College of Engineering

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Education:

- **PhD in Mechanical Engineering.**

University of Toronto, Toronto, Canada, 2012 – 2016.

- **MSc in Mechanical Engineering.**

Sultan Qaboos University, 2002- 2004.

- **BEng in Mechanical Engineering.**

Sultan Qaboos University, 1997- 2002.

AWARDS AND RECOGNITION:

- Appreciation from Gulf Intelligence Company for being active in the yearly forums as a speaker.
- Letter of Appreciation from CureTech Company for supporting them in the design and manufacturing of patient-specific medical implants, 2023
- Certificate of Appreciation from Abu Dhabi University for supervising students in the 10th Undergraduate Research Competition (URC), 2023

PROFILE

Dr. Farooq Al Jahwari is a distinguished academic, researcher, and industry consultant with over 20 years of experience in engineering education and research. Currently serving as the Director of the Oil and Gas Research Center (OGRC) at Sultan Qaboos University (SQU), he specializes in polymer composites, finite element modeling, and innovative applications in the energy sector, particularly hydrogen storage and downstream industries. He holds a PhD in Mechanical Engineering from the University of Toronto, where his research focused on functionally graded porous structures and composites, and both MSc and BEng degrees from SQU, solidifying his expertise in anisotropic materials and corrosion studies. Dr. Al Jahwari has published 32 journal articles, 18 conference papers, and two book chapters, receiving over 550 citations globally. He has secured over $337,000 in research funding and developed patented technologies, such as a Vacuum-Assisted Compression Molding system for defect-free thermoplastic composites, while establishing state-of-the-art laboratories for thermoplastics and thermosets processing at SQU. As an Assistant Professor, he integrates real-world problem-solving into his teaching through the CDIO approach and has supervised 20 postgraduate students in advanced research areas. His collaborations with industry leaders like PDO, OQ, and CureTech have translated research into impactful applications, including pipeline durability, medical implants, and renewable energy solutions. Widely recognized for his contributions, Dr. Al Jahwari has received accolades such as the 2023 OmanTel Startup Grant and the 2022 Best Innovation Award by the Royal Army of Oman. With a vision to enhance Oman's industrial capabilities, he is committed to advancing hydrogen storage solutions, fostering SMEs for commercializing innovative technologies, and addressing global sustainability challenges.

WORK EXPERIENCE

- 2022–Present

Director, Oil and Gas Research Center, Sultan Qaboos University, Oman

- 2016–Present

Assistant Professor, College of Engineering, Sultan Qaboos University, Oman

- 2021 – 2022

Assistant Head of Department, Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Oman

- 2009 – 2016

Lecturer, College of Engineering, Sultan Qaboos University, Oman

- 2008 – 2009

Head, Section of Mechanical and Industrial Engineering, Almusanaa College of Technology, Oman

- 2006 – 2008

Lecturer, Section of Mechanical and Industrial Engineering, Almusanaa College of Technology, Oman

- 2002 – 2006

Research Assistant, College of Engineering, Sultan Qaboos University, in collaboration with Petroleum Development of Oman (PDO), Oman

RESEARCH INTERESTS

- Finite Element Analysis and Design;
- Processing, Analysis and Characterization of Polymers and Composites;
- Molecular Dynamics;
- Impact Mechanics;
- Smart Materials;
- Cellular Structures;
- Design and Fabrication of High Damping Materials for Impact Attenuation.

Professional Credentials, Certifications, or Licensing

- None

Membership in Professional Organization

- None

Professional Development Activities

- Keynote Speaker, "Challenges of Oil Industry at Oman with Potential Areas of Improvement from Upstream to Downstream", International Conference on Transforming Upstream (ICTU), RGIPT campus in Jais, Amethi, Uttar Pradesh, India, Sept. 30 – Oct. 01, 2024
- Member of Advisory Committee, Oman Materials, Corrosion and Integrity Summit, Oman Convention & Exhibition Centre, Muscat, Oman, Sept. 8-11, 2024
- Speaker in the yearly Academia-Industry-Governance forums organized by Gulf Intelligence
- Associate Editor, The Journal of Engineering Research [TJER], ISSN: Online: 1726-6742 & Print: 1726-6009
- Peer Reviewer, College of Engineering Research Proposals, Sultan Qaboos University, 2017 - present
- Peer Reviewer, The Research Council (former, now under the Ministry of Higher Education, Research, and Innovation, MoHERI) Proposals, 2017 - present

