



Ammar M. Bahman

ASSISTANT PROFESSOR · KUWAIT UNIVERSITY

College of Engineering and Petroleum, Mechanical Engineering Department, P.O. Box 5969,
Safat, 13060, Kuwait

+965-2498 5810 | +965-2484 7131 | +965-9921 1101 | a.bahman@ku.edu.kw

ammarbahman | @AmmarBahman | Ammar Bahman | Ammar-Bahman

0000-0003-2370-9525 | 36882594900 | AAD-5841-2020

Research Interest

Applied thermodynamics Energy efficiency Energy conversion and management Energy and buildings Energy and built environment Exergy analysis Techno-economic Exergo-economic Gas dynamics HVAC&R Heat exchangers design Alternative refrigerants Advanced heat pumping technologies Dynamic and steady-state system modeling Thermal systems optimization Machine learning Two-phase Nanofluids Thermophysical properties characterization

Education

Purdue University

PH.D. MECHANICAL ENGINEERING

- Dissertation: 'Analysis of Package Air Conditioning System for High Temperature Climates'

West Lafayette, IN, USA

Aug, 2013 - May, 2018

University of South Florida

MS.C. MECHANICAL ENGINEERING

- Thesis: 'Modeling of Solar-Powered Single-Effect Absorption Cooling System and Supermarket Refrigeration/HVAC System'

Tampa, FL, USA

Aug, 2009 - Aug, 2011

Kuwait University

MS.C. MECHANICAL ENGINEERING

- Project: 'Performance of Chilled Ceiling /Displacement Ventilation System in Kuwait'

Kuwait City, Kuwait

Sep, 2006 - Jan, 2009

Kuwait University

B.SC. MECHANICAL ENGINEERING

- Capstone Project: 'Solar Refrigerator'

Kuwait City, Kuwait

Sep, 2002 - Aug, 2006

Professional Experience

ACADEMIC POSITION

- May, 2018 - Present **Assistant Professor**, Mechanical Engineering Department, Kuwait University
- Oct, 2021 - Sep, 2022 **Visiting Professor**, Ray W. Herrick Laboratories, Purdue University
- Jun, 2019 - Sep, 2019 **Visiting Professor**, Ray W. Herrick Laboratories, Purdue University
- Aug, 2013 - May, 2018 **Research Assistant**, Ray W. Herrick Laboratories, Purdue University
- Aug, 2011 - Aug, 2013 **Assistant Teacher**, Public Authority for Applied Education and Training (PAAET)
- Mar, 2008 - Aug, 2009 **Scientific Assistant**, Mechanical Engineering Department, Kuwait University

PROFESSIONAL POSITION

- Nov, 2007 - Feb, 2008 **Maintenance/Mechanical Engineer**, Kuwait Oil Company (KOC)

Administrative Experience

UNIVERSITY LEVEL

- AY 2023-2024 **Member**, KISR/Kuwait University Collaboration Committee

FACULTY LEVEL

AY 2023-2024 **Member**, Strategic Planning Committee

DEPARTMENTAL LEVEL

AY 2023-2024 **Member**, UPC/TAG/Thermo-fluid/Thermal Elective Courses Sub-Committee
AY 2023-2024 **Member**, UPC/TAG/Thermo-fluid/Fluid Mechanics and Heat Transfer Sub-Committee
AY 2023-2024 **Member**, UPC/TAG/Thermo-fluid/Thermodynamics Sub-Committee
AY 2023-2024 **Coordinator**, UPC/TAG/Thermo-fluid/Air Conditioning and Refrigeration Sub-Committee
AY 2022-2023 **Coordinator**, Strategic Planning Committee
AY 2022-2023 **Coordinator**, Technical Lectures Committee
AY 2020-2021 **Member**, TimeTable Committee
AY 2020-2021 **Member**, Consultation & Short Courses Committee
AY 2019-2020 **Member**, Sabbatical & Academic Missions Committee
AY 2019-2020 **Co-Coordinator**, UPC/TAG/Thermo-fluid
AY 2024-2025 **Member**, Scholarship Committee
AY 2018-2019
AY 2024-2025
AY 2023-2024
AY 2020-2021 **Member**, Research Committee
AY 2018-2019
AY 2023-2024
AY 2018-2019 **Member**, Thermo-Fluids Labs Committee
AY 2019-2020
AY 2018-2019 **Coordinator**, ASHRAE - Kuwait Student Branch

