

**Dr. Mohammed A. Hefni Phd, PMP, PEng**  
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### Qualifications

<i>Degree</i>	<i>Field</i>	<i>Institution</i>	<i>Year</i>
PhD	Mining Engineering	McGill University	2015
MEng	Mining Engineering	McGill University	2010
B.Sc.	Mining Engineering	King Abdulaziz University	2008

### Academic Experience

<i>From</i>	<i>To</i>	<i>Institution</i>	<i>Position</i>	<i>Full / Part Time</i>
2008	2009	King Abdulaziz University, Mining Engineering Department	Teacher assistant	Full time
2009	2014	McGill University, Mining and Materials Eng. Department	Research Assistant	Full time
2015	2021	King Abdulaziz University, Mining Engineering Department	Assist Professor	Full time
2016	2018	McGill University, Mining and Materials Eng. Department	Visiting Professor	Full time
2019	Current	King Abdulaziz University, Mining Engineering Department	Department head	Full time
2021	Current	King Abdulaziz University, Mining Engineering Department	Associate Professor	Full time

### ***Non-Academic Industrial Experience (including Consultations)***

<i>From</i>	<i>To</i>	<i>Company/Entity</i>	<i>Title</i>	<i>Full / Part Time</i>
2007	2008	Jeddah Municipality	Surveying Engineer	<i>Full time</i>
2019	2019	Al Masane Al Kobra	Consultant	<i>Part time</i>
2020	2020	Ministry of Industry and Mineral resources	Consultant	<i>Part time</i>
2021	Present	Northern Border University	Consultant	<i>Part time</i>

### **Funded Research Projects and Patents from the Past Five Years**

- An investigation into the development and potential of foam minefill.
- Methods and systems for foam.
- An investigation into the potential use of calcium carbonate nano particles in mine backfill.
- The use of natural pozzolans in mine backfill.
- Natural and eco-friendly backfill binder alternatives for a sustainable mining industry.

### **Certifications and Professional Registrations**

- Received a certificate of participation in training in foam concrete technology from the University of Penang, Malaysia.
- Received a certificate of participation in the minefill 2014 conference in Perth, Australia.
- Received a certificate of participation in the 23<sup>rd</sup> world mining congress in Montreal, Canada.
- Project Management Professional Certification (PMP)
- Registered professional engineer (PEng) in the Saudi Council of Engineers (SCE)
- Received a certificate of participation in the 13<sup>th</sup> International Geological Conference in Jeddah, Saudi Arabia

### **Current Membership in Professional Societies and Organizations**

<i>Society/organization</i>	<i>Type of membership</i>	<i>Member Since</i>
Canadian Institute of Mining, Metallurgy and Petroleum (CIM)	Basic	2012
Saudi Council of Engineers (SCE)	Professional	2015
		2017

Project Management Institute (PMI)	Professional	
Society for Mining, Metallurgy & Exploration (SME)	Professional	2019
Accreditation Board for Engineering and Technology (ABET)	Program evaluator for mining engineering programs	2021

### **Institutional and Professional Services** (*administration, committees, units, etc.*)

- Geomechanics lab committee, Mining and Materials Engineering, McGill University.
- Accreditation and quality committee, Mining Engineering Department, King Abdulaziz University.
- Academic affairs committee, Mining Engineering Department, King Abdulaziz University.
- Postgraduate studies committee, Mining Engineering Department, King Abdulaziz University.
- Alumni and industrial relation committee, Mining Engineering Department, King Abdulaziz University.
- The forum of head and supervisors of the academic departments, King Abdulaziz University.

### **Principal Publications/Patents/ Presentations from the Past Five Years**

- Hefni, M.; Hassani, F.; Nokken, M.; Kermani, M.; Vatne, D. Investigation into the development of foam mine fill. In Proceedings of the Eleventh International Symposium on Mining with Backfill, Perth, Australia, 20–22 May 2014; pp. 49–59, doi:10.36487/ACG\_rep/1404\_02\_Hefni.
- Hefni, M.; Hassani, F.P.; Kermani, M.F. A review of the properties of foam mine fill. In Proceedings of the 13th ISRM International Congress of Rock Mechanics, Montreal, QC, Canada, 10–13 May 2015.
- Hefni, M. A., Hassani, F. P., & Kermani, M. F. (2018). An Investigation into the Potential Use of Calcium Carbonate Nanoparticles in Mine Backfill. *Materials Science Forum*, 916, 184–189. <https://doi.org/10.4028/www.scientific.net/msf.916.184>
- W. R. Abdellah, H. M. Ahmed, and M. A. Hefni, “Numerical modelling of staged stope extraction in a tabular steeply dipping deposit,” *Geomech. Geoengin.*, 2019, doi: 10.1080/17486025.2018.1508856.
- W. R. E. Abdellah, M. A. Hefni, and H. M. Ahmed, “Factors Influencing Stope Hanging Wall Stability and Ore Dilution in Narrow-Vein Deposits: Part 1,” *Geotech. Geol. Eng.*, vol. 38, no. 2, pp. 1451–1470, Apr. 2020, doi: 10.1007/s10706-019-01102-w.
- M. A. Hefni, W. R. E. Abdellah, and H. M. Ahmed, “Factors Influencing Stope Hanging Wall Stability and Ore Dilution in Narrow-Vein Deposits: Part II,” *Geotech. Geol. Eng.*, 2020, doi: 10.1007/s10706-020-01259-9.
- Hassani, F.; Hefni, M.; Kermani, M.; Vatne, D. Methods and systems for foam mine fill—Australian Patents. AU201525277A1, 9 September 2019.