Selected Journal Publications

J1. M. Kabir, T. Pervez, **F. Al Jahwari**, and S. Z. Qamar, "A new weighted approach for homogenization of composites," Materials Research Express, vol. 12, no. 4, p. 045702, 2025.
(DOI 10.1088/2053-1591/adc786)

J2. Hussain Al Naamani, **F. Al Jahwari**, Tasneem Pervez, Sultan Al Owaisi, Abdullah Al Shabibi and Sanket Joshi, " Numerical prediction with finite element analysis (FEA) of burst pressure in pipelines with interacting internal & external corrosion defects", Engineering Research Express, vol. 6, no. 4, p. 045585, 2024
(DOI 10.1088/2631-8695/ad9db6)

J3. M. H. B. Tasneem, **F. Al Jahwari**, M. Al-Kindi, S. Al Mufarraji, and E. Al-Lawati, "Finite element based homogenization of polypropylene/silica micro-composites: experimental work and numerical modeling," Journal of Micromechanics and Microengineering, vol. 34, no. 8, p. 085015, 2024
(DOI 10.1088/1361-6439/ad60d3)

J4. M. H. B. Tasneem, **F. Al-Jahwari**, M. Al-Kindi, E. Al-Lawati, and A. Al-Lawati, "Thickness-extensible Higher Order Plate Theory with Enforced C1 Continuity for the Analysis of PEEK Medical Implants," Biomedical Physics & Engineering Express, vol. 10, no. 6, p. 065008, 2024
(DOI 10.1088/2057-1976/ad7591)

J5. M. Kabir, T. Pervez, **F. Al-Jahwari**, and M. S. M. Al-Kharusi, "Material Homogenization of Human Femur Bone Material Using a New Weighted Approach," Journal of Engineering and Science in Medical Diagnostics and Therapy, pp. 1-24, Published Online on September 9, 2024
(DOI 10.1115/1.4066460)

J6. A. Al Shabibi, I. Aal Thani, **F. Al Jahwari**, and K. Goher, "Failure analysis using finite element method of defective pipelines reinforced with composite repair system," Petroleum Science and Technology, pp. 1-19, Published online on 30 July, 2024
(DOI 10.1080/10916466.2024.2384524)

J7. I. Al Muscati, **F. Al Jahwari**, T. Pervez, Mehmet Dorduncu, "Molecular dynamics investigation for mechanical and failure behaviors of carbon nanotube-reinforced functionally graded aluminum–copper nanocomposites," Mechanics of Advanced Materials and Structures (Taylor & Francis), pp. 1-14, Published online on 28 October, 2023
(DOI 10.1080/15376494.2023.2273009)

J8. I. Al Muscati, **F. Al Jahwari**, and T. Pervez, "Effect of CNT's volume fraction on the mechanical properties of CNT reinforced Al/Cu alloy nanocomposite using molecular dynamics simulation," Materials Today: Proceedings, Available online on 19 May, 2023

(DOI 10.1016/j.matpr.2023.05.169)

J9. S. Z. Qamar, T. Pervez, and **F. Al-Jahwari**, "Integrity Assessment of High-Performance PVC Pipes for Thermal Wells," Polymers, vol. 15, no. 17, p. 3593, 2023.
(DOI 10.3390/polym15173593)

J10. Fatema Al Kindi, Talal Al-Shukaili, Pankaj B Pathare, **F. Al-Jahwari**, Nasser Al-Azri, Ohood Al Ghadani, "Thermal Performance of a Flat-Plate Solar Collector for Drying Agricultural Crops," AgriEngineering, vol. 5, no. 4, p. 2349-2365, 2023.
(DOI 10.3390/agriengineering5040144)

J11. A. Allamki, M. Al-Maharbi, S. Z. Qamar, and **F. Al-Jahwari**, "Precipitation Hardening of the Electrical Conductor Aluminum Alloy 6201," Metals, vol. 13, no. 6, p. 1111, 2023
(DOI 10.3390/met13061111)

Selected Conference Participations

C1. Said Almufarraji, **F. Al Jahwari**, Tasneem Pervez, Moosa Al-Kharusi, "Processing and Structure-Property Relation of Polypropylene/nanosilica Nanocomposite Porous Structures with Solid-State Foaming for Damping Applications", in ASME International Mechanical Engineering Congress and Exposition 2024 (IMECE2024): American Society of Mechanical Engineers, Oregon Convention Center, Portland, USA, November 17-21, 2024.