COMMUNITY LEVEL

Jul, 2024 - Jun, 2025 **Treasurer**, Act as treasurer of ASHRAE Kuwait Chapter
Oct, 2023 - Mar, 2024 **Evaluator**, Act as a member in the evaluation team for KSEF 2024 competition
Oct, 2022 - Mar, 2023 **Evaluator**, Act as a member in the evaluation team for KSEF 2023 competition
Nov, 2022 - Nov, 2023 **Member**, Act as a member in ICERD-8 scientific committee
Nov, 2022 - Nov, 2023 **Member**, Act as a member in ICERD-8 organizing committee
Sep, 2022 - Jan, 2023 **Evaluator**, Act as a member in KFAS capstone design reward and Zain creative and innovation reward
Jul, 2023 - Jun, 2024
Jul, 2022 - Jun, 2023 **Communications Chair**, Act as communications committee chair in ASHRAE Kuwait Chapter
Jul, 2021 - Jun, 2022 **Nominating Chair**, Act as nominating committee chair in ASHRAE Kuwait Chapter
Feb, 2021 - Jun, 2021 **Member**, Act as a member in ASHRAE RAL SAC Town Hall & Quiz Competition
Jul, 2020 - Jun, 2021 **President**, Act as president of ASHRAE Kuwait Chapter
Jul, 2024 - Jun, 2025
Jul, 2019 - Jun, 2021 **SA Chair**, Act as student activity chair in ASHRAE Kuwait Chapter
Jul, 2019 - Jun, 2020 **President-Elect**, Act as the president-elect for ASHRAE Kuwait Chapter
Jul, 2023 - Jun, 2024
Jul, 2018 - Jun, 2019 **BOG member**, Act as a board of governor member in ASHRAE Kuwait Chapter

Publications

JOURNAL

Althallab, H., Ali, N., Ebrahim, S.A. and **Bahman, A.M.**, 2024, 'Oil enhancement using carbon-based nano-lubricants for air conditioning compressor in hot climates', *Renewable and Sustainable Energy Reviews*, Submitted. *url*

Bahman, A.M., Pradeep, E., Said, Z. and Sharma, P., 2024, 'Prognostic machine learning models for thermophysical characteristics of nanodiamond-based nanolubricants for heat pump systems', *Energy & AI*, Under Review. *doi*

Mohammadi, S. and **Bahman, A.M.**, 2024, 'Assessing residential autonomous buildings for hot climate applications', *Journal of Cleaner Production*, vol. 471, pp. 143410. *doi*

- Gharaee, H., Erfanimatin, M. and **Bahman, A.M.**, 2024, 'Machine learning development to predict the electrical efficiency of photovoltaic-thermal (PVT) collector systems', *Energy Conversion and Management*, vol. 315, pp. 118808. *doi*
- Bahman, A.M.** and Saleh, D., 2024, 'Parametric analysis for nanolubricant in vapor compression refrigeration cycle', *Journal of Engineering Research*, Accepted. *doi*
- Etemad, A., Zare, N., Shafaat, A. and **Bahman, A.M.**, 2024, 'Assessing retrofitting strategies for a cooling system in a historical building for thermal comfort improvement', *Energy Reports*, vol. 11, pp. 1503-1516. *doi*
- Saryazdi, S.E., Etemad, A., Shafaat, A. and **Bahman, A.M.**, 2024, 'A comprehensive review of factors affecting Variable Refrigerant Flow system performance: Sensitivity analysis for Middle East climate', *Renewable and Sustainable Energy Reviews*, vol. 191, pp. 114131. *doi*
- Zare, N., Saryazdi, S.E., **Bahman, A.M.**, Shafaat, A., and Sartipipour, M., 2023, 'Investigation of heating Energy Performance Gap (EPG) in design and operation stages of residential buildings', *Energy and Buildings*, vol. 301, pp. 113747. *doi*
- Said, Z., Rahman, S.M.A., Sohail, M.A., **Bahman, A.M.**, Alim, M.A., Shaik, S., Radwan, A.M., and El-Sharkawy, I.I., 2023, 'Nano-refrigerants and nano-lubricants in refrigeration: Synthesis, mechanisms, applications, and challenges', *Applied Thermal Engineering*, vol. 233, pp. 121211. *doi*
- Aljuwayhel, N.F., Ali, N., and **Bahman, A.M.**, 2023, 'Experimental evaluation of split air conditioning performance using nanodiamonds particles in compressor polyester lubricant oil', *Applied Thermal Engineering*, vol. 231, pp. 120961. *doi*
- Bahman, A.M.** and Abdal, A., 2023, 'Enhancing energy efficiency of air-conditioning systems in hot climates through refrigerant vapor injection: A study of Kuwait and GCC countries', *International Journal of Energy Research*, vol. 2023, pp. 8868546. *doi*
- Aljuwayhel, N.F., Ali, N., Ebrahim, S.A. and **Bahman, A.M.**, 2023, 'Experimental investigation of thermophysical properties, tribological properties and dispersion stability of nanodiamond-based nanolubricant for air conditioning systems', *International Journal of Refrigeration*, vol. 145, pp. 325-337. *doi*
- Saryazdi, S.E., Etemad, A., Shafaat, A. and **Bahman, A.M.**, 2022, 'Data-driven performance analysis of a residential building applying artificial neural network (ANN) and multi-objective genetic algorithm (GA)', *Building and Environment*, vol. 225, pp. 109633. *doi*
- Bahman, A.M.**, Parikhani, T. and Ziviani, D., 2022, 'Multi-objective optimization of a cold-climate two-stage economized heat pump for residential heating applications', *Journal of Building Engineering*, vol. 46, pp. 103799. *doi*
- Ashkanani, A.M., **Bahman, A.M.** and Aljuwayhel, N.F., 2022, 'Impact of COVID-19 interventions on electricity power production: An empirical investigation in Kuwait', *Electric Power Systems Research*, vol. 205, pp. 107718. *doi*
- Ebrahim, S.A., **Bahman, A.M.**, Almutairi, K. and Alalaimi, M.A., 2022, 'Experimental study on enhanced heat transfer during rapid cooling of modified and oxidized rods', *Annals of Nuclear Energy*, vol. 167, pp.108806. *doi*
- Ali, N., **Bahman, A.M.**, Aljuwayhel, N.F., Ebrahim, S.A., Mukherjee, S. and Alsayegh, A., 2021, 'Carbon-based nanofluids and their advances towards heat transfer applications—a review', *Nanomaterials*, vol. 11, no. 6, pp. 1628. *doi*
- Cao, Y., Parikhani, T. and **Bahman, A.M.**, 2021, 'Thermodynamic and thermoeconomic analyses of an ejector/booster enhanced heat pump system with zeotropic mixture', *International Journal of Energy Research*, vol. 45, no. 3, pp. 4443-4465. *doi*
- Bahman, A.M.**, Ziviani, D. and Groll, E.A., 2020, 'A generalized moving-boundary algorithm to predict the heat transfer rate of transcritical CO₂ gas coolers', *International Journal of Refrigeration*, vol. 118, pp. 491-503. *doi*
- Bahman, A.M.** and Ebrahim, S.A., 2020, 'Prediction of the minimum film boiling temperature using artificial neural network', *International Journal of Heat and Mass Transfer*, vol. 155, pp. 119834. *doi*
- Bahman, A.M.** and Groll, E.A., 2020, 'Application of second-law analysis for the environmental control unit at high ambient temperature', *Energies*, vol. 13, no. 12, pp. 3274. *doi*
- Bahman, A.M.**, Ziviani, D. and Groll, E.A., 2018, 'Vapor injected compression with economizing in packaged air conditioning systems for high temperature climate', *International Journal of Refrigeration*, vol. 94, pp. 136-150. *doi*
- Lumpkin, D.R., **Bahman, A.M.** and Groll, E.A., 2018, 'Two-phase injected and vapor-injected compression: Experimental results and mapping correlation for a R-407C scroll compressor', *International Journal of Refrigeration*, vol. 86, pp. 449-462. *doi*
- Bahman, A.M.** and Groll, E.A., 2017, 'Application of interleaved circuitry to improve evaporator effectiveness and COP of a packaged AC system', *International Journal of Refrigeration*, vol. 79, pp. 114-129. *doi*

