Mohammad A. Abdul Qader

CONCRETE TECHNOLOGY • BIO-INSPIRED MATERIALS • CEMENT-BASED MATERIALS
SUSTAINABILITY • MOLECULAR DYNAMIC SIMULATION

University of Miami | 1251 Memorial Drive, McArthur Engineering Building, Rm. 301, Coral Gables, FL, 33146-0630
(802) 399-0094 | Maa3638@miami.edu | Mohammadabdulqader.wuiltweb.com

EDUCATION

University of Vermont *Burlington, VT*

M.S. IN CIVIL AND ENVIRONMENTAL ENGINEERING *2025*

- Research Advisors: Profs. Dryver Huston & Mandar Dewoolkar
- Thesis Title: *Durability Improvement and Strength Enhancement of Cement-Based Materials Using Self-Shrinking Fibers, Superabsorbent Polymers, and Air-Entraining Admixtures*
- Served as a Teaching Assistant for Geotechnical Principles Lab and Hydraulics Lab, mentoring students in laboratory procedures and data interpretation
- Supervised an undergraduate research project, with the student earning the prestigious Barrett Foundation Summer Research Internship

Taif University *Taif, Saudi Arabia*

B.S. IN Civil ENGINEERING *2021*

- Research Advisor: Prof. Saleh J. Alghamdi
- Graduation Project Title: *Comparison of Popular Mix Design Methods via Implemented MATLAB GUUI-Aided Programs*
- Graduated with First Class Honors (Summa Cum Laude) and a GPA of 3.78/4.00, ranking 1_{st} in the Civil Engineering class of 2021
- Sole student in the Department of Civil Engineering to achieve First Class Honors in 2021

Leadership and Academic Achievements

- **Founding member of Taif University's Scientific Club and the College of Engineering Club; served as President of the Scientific Club in 2020 and 2021.**
- **Ranked second for my "Comparison of Popular Concrete Mix Design Methods via Implemented MATLAB GUI-Aided Programs" presentation at Taif University's Annual Scientific Forum 2021.**
- **Achieved perfect scores (100) in several undergraduate courses, including Water Resources Engineering, Building Construction, and General Physics.**
- **Co-organized scientific and general knowledge competitions at the university level, attracting over 30,000 student participants; honored by the Dean of Student Affairs for exceptional contributions.**
- **Awarded second place in the individual debating competition at Taif University's Cultural Olympics 2020 and third place in the book chapter summarization competition at the 2019 Cultural Olympics.**
- **Vice President of the Middle Eastern Student Association (MESA) at the University of Vermont.**

RESEARCH EXPERIENCE

University of Vermont *Burlington, VT*

STUDENT RESEARCHER (ADVISORS: PROFS. Dryver Huston & Mandar Dewoolkar) *2023 - present*

- Researching the durability and strength of green PLC-based concrete prestressed with chitosan fibers, using freeze-thaw,

surface resistivity, and compressive strength tests.
- Studying the effect of chitosan fibers, derived from sea shells, on enhancing concrete durability and sustainability through shrinkage in high pH environments.

University of Vermont *Burlington, VT*

STUDENT RESEARCHER (ADVISORS: PROFS. Dryver Huston & Mandar Dewoolkar) *2023- 2024*

- Contributed as part of a research team in developing thirteen sustainable concrete mixes using seven different supplementary cementitious materials and aggregates from four local suppliers.
- Assisted in conducting packing density assessments and evaluating the mechanical and durability performance of optimized concrete mixes through freeze-thaw, surface resistivity, shrinkage, and compressive strength tests.

Taif University *Taif, Saudi Arabia*

STUDENT RESEARCHER (ADVISOR: PROF. Saleh J. Alghamdi) *2020- 2021*

- Led a team in developing GUI-aided MATLAB programs to streamline the concrete mix design process, implementing six widely used methods for normal and high-strength concrete, and applying machine learning to classify mixes.
- Published a research article as the first author in a leading civil engineering journal, focusing on the impact of cementitious material content on concrete properties and carbon emissions.

