Canadian Geotechnical Journal,
- International Journal of Geosynthetics and Ground Engineering, and
- ASTM International-Geotechnical Testing Journals.