- Hefni, M.; Hassani, F. Experimental Development of a Novel Mine Backfill Material: Foam Mine Fill. *Minerals* **2020**, *10*, 564. <https://doi.org/10.3390/min10060564>
- Hefni, M. (2020). The potential use of pumice in mine backfill. *Experimental Results*, *1*, E56. doi:10.1017/exp.2020.6.
- Hassani, F.; Hefni, M.; Kermani, M.; Vatne, D. Methods and systems for foam mine fill—Canadian Patents. CA2982194C, 29 December 2020.
- Hefni, M.; Hassani, F. Effect of Air Entrainment on Cemented Mine Backfill Properties: Analysis Based on Response Surface Methodology. *Minerals* **2021**, *11*, 81. <https://doi.org/10.3390/min11010081>
- M. Hefni and M. A. Ali, “The Potential to Replace Cement with Nano-Calcium Carbonate and Natural Pozzolans in Cemented Mine Backfill,” *Adv. Civ. Eng.*, vol. 2021, p. 5574761, 2021, doi: 10.1155/2021/5574761.
- A. Al-Bakri and M. Hefni, “A review of some nonexplosive alternative methods to conventional rock blasting,” *Open Geosciences*, vol. 13, no. 1. 2021, doi: 10.1515/geo-2020-0245.
- Hefni, M.; Ahmed, H.A.M.; Omar, E.S.; Ali, M.A. The Potential Re-Use of Saudi Mine Tailings in Mine Backfill: A Path towards Sustainable Mining in Saudi Arabia. *Sustainability* **2021**, *13*, 6204. <https://doi.org/10.3390/su13116204>
- Hefni, M.A.; Xu, M.; Hassani, F.; Ghoreishi-Madiseh, S.A.; Ahmed, H.M.; Saleem, H.A.; Ahmed, H.A.M.; Hassan, G.S.A.; Ahmed, K.I.; Sasmito, A.P. An Analytical Model for Transient Heat Transfer with a Time-Dependent Boundary in Solar- and Waste-Heat-Assisted Geothermal Borehole Systems: From Single to Multiple Boreholes. *Appl. Sci.* **2021**, *11*, 10338. <https://doi.org/10.3390/app112110338>
- Ahmed, H.M.; Ahmed, H.A.M.; Hefni, M.; Moustafa, E.B. Effect of Grain Refinement on the Dynamic, Mechanical Properties, and Corrosion Behaviour of Al-Mg Alloy. *Metals* **2021**, *11*, 1825. <https://doi.org/10.3390/met11111825>
- Ali, M.A.; Ahmed, H.A.M.; Ahmed, H.M.; Hefni, M. Pyrophyllite: An Economic Mineral for Different Industrial Applications. *Appl. Sci.* **2021**, *11*, 11357. <https://doi.org/10.3390/app112311357>

### Recent Professional Development Activities (*Workshops, training, etc.*)

- **Foam concrete technology**, University of Penang, Malaysia.
- **Mining with backfill**, McGill University, Canada.
- **Design of experiment**, Boston, USA.
- **Safety in underground mines**, the Hudbay mine in Flin Flon, Canada.
- **Ethics and academic integrity**, McGill University, Canada.
- **The workplace hazardous materials information system**, McGill University, Canada.

- **Project management professional training course**, April 2018, Montreal, Canada.
- **ASTM training and E-Learning**, 4th ASTM conference and workshop, May 2018, Kuwait.
- **ABET fundamental workshop**, ABET symposium 2019 in Dallas, TX, USA.
- **ABET ideal workshop**, September 2019, Jeddah, Saudi Arabia.
- **Resource estimation with MICROMINE**, December 2019, London, UK.
- **Implicit modelling with MICROMINE**, January 2020, Online.
- **Block modelling with MICROMINE**, March 2020, Online.
- **Pit optimization with MICROMINE**, May 2020, Online.
- **MICROMINE training week**, Sep 14 -Sep 18 2020, Online.
- **Leading without formal authority**, Aug 2020, LinkedIn online learning.
- **Artificial intelligence for project managers**, July 2020, LinkedIn online learning.
- **Construction management: Safety and Health**, July 2020, LinkedIn online learning.
- **Lean six sigma foundations**, July 2020, LinkedIn online learning.
- **Logistics foundations**, July 2020, LinkedIn online learning.
- **OSHA standards in occupational safety and health**, Aug 2020, College of engineering & Islamic architecture at Umm Alqura University.
- **Academic leadership diploma**, Dec 2020, King Abdulaziz University, Jeddah, Saudi Arabia.
- **ABET Face-to-Face training**, April 2021, online.