INDUSTRY EXPERIENCE

Al-Jazera Concrete Company *Taif, Saudi Arabia*

Concrete Field Engineer *2022-2023*

- Monitored contractors' work and assisted in implementing new construction methods, including fast-casting concrete forms, on the Madinat Al Wurood Project, a mega-construction project in Saudi Arabia.
- Managed concrete casting operations, overseeing the testing of fresh properties and approving or rejecting concrete for over 20,000 m³, while gaining extensive experience with self-consolidating concrete and shotcrete.

Hussain Ba Hussain Structural Design and Consultancy *Taif, Saudi Arabia*

Civil ENGINEERING INTERN *2021*

- Collaborated with the engineering team to prepare structural plans in alignment with the architectural design.
- Utilized CSI SAP2000 for structural analysis, designed columns and beams, and prepared structural drawings using AutoCAD.

Professional Memberships and Certifications

American Society of Civil Engineers (ASCE) *Student Member*

Institution of Civil Engineers (ICE) *Student Member*

ACI Concrete Field Testing Technician – Grade 1 Certification *2025-2030*

PUBLICATIONS & PRESENTATIONS

Journal Articles

[J3] B. Yeboah*, D. Huston, M. Dewoolkar, **M. Abdul Qader**, and A. Casavant. (2024). *Performance Concrete: Enhancing Durability, Cost Effectiveness and Reducing Carbon Footprint*. (Submitted).

[J2] Huston, D*., Dewoolkar, M. M., Gregory, D., **Abdul Qader, M**., & Yeboah, B. (2025*). Chitosan Shrinking Fibers for Curing-Initiated Stressing to Enhance Concrete Durability*. *Materials*, *18*(7), 1574. https://doi.org/10.3390/ma18071574

[J1] **M. Abdul Qader**, A. Ibrahim, , Al-Badr Alaidaros, A. K. Abdulkareem, Abdullah Alwuayl, Abdullah Alsaluli, Mamdooh Alwetaishi, Mishal Alsehli, & S. Alghamdi*. (2022). *Investigating Trends and Costs Associated with Designing Concrete Mixes Using Different Methods by Computer Programs. Advances in Civil Engineering, 1–13.* doi.org/10.1155/2022/2526833.

Talks and Posters

[T6] B. Yeboah, **M. Abdul Qader**, D. Huston, and M. Dewoolkar. (2024). "Performance Concrete: Enhancing Durability, Cost Effectiveness and Reducing Carbon Footprint", poster at Vermont Agency of Transportation Research and Innovation Annual Symposium, 2024.

[T5] **M. Abdul Qader**, Shannon Hughes, D. Huston, and M. Dewoolkar. (2024). "Enhancing the Durability of Green PLC-Based Concrete Using Self-Shrinking Fibers", poster at Transportation Infrastructure Durability Center (TIDC) Annual Conference, 2024.

[T4] **M. Abdul Qader**, B. Yeboah, G. Diarmuid, M. Dewoolkar, and D. Huston. (2024). "Enhanced Durablity of Concrete With During-and Post-Cure Shrinking Fibers", presentation at Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024).

[T3] **M. Abdul Qader**, D. Huston, M. Dewoolkar, and G. Diarmuid. (2023). "Shrinking Chitosan Fibers to Improve Long Term Concrete Durability", poster at Transportation Infrastructure Durability Center (TIDC) Annual Conference, 2023.

[T2] A. Ibrahim, Al-Badr Alaidaros, A. K. Abdulkareem, Abdullah Alwuayl, and **M. Abdul Qader**. (2021). "Classification of Popular Concrete Mix Design Methods using Machine Learning", presentation at Taif University Annual Scientific Forum.

[T1] **M. Abdul Qader**, A. Ibrahim, Al-Badr Alaidaros, A. K. Abdulkareem, and Abdullah Alwuayl. (2021). "Comparison of Popular Concrete Mix Design Methods via Implemented MATLAB GUI-Aided Programs", presentation at Taif University Annual Scientific Forum.