Bahman, A., Rosario, L. and Rahman, M.M., 2012, 'Analysis of energy savings in a supermarket refrigeration/HVAC system', *Applied Energy*, vol. 98, pp. 11-21. [doi](#)

CONFERENCE

Guedour, A., **Bahman, A.M.** and Ibrahim, O.M., 2024, 'Exergy, Environmental, and Economic Analyses of Solar-Powered Dedicated Mechanical Subcooling Refrigeration in Hot Climates', *20th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)

Althalab, H., Ali, N., Ebrahim, S.A. and **Bahman, A.M.**, 2024, 'Air Conditioning Compressor Oil Enhancement using Carbon-based Nanolubricants', *27th International Compressor Engineering Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)

Bahman, A.M., Pradeep, E., Said, Z. and Sharma, P., 2024, 'Development of Prognostic Machine Learning Models for Thermophysical Properties Predictions of Nanodiamond-Based Nanolubricants', *27th International Compressor Engineering Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)

Azimi, Z., Shafaat, A., **Bahman, A.M.** and Fathi, A., 2023, 'The Impact of Albedo on Outdoor Thermal Comfort in Contemporary Courtyards During Summer and Winter', *6th International Conference on Countermeasures to Urban Heat Islands*, UHI 2023, Melbourne, Australia. [url](#)

Althalab, H., Kumar, A., Ebrahim, S.A. and **Bahman, A.M.**, 2023, 'Modeling and Sizing a Compressor Test Stand for Nanolubricant Measurements', *8th International Conference on Energy Research & Development*, ICERD-8, Kuwait City, Kuwait. [url](#)

Mohammadi, S. and **Bahman, A.M.**, 2023, 'Towards Energy-Autonomous Buildings in Kuwait: A Case Study', *8th International Conference on Energy Research & Development*, ICERD-8, Kuwait City, Kuwait. [url](#)

Saryazdi, S.E., Etemad, A., Shafaat, A. and **Bahman, A.M.**, 2023, 'Sensitivity Analysis of VRF Systems in Hot climate Buildings: Kuwait Case', *8th International Conference on Energy Research & Development*, ICERD-8, Kuwait City, Kuwait. [url](#)

Saryazdi, S.E., Khanbaba, Y., Shafaat, A. and **Bahman, A.M.**, 2023, 'Optimizing HVAC System of Kuwaiti Residential Building Based on Internet of Energy (IoE) Concept', *8th International Conference on Energy Research & Development*, ICERD-8, Kuwait City, Kuwait. [url](#)

Saleh, D. and **Bahman, A.M.**, 2023, 'A Parametric Analysis for Nanolubricant in Vapor Compression Refrigeration Cycle', *1st GCC Engineering Symposium*, Kuwait City, Kuwait. [url](#)

Bahman, A.M., Erfanimatin, M., Nourni, P., Liu, H., Shah, V., Braun, J.E. and Groll, E.A., 2023, 'Predictions of Oil Retention in Horizontal and Vertical Refrigerant Vapor Lines of Unitary Split Systems using a Physics-based Machine Learning-aided Model', *26th IIR International Congress of Refrigeration*, ICR 2023, Paris, France. [url](#)

Othman, A., **Bahman, A.M.**, Barta, R.B., Ziviani, D. and Groll, E., 2022, 'Refrigerant Charge Optimization of a Variable Speed Residential Heat Pump with an Expander/Separator', *19th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)

Abdal, A. and **Bahman, A.M.**, 2022, 'Annual Thermal Performance Assessment for an Economized Vapor Injection System in Hot Climate', *19th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)

Bahman, A. and Ziviani, D., 2021, 'Exergo-economic Trade-offs for Cold Climate Heat Pumps with Low-GWP and Natural Refrigerants', *2nd IIR Conference on HFOs and Low GWP blends*, HFO 2021, Osaka, Japan / Virtual. [url](#)

Parikhani, T., **Bahman, A.** and Ziviani, D., 2021, 'Techno-Economic Analysis for Two-Stage Vapor Injected System for Heating Applications', *18th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA / Virtual. [url](#)

Barghash, S., **Bahman, A.** and Ibrahim, O., 2021, 'Solar-Powered Mechanical Subcooling Refrigeration System for Hot Climates', *18th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA / Virtual. [url](#)

Barta, R., **Bahman, A.**, Stania, L., Ziviani, D. and Groll, E., 2021, 'Experimental and Mechanistic Numerical Analysis of a Variable Speed Residential Heat Pump Unit with an Expansion Work-Recovery Device', *13th IEA Heat Pump Conference*, HPC 2021, Jeju, Korea / Virtual. [url](#)

Ashkanani, A.M., **Bahman, A.M.** and Aljuwayhel, N.F., 2020, 'Impact of COVID-19 Lockdown Measures on Energy Supply Chain', *12th International Conference on Applied Energy*, ICAE 2020, Bangkok, Thailand / Virtual. [url](#)

- Alolaimi, M., Ebrahim, S., **Bahman, A.**, Alalaimi, M., Alyaseen, M. and Chakroun, W., 2019, 'Effect of surface roughness on heat transfer with phase change pool boiling for quenched vertical cylinders', *7th International Conference on Energy Research & Development*, ICERD-7, Kuwait City, Kuwait. [url](#)
- Ebrahim, S.A., **Bahman, A.M.** and Alotaibi, S., 2019, 'Prediction of the minimum film boiling temperature of vertical quenched rods in distilled water using an artificial neural network', *7th International Conference on Energy Research & Development*, ICERD-7, Kuwait City, Kuwait. [url](#)
- Ziviani, D., **Bahman, A.** and Groll, E., 2019, 'Multi-input multi-output (MIMO) artificial neural network (ANN) models applied to economized scroll compressors', *25th IIR International Congress of Refrigeration*, ICR 2019, Montréal, Québec, Canada. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 2019, 'Investigation of two-phase injected compression with economization for high temperature application', *25th IIR International Congress of Refrigeration*, ICR 2019, Montréal, Québec, Canada. [url](#)
- Ziviani, D., **Bahman, A.**, James, N., Lumpkin, D., Braun, J. and Groll, E., 2018, 'Machine Learning Applied to Positive Displacement Compressors and Expanders Performance Mapping', *24th International Compressor Engineering Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 2018, 'Development and Validation of a Mechanistic Vapor-Compression Cycle Model', *17th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 2018, 'Validation of a Charge-Sensitive Vapor-Injected Compression Cycle Model with Economization', *17th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 2018, 'Development and Validation of a CO₂ Gas Cooler Moving-Boundary Model', *13th IIR Gustav Lorentzen Conference*, IIR GL Conference, Valencia, Spain. [url](#)
- Moesch, T., **Bahman, A.** and Groll, E., 2016, 'Performance Testing of a Vapor Injection Scroll Compressor with R407C', *23rd International Compressor Engineering Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.** and Groll, E., 2016, 'Second-Law Analysis to Improve the Energy Efficiency of Environmental Control Unit', *16th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.**, Groll, E., Horton, W., T. and Braun, J., 2014, 'Technologies to Improve the Performance of A/C Systems in Hot Climate Regions', *15th International Refrigeration and Air Conditioning Conference*, Purdue Conference, West Lafayette, IN, USA. [url](#)
- Bahman, A.**, Rosario, L. and Rahman, M.M., 2012, 'Modeling of Supermarket Refrigeration/HVAC System for Simple Energy Prediction', *5th International Conference in Energy Researches & Development*, ICERD-5, Kuwait. [url](#)
- Bahman, A.**, Saade, R., Chakroun, W., Ghali, K. and Ghaddar, N., 2009, 'Performance Comparison of Conventional and Chilled Ceiling/Displacement Ventilation Systems in Kuwait', *ASHRAE Transactions*, vol. 115, no. 1, pp. 587-594. [url](#)
- Bahman, A.**, Chakroun, W., Saade, R., Ghali, K. and Ghaddar, N., 2008, 'Performance of Chilled Ceiling/Displacement Ventilation System in Kuwait Weather: Case Study', *4th International Conference in Energy Researches & Development*, ICERD-4, Kuwait. [url](#)

BOOKS

- Bahman, A.**, Barta, R., Groll, E. and Ziviani, D., 2021, 'Theoretical analysis of CO₂ expansion process', *CO₂ Heat Pump Fundamentals and Application*, Chapter 5, John Wiley & Sons. [url](#)
- Bahman, A.**, 2014, 'Solar-Powered Absorption Cooling and Supermarket Refrigeration Systems Modeling & Simulation', Scholar Press. [url](#)

PATENTS

- Alsayegh, N. and **Bahman, A.M.**, Kuwait University, 2023. *System and Method for Determining Physical Stability of Dispersed Particles in Flowing Liquid Suspensions*. U.S. Patent 11,821,828 B1. [url](#)
- Bahman, A.M.**, Ibrahim, O.M. and Barghash, S., Kuwait University, 2023. *Air Conditioning System with Solar-Powered Sub-cooling System*. U.S. Patent 11,739,992 B2. [url](#)
- Alsayegh, N. and **Bahman, A.M.**, Kuwait University, 2022. *Apparatus for Testing the Stability of Dispersed Particles in Flowing Suspensions*. U.S. Patent 11,353,386 B1. [url](#)

Research Grants

KFAS, CN23-35EM-2074

96,110 KD

PI

Nov, 2024 - Nov, 2027

- Evaluating Nano Cool Paint (NCP) and Nano-enhanced Phase Change Material (NePCM) Efficacy in Kuwait's Arid Climate: A Look into Energy Savings and Sustainable Building Practices

Kuwait University, EM02/23

3,500 KD

PI

June, 2024 - Dec, 2025

- An Optimal Design of Sustainable Plus Energy Neighborhood (SPEN) Considering the Effects of Climate Change Based on Artificial Neural Networks

Kuwait University, YE01/23

4,000 KD

PI

Mar, 2024 - Sep, 2025

- Development of a Compressor Test Stand to Measure Compressor Performance with Nano-lubricants

KFAS, CN22-35EM-1547

38,702 KD

PI

Aug, 2023 - Aug, 2026

- Investigation of Nano-lubricants for Refrigeration Systems for Urban Energy Resilience

Kuwait University, EM03/22

16,400 KD

CONTRIBUTOR

May, 2023 - May, 2025

- Consequences of Active Magnetic Field on the Film Boiling Region While Quenching under Hybrid Nanofluid Environment

Kuwait University, EM02/22

4,000 KD

PI

Nov, 2022 - Nov, 2023

- Assessing the Feasibility and Characteristics of Autonomous Dwellings for Kuwait

Kuwait University, EM01/22

4,000 KD

CONTRIBUTOR

Sep, 2022 - Sep, 2023

- Effects of Various Shapes and Characteristic Lengths on the Rapid Cooling of Vertical Rods in Various Pool Dimensions

Kuwait University, EM02/21

4,000 KD

CONTRIBUTOR

Jan, 2022 - Jan, 2023

- An Experimental Investigation on Transient Pool Boiling Heat Transfer during Rapid Cooling of Cylindrical Rods in Carbon-based Nanofluids

Kuwait University, EM04/21

4,000 KD

PI

Dec, 2021 - Dec, 2022

- Optimal Design and Operation of Energy Consumption in a Residential Building Applying Artificial Neural Network (ANN) and Multi-Objective Genetic Algorithm (GA)

Kuwait University, EM01/20

10,000 KD

PI

Dec, 2021 - Mar, 2023

- Assessment and Optimal Sizing of Kuwaiti Typical Building HVAC Systems Based on Internet of Energy (IoE) Concept

Kuwait University, RE06/19

15,900 KD

PI

Sep, 2021 - Sep, 2023

- Investigation of a Variable Speed Residential Heat Pump Unit with an Expansion Work-Recovery Device

Kuwait University, EM02/20

4,000 KD

Co-I

Jan, 2021 - May, 2022

- Investigation of Nano-Lubricants Applied to Residential Air Conditioning System

Kuwait University, EM03/20

4,000 KD

Co-I

Jan, 2021 - Jan, 2022

- Experimental Investigation of the Tribological and Thermal Properties of Nanodiamond as Lubricating Oil Additives for Air Conditioning Systems

Kuwait University, EM05/20

3,900 KD

CONTRIBUTOR

Jan, 2021 - May, 2022

- Heat Transfer Characteristics for Quenched Hot Rods in Coastal Waters of Kuwait Arabian Gulf Case Study