C2. Mobashar Kabir, Tasneem Pervez, **F. Al Jahwari**, Sayyad Zahid Qamar, "Homogenization of Different Material Groups at High Filler Fractions Using a New Weighted Approach", in ASME International Mechanical Engineering Congress and Exposition 2024 (IMECE2024): American Society of Mechanical Engineers, Oregon Convention Center, Portland, USA, November 17-21, 2024.

C3. Mobashar Kabir, Tasneem Pervez, **F. Al Jahwari**, Moosa s.m. Al-Kharusi, "Material Homogenization of Human Femur Bone Material Using a New Weighted Approach", in ASME International Mechanical Engineering Congress and Exposition 2024 (IMECE2024): American Society of Mechanical Engineers, Oregon Convention Center, Portland, USA, November 17-21, 2024.

C4. Moosa Al Kharusi, Mohammed Suleiman Al. Owiemri, **F. Al Jahwari**, "Finite Element Modeling and Additive Manufacturing of High-Density Polyethylene Micro/nano-Hydroxyapatite Composites for Biomedical Implants", in ASME International Mechanical Engineering Congress and Exposition 2024 (IMECE2024): American Society of Mechanical Engineers, Oregon Convention Center, Portland, USA, November 17-21, 2024.

C5. M. Kabir, T. Pervez, S. Z. Qamar, and **F. Al-Jahwari**, "Weighted Mori-Tanaka approach for homogenization of particulate composites at high filler fractions," in *ASME International Mechanical Engineering Congress and Exposition*, vol. 87684, pp. V011T12A018, New Orleans, LA, USA, Oct. 29–Nov. 2, 2023

C6. M. Kabir, T. Pervez, **F. Al-Jahwari**, and S. Z. Qamar, "Modeling of human femoral bone idealized as functionally graded and laminated composite structure," in *ASME International Mechanical Engineering Congress and Exposition*, vol. 87622, pp. V005T06A047, New Orleans, LA, USA, Oct. 29–Nov. 2, 2023

C7. O. Al-Abri, T. Pervez, Z. Qamar, and **F. Al-Jahwari**, "Macroscale Simulation of Tensile Test of Expandable Tubular Steel Using Crystal Plasticity FEM," in *Proceedings of the Canadian Society for Mechanical Engineering International Congress*, Edmonton, Canada, June 5–8, 2022

C8. **F. Al-Jahwari**, S. Z. Qamar, T. Pervez, and N. Al Maskari, "Using CDIO Principles for Teaching of Mechanical Design Courses," in 2022 IEEE Global Engineering Education Conference (EDUCON), pp. 1683-1688, Tunis, Tunisia, Mar. 28–31, 2022

Selected Service Activities

- Research Support to the Small and Midsize Enterprises (SME's) by Young Researchers/Engineers
    - Providing support to CureTech (Local Omani SME that develops and manufactures patient-specific implants), (https://www.curetechom.com/). The support is through research and consultancy to different aspects related to materials, design, and manufacturing of medical implants.
    - Currently working on developing three new SME's:
        - Graphene-based Polymeric Solar Cells from the Locally Produced Raw Polymers (*Awarded OmanTel Upgrade Fund for Startups*).
        - Pellets-based Extruder Head for Fused Deposition Modeling (FDM) 3D printers.
        - Design and Fabrication of Hydrogen Storage Tanks from Petroleum-based Polymers Produced in Oman.

- Extra Activities for the University and Community Services

  As the Director of Oil and Gas Research Center, 2022-present, I have led/joined research initiatives / gatherings / workshops / meetings to represent the university. I am building bridges to the university for a better relationship with the community and industry. This in turns helps SQU to serve the community and industry more effectively. Sample of these research initiatives/gatherings/workshops/meetings are listed below:

  - Meetings with leading bodies from the industry and government sector such as:
    - OQ Company.
    - BGP Oman Company, Subsidiary of CNPC (China National Petroleum Corporation).
    - Oman Public Authority for Special Economic Zones and Free Zones (OPAZ).
    - Zenn AI Company.
    - Occidental Oman Inc.
  - Leading the efforts of governance and operation of the Chemical and Biological Services Center (CBSC) for commercial use. It is the first laboratory in the university with the philosophy of commercialization.