

ABDUL ADAM, PMP

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RESEARCH & WORK EXPERIENCE

Graduate Research Assistant II

Aug 2022-Present

Michigan State University, Composite Vehicle Research Center

- Developed multiscale Digimat–ABAQUS FEA models for nano-modified adhesive joints under static and dynamic loading.
- Established quasi-static testing protocols and fixture design for single lap joint characterization across multiple strain rates.

Thermal Spray Coatings for Maintenance and Sustainment of Vehicles. Jul 2023-Present

- Led project enhancing coating durability through nanoparticle-modified clay formulations and thermal spray optimization with industry partners (NCMS, GVSC, PPG)
- Conducted comprehensive testing (pull-off, corrosion, eddy current NDT) and thermal analysis (DSC, TGA, DSM) to optimize coating performance

Advanced Manufacturing & Multi-Material Composites

Feb 2023-Present

- Composite Structural R&D: Achieved 57% strength improvement (Stitched Z Composites) and designed lightweight automotive structures (hoods, battery trays).
- Material Process Innovation: Developed reversible adhesive joints and optimized manufacturing processes for multi-material composite adaptability.

Structural Design Engineer Larsen & Toubro Ltd., Chennai, India

Jul 2020 - Feb 2021

- Designed structures using manual calculations and software simulations (SAP 2000, STAAD.Pro, ETABS)
- Oversaw on-site implementation of designs to ensure design fidelity and structural integrity
- Conducted comprehensive load analysis (dead, live, wind loads) for multi-story structures

Site Engineer, Utracon Structural Systems Pvt. Ltd., Chennai, India

Jun - Jul 2019

- Gained hands-on experience using epoxy-coated strands for post-tensioning slabs
- Assisted in monitoring tendon installation, stressing, and grouting to ensure design compliance

MSU Innovation Center, East Lansing, MI

Dec 2025 – Present

Technology Commercialization Intern — Engineering & Physical Sciences

- Investigated and analyzed the commercial potential of new and emerging technologies.
- Supported the marketing and promotion of technologies while staying aligned with MSU policies.
- Communicated findings through reports, presentations, and documentation.

GRADUATE TEACHING ASSISTANT

Graduate Teaching Assistant

August 2022-December 2023

Department of Civil & Environmental Engineering

CE 305: Introduction to Structural Analysis

- Designed and graded assessments, led weekly lectures, and held office hours.
- Helped numerous students achieve 4.0 GPAs and contributed to the professor receiving the Teaching Excellence Award during my tenure.
- Received student feedback: Students praised my teaching style, clear communication, and simplifying complex concepts

EGR 102 - Introduction to Engineering Modeling

- Led weekly lab sessions teaching MATLAB programming and advanced Excel for mathematical modeling and engineering problem-solving
- Provided individual mentorship through code debugging, model development, and computational analysis of real-world engineering problems

EDUCATION

Michigan State University, East Lansing, MI 2022-Present (expected 2027)

Dual Degree in Doctor of Philosophy (Ph.D.)

Departments of Civil Engineering & Mechanical Engineering

PhD Thesis: Multi-Material Bonded Joints under Intermediate

Michigan State University, East Lansing, MI 2022-2024

Master of Science (M.S.) in Mechanical Engineering

Anna University, Chennai, India 2019-2021

Master of Science (M.S.) in Structural Engineering

Annamalai University, Annamalai Nagar, India 2015-2019

Bachelor of Science (B.S) in Civil & Structural Engineering

PUBLICATIONS

1. **Adan, A.**, Kuloglu, A., Hassan, S. F., Haq, M. "Effect of Fe₃O₄ Surface Functionalization on Mechanical–Magnetic Performance of Reversible Thermoplastic Adhesive Joints." Under review, 2026.
2. **Adan, A.**, Hassan, S. F., Abdelwahab, A., Haq, M."Influence of Functionalized Iron Oxide Nanoparticles on the Mechanical Performance of Thermoplastic Adhesives." SAMPE 2026 Conference Proceedings, Seattle, WA, April 27–30, 2026. DOI: 10.33599/nasampe/s.26.131
3. Avireni, B., **Adan, A.**, Kuloglu, A., Haq, M., & Chahal, P. (2025). Glass Fiber Composite Embedded Fabric-based RF Structures for Vehicular Applications. IEEE Sensors Journal, vol. XX, no. XX. (Submitted)
4. Adan, A., Haq, M. "Loading-Dependent Effects of Fe₃O₄ Nanoparticle Functionalization and Hierarchical Carbon Fiber Reinforcement on Thermoplastic Adhesive Joints Across Metallic and Composite Adherends." To be submitted to MDPI Journal of Composites Science.
5. Ponsingh, J. D., **Adan, A.**, Helena, J. H. "The Residual Mechanical Properties of Fire-Exposed Hot-Rolled Structural Steel with Passive Fire Protection." Engineering Structures, preprint Jun. 2026, under review (ENGSTRUCT-D-26-06372).
6. **Adan, A.**, Jane Helena, H. (2023). Behaviour of concrete-encased composite members under elevated temperatures. Materials Today: Proceedings. <https://doi.org/10.1016/j.matpr.2023.04.572>
7. Abdullahi Mohamed, S. A., Abdikafi, E. A., **Adan, A.**, & Ahmed, M. H. (2022). Environmental Impact Assessment for Construction Activities of the Dahab Tower Building in Mogadishu. American Journal of Environment and Climate, 1(3), 1–5. <https://doi.org/10.54536/ajec.v1i3.773>
8. Kundurthi, S., Haq, M., & **Adan, A.** Effective wall thickness for computational modeling of polymer extrusion additive manufacturing. SPE Antec Conference 2023, Denver, CO, USA