Kuwait University, EM03/19

4,000 KD

PI

Sep, 2019 - Sep, 2020

- Investigation of Two-Phase Injected Compression with Economization for Extreme Temperature Application

Kuwait University, ZE04/18

2,000 KD

PI

Apr, 2019 - Jun, 2019

- Investigation of Pool Boiling Heat Transfer using Quenching of Heated Surface with Coating Material

Honors, Grants, & Awards

- Apr, 2024 **Jaber Al-Ahmad Prize for Young Researchers**, Kuwait Foundation for the Advancement of Sciences (KFAS) Award in the Scientific Subfields of Applied Sciences (Engineering Sciences)
- Feb, 2024 **Silver Medal Award**, 14th International Invention Fair in the Middle East (IIFME)
- Feb, 2023 **Silver Medal Award**, 13th International Invention Fair in the Middle East (IIFME)
- Oct, 2022 **Best Young Researcher Award**, Basics and applied sciences category at Kuwait University
- Mar, 2021 **Scientific Poster Award**, 3rd place in assistant faculty members category at Kuwait University
- Sep, 2020 **Scientific Poster Award**, 1st place in faculty members category at Kuwait University
- Jun, 2019 **Post-Doctoral Research Grant**, KFAS post-doctoral research training program grant
- Since Mar, 2023 **Certificate of Reviewing**, Journal of Building Engineering
- Since Feb, 2022 **Certificate of Reviewing**, Case Studies in Thermal Engineering
- Since May, 2020 **Certificate of Reviewing**, International Journal of Heat and Mass Transfer
- Since Jan, 2018 **Certificate of Reviewing**, Applied Thermal Engineering
- Since Dec, 2016 **Certificate of Outstanding Contribution in Reviewing**, International Journal of Refrigeration
- Since May, 2015 **Certificate of Reviewing**, International Journal of Refrigeration
- 2004 - 2006 **Extraordinary Students List**, Kuwait University
- 2004 - 2006 **Deans Honorary List**, Kuwait University
- 2004 - 2006 **Academic Excellence**, Kuwait University

Presentations

SEMINARS

- Bahman, A.M.**, 'Solar-Powered Mechanical Subcooling Refrigeration System for Hot Climates', Webinar – AEE EnergyTalks, Kuwait Institute for Scientific Research (KISR), Mar, 2024
- Bahman, A.M.** and Ziviani, D., 'Application of Passive Circuitry Arrangement to Improve the Heat Exchange Effectiveness', 2019 ASHRAE Annual Conference, Seminar 60 – Heat Exchanger Fundamentals and Design Innovations, Kansas City, MO, USA, Jun, 2019
- Bahman, A.M.**, 'Analysis of Packaged Air Conditioning System for High Temperature Climate', Seminar – Mechanical Engineering Department, College of Engineering and Petroleum, Kuwait University, Nov, 2018

POSTERS

- Ali, F., Ali, N., Buhzad, H., Aljuwayhel, N.F., Ebrahim, S.A., and **Bahman, A.M.**, 'Feasibility Analysis of Conventional and Effervescent Tablet-based Nanofluid', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)
- Althalab, H., Alhamdan, H., Jamali, M., Aljuwayhel, N.F., Ebrahim, S.A., Ali, N. and **Bahman, A.M.**, 'Evaluation of Effervescent Tablet-based MWCNTs Nanofluids Produced from the State of Kuwait Seawater', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)
- Althallab, H., Ebrahim, S. and **Bahman, A.M.**, 'Development of a Compressor Test Stand for Nano-lubricant Measures', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)

- Saryazdi, S.E., Khan Baba, Y., Shafaat, A. and **Bahman, A.M.**, 'Optimizing HVAC system of Kuwaiti Residential Building based on Internet of Energy (IoE) concept', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)
- Saryazdi, S.E., Etemad, A., Shafaat, A. and **Bahman, A.M.**, 'Sensitivity analysis of the factors affecting the performance of buildings equipped with Variable Refrigerant Flow system in Kuwait', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)
- Aljuwayhel, N., Ali, N., and **Bahman, A.M.**, 'Experimental study of an air conditioning system with nanodiamond/Polyester (ND/POE) oil operating at high ambient temperatures', 3rd Scientific Research Conference 2024 at Kuwait University, March, 2024. [url](#)
- Mohammadi, S. and **Bahman, A.M.**, 'Energy Autonomous Buildings: At The Glance', 2nd Scientific Research Conference 2023 at Kuwait University, March, 2023. [url](#)
- Saryazdi, S.E., Etemad, A., Shafaat, A. and **Bahman, A.M.**, 'Data-driven performance analysis of a residential building applying artificial neural network (ANN) and multi-objective genetic algorithm (GA)', 2nd Scientific Research Conference 2023 at Kuwait University, March, 2023. [url](#)
- Alhassan, L., Alshehema, H., Althaqeb, L., Althalab, H., **Bahman, A.M.**, Ebrahim, S. and Ali, N., 'Dispersion Stability of Boron Nitride-Based Nanofluids Fabricated from Kuwaiti's Seawater and Pure Water', 2nd Scientific Research Conference 2023 at Kuwait University, March, 2023. [url](#)
- Aljuwayhel, N., Ali, N., Ebrahim, S. and **Bahman, A.M.**, 'Air-Conditioning Compressor Lubricant Enhancement using Nano-Diamonds Particles', 2nd Scientific Research Conference 2023 at Kuwait University, March, 2023. [url](#)
- Ali, N., Aljuwayhel, N., Ebrahim, S. and **Bahman, A.M.**, 'The Effect of Nanofluids on the Performance of WR-21 Marine Gas Turbine Intercooler', 1st Scientific Research Conference 2022 at Kuwait University, March, 2022. [url](#)
- Barghash, S., **Bahman, A.M.** and Ibrahim, O., 'Technical and Economic Validation for Solar-Powered Dedicated Mechanical Subcooling (SDMS) Cycle: Kuwait Case', 1st Scientific Research Conference 2022 at Kuwait University, March, 2022. [url](#)
- Othaman, A., **Bahman, A.**, Barta, R., Ziviani, D. and Groll, E., 'Sensitivity Analysis of Refrigerant Charge for a Variable Speed Residential Heat Pump with an Expander/Separator', 1st Scientific Research Conference 2022 at Kuwait University, March, 2022. [url](#)
- Abdal, A. and **Bahman, A.M.**, 'Annual Thermal Performance Assessment for an Economized Vapor Injection System in Hot Climate', 1st Scientific Research Conference 2022 at Kuwait University, March, 2022. [url](#)
- Abdal, A. and **Bahman, A.M.**, 'Thermal Performance Analysis for An Economized Vapor Injection System in hot climate: Kuwait Case', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Aljowaiser, O., **Bahman, A.M.**, Ali, N., Malallah, Y. and Fairouz, A., 'Simulation of Nanofluids in Computer Cooling Systems', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Bahman, A.** and Ziviani, D., 'Exergo-Economic Analysis and Optimization of A Two-Stage Vapor Injected System for Residential Cooling Applications', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Alshehaima M., Paradeep, E., Ebrahim, S., **Bahman, A.M.**, 'Effects of Surface Modification and Oxidation on Enhancing Pool Boiling Heat Transfer During Quenching', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Barghash, S., **Bahman, A.M.** and Ibrahim, O., 'Solar-Powered Mechanical Subcooling Refrigeration System (Yearly Analysis for Kuwait)', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Bahman, A.M.**, Ashkanani, A. and Aljuwayhel, F., 'Impact of COVID-19 Lockdown Measures on Power Supply Chain in the State of Kuwait', Scientific Poster Day 2021 at Kuwait University, March, 2021. [url](#)
- Barghash, S., **Bahman, A.** and Ibrahim, O., 'Solar-Powered Mechanical Subcooling Refrigeration System for Hot Climate', Scientific Poster Day 2020 at Kuwait University, March, 2020. [url](#)
- Bahman, A.**, Barta, R., Stania, L., Ziviani, D. and Groll, E., 'Investigation of Variable Speed Residential Heat Pump Unit with Expansion Work-Recovery Device', Scientific Poster Day 2020 at Kuwait University, March, 2020. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 'Investigation of Two-phase Injected Compression with Economization for High Temperature Application', Scientific Poster Day 2020 at Kuwait University, March, 2020. [url](#)
- Bahman, A.**, Ziviani, D. and Groll, E., 'Development of Validation of a Mechanistic Vapor-Compression Cycle Model for Refrigerant Charge Prediction', Scientific Poster Day 2019 at Kuwait University, March, 2019. [url](#)

Bahman, A., Ziviani, D. and Groll, E., 'Development and Validation of CO₂ Gas Cooler Moving-Boundary Model for Effectiveness Performance Prediction', Scientific Poster Day 2019 at Kuwait University, March, 2019. [url](#)

Teaching Experience

UNDERGRADUATE

2024 - Present	ME 0630-420 , Energy Conversion and Utilization	Kuwait University
2023 - Present	ME 0630-322 , Engineering Thermodynamics II	Kuwait University
2020 - Present	ME 0630-475 , Thermal Science Lab II	Kuwait University
2019 - Present	ME 0630-424 , Air Conditioning & Refrigeration	Kuwait University
2018 - Present	ENG 0600-208 , Engineering Thermodynamics	Kuwait University
2011 - 2013	MER 0660-111 , Statics and Strength of Materials	Public Authority for Applied Education and Training (PAAET)
2011 - 2013	MER 0660-131 , Fundamentals of Thermodynamics	Public Authority for Applied Education and Training (PAAET)
2011 - 2013	MER 0630-132 , Engineering Thermodynamics	Public Authority for Applied Education and Training (PAAET)
2011 - 2013	EE 0690-182 , Introduction to Computer	Public Authority for Applied Education and Training (PAAET)
2011 - 2013	MER 0630-250 , Fundamentals of Air Conditioning	Public Authority for Applied Education and Training (PAAET)