MANUSCRIPTS UNDER PREPARATION

1. **Adan, A.**, Adeyemo, Kunle, Hassan Syed Fahad, Haq Mahmoodul, "Experimental and Numerical Investigation on the Effect of Z-Stitching on the Fracture Toughness of Stitched Sandwich Composites with Integrated RF Copper Fabric Antennas
2. Kuloglu, Arinc, **Adan, A.**, Kepreos, Alexander, Hassan Syed Fahad, Karpenko Oleksii, Haq Mahmoodul, " NDE Evaluation of Impact-Resistant Composite Foam Structures "
3. **Adan, A.**, Hassan Syed Fahad, Haq Mahmoodul, "Effect of Intermediate strain rate on bonded lap joints"

4. **Adan, A.,** Haq Mahmoodul. "Experimental and Numerical Investigation of Quasistatic Mechanical Properties of Functionalized Adhesives on Lap Bonded Joints Using Multiscale Modelling."
5. **Adan, A.,** Kepreos, Alexander, Haq Mahmoodul. "Characterization of Nano-Modified Thermal Spray Coatings: Effects on Mechanical Strength, Corrosion Resistance, and Thermal Performance"

POSTER PRESENTATION

1. **Adan, A.,** Haq Mahmoodul. "Review of Hybrid Fastening Joints" at SPE Auto EPCON, Troy, MI, May 02, 2023.
2. **Adan, A.,** Kepreos, Alexander, Haq Mahmoodul. "Thermal Spray Coatings for Maintenance Vehicles" in CVRC at The Provost Visit. Oct 2023
3. **Adan, A.,** Hassan Syed Fahad, Haq Mahmoodul, "Influence of Nanoparticle-Reinforced Thermoplastics on Lap Shear Strength of Aluminum Joints. " May 4, 2024.
4. Kuloglu Arinc, Kepreos Alexander Michael, **Adan, A.,** Hassan Syed Fahad, Karpenko Oleksii, Haq Mahmoodul, Udpa Lalita, Udpa Satish S, "Advanced Manufacturing, Structural Joining, & Health Monitoring ". (June 5-7, 2024).
5. **Adan, A.,** Hassan Syed Fahad, Haq Mahmoodul, "Influence of Nanoparticle-Reinforced Elium (Acrylic) Thermoplastics on Lap Shear Strength of GFRP Joints. " August 30, 2024.
6. **Adan, A.,** Adeyemo, Kunle, Hassan, Syed Fahad, Haq, Mahmoodul. "Effect of Machined and Printed Holes on 3D printed Continuous Fiber Reinforced Thermoplastics (CFRTPs). March 8, 2025
7. Kunle Adeyemo, **Adan, A.,** Hassan Fahad and Mahmood Haq. 3D printing and investigating of the bearing performance of an open-hole CFRTP. COGS, at MSU, January 2025.
8. Rodarte-Escobedo, L., **Adan, A.,** Haq, M. "Mechanical Characterization of Fe₃O₄ Nanoparticle-Reinforced Thermoplastic Composites." SPE FOAMS 2026, Novi, MI, June 2026

HONORS AND AWARDS

- Won Third Prize in Poster Presentation at SPE Auto EPCON, Troy, MI. **May 2023**
- Won First Prize in Poster Presentation at SPE Auto EPCON, Troy, MI. **May 2024**
- 10th annual Recipient of the Delta Polymers Award 2024, SPE Detroit Section. **SEP 2024**
- Winner, 90-Second Doctoral Research Impact Video Competition. American Society for Composites (ASC) **JULY 2026**
- SPE Detroit-Section Scholarship (**2023,205,2026**)

PROFESSIONAL MEMBERSHIPS

- American Society of Composites (ASC), Society of Automotive Engineers (SAE)
- Society for the Advancement of Materials and Process Engineering (SAMPE)
- American Society of Mechanical Engineers (ASME), Society of Plastics Engineers (SPE)

LEADERSHIP AND SERVICE - DEPARTMENTAL AND UNIVERSITY SERVICE

- President of Society of Plastics Engineers (SPE) MSU student chapter **Jun 2026- Present**
- Vice President of SAMPE, MSU Student Chapter. **Jan 2026- Present**
- Held Secretary & Events Coordinator at SPE Student Chapter, MSU. **Jan 2024-Dec 2025**
- Hearing Board Member, College of Engineering Student Committee, MSU **2024-2025**
- Treasurer at Michigan State University Toastmasters Club.

SERVICE TO THE PROFESSION — PEER REVIEWER

- SAE International Journal of Aerospace
- SAE International Journal of Materials and Manufacturing
- SAE Technical Papers