GRADUATE

2024 - Present	ME 0630-524 , Air Conditioning	Kuwait University
2023 - Present	ME 0630-539 , Advanced Thermodynamics	Kuwait University
2023 - Present	ME 0630-529 , Refrigeration Engineering	Kuwait University

Mentoring

UNDERGRADUATE

Jan, 2020 - Mar, 2021 **Abdulrahman Alanzi**, 'Nanofluids from Bulk Raw Materials to Thermal Solar Applications', *BSc Thesis (Senior Project ME 495)*

GRADUATE (ADVISOR)

Oct, 2024 - Present **Abdulwahab Albassam**, 'Energy, Exergy, Economic, and Environmental Analysis of a Liquid Flooded Compression Air Conditioning System for Hot Climate Region', *MSc Thesis, Kuwait University*

June, 2024 - Present **Dana Alenazi**, 'Parametric analysis for nanolubricant in vapor compression refrigeration cycle', *MSc Thesis, Kuwait University*

Oct, 2023 - Present **Anes Guedouar**, 'Energy, Exergy, Economic and Environmental Analysis of Solar-Powered Dedicated Mechanical Subcooling (SDMS) Air Conditioning System', *MSc Thesis, Kuwait University*

Jan, 2023 - Present **Hessah Althalab**, 'Development of a Compressor Test Stand for Nano-Lubricants Measurements', *MSc Thesis, Kuwait University*

Oct, 2020 - Oct, 2022 **Abdullah Abdal**, 'Thermal Performance Analysis for an Economized Vapor Injection System at High Ambient Temperature Climates - Kuwait Case', *MSc Thesis, Kuwait University*

GRADUATE (CO-ADVISOR)

Jan, 2023 - Present **Hanan ALShehemah**, 'Experimental Investigation of the Thermophysical Properties of Hybrid Nanofluids for Cooling Systems', *MSc Thesis, Kuwait University*

Sep, 2021 - Present **Sarah Alkandari**, 'Design, Model and Experimental Evaluation of a Wall Embedded Thermally Radiative Micro Heat Pump', *MSc Thesis, Purdue University*

Outreach & Professional Development

ATTENDED CONFERENCES, WORKSHOPS, & SEMINARS

2024 Herrick Conferences

3rd Scientific Research Conference 2024 at Kuwait University

14th International Invention Fair in the Middle East (IIFME)

2024 ASHRAE Winter Conference

8th International Conference in Energy Researches & Development (ICERD-8)

1st GCC Engineering Symposium

2023 ASHRAE Region-at-Large Chapter Regional Conference

26th IIR International Congress of Refrigeration

2nd Scientific Research Conference 2023 at Kuwait University

13th International Invention Fair in the Middle East (IIFME)

2022 Herrick Conferences

2nd IIR Conference on HFOs and Low GWP blends

2020 Purdue Conferences

12th International Conference on Applied Energy 2020

2020 ASHRAE Region-at-Large Chapter Regional Conference

7th International Conference in Energy Researches & Development (ICERD-7)

2019 ASHRAE Region-at-Large Chapter Regional Conference

25th IIR International Congress of Refrigeration

2019 ASHRAE Annual Conference

2018 Purdue Conferences

2018 ASHRAE Winter Conference

2016 Purdue Conferences

2015 ASHRAE Winter Conference

2014 Purdue Conferences

2014 ASHRAE Annual Conference

5th International Conference in Energy Researches & Development (ICERD-5)

4th International Conference in Energy Researches & Development (ICERD-4)

Training Course in Engineering Management, Japan Cooperation Center for the Middle East (JCCME)

Training Course in Energy Conservation in Air-Conditioned Building, Kuwait Institute for Scientific Researches (KISR)

West Lafayette, IN, USA, Jul, 2024

Kuwait City, Kuwait, Feb, 2024

Kuwait City, Kuwait, Feb, 2024

Chicago, IL, USA, Jan, 2024

Kuwait City, Kuwait, Nov, 2023

Kuwait City, Kuwait, Oct, 2023

Colombo, Sri Lanka, Oct, 2023

Paris, France, Aug, 2023

Kuwait City, Kuwait, Mar, 2023

Kuwait City, Kuwait, Feb, 2023

West Lafayette, IN, USA, Jul, 2022

Japan / Virtual, Jun, 2021

USA / Virtual, May, 2021

Bangkok / Virtual, Dec, 2020

Virtual, Dec, 2020

Kuwait City, Kuwait, Nov, 2019

Amman, Jordan, Sep, 2019

Montréal, Québec, Canada, Aug, 2019

Kansas City, MO, USA, Jun, 2019

West Lafayette, IN, USA, Jul, 2018

Chicago, IL, USA, Jan, 2018

West Lafayette, IN, USA, Jul, 2016

Chicago, IL, USA, Jan, 2015

West Lafayette, IN, USA, Jul, 2014

Seattle, WA, USA, Jun, 2014

Kuwait City, Kuwait, Dec, 2012

Kuwait City, Kuwait, Nov, 2008

Japan, Jun, 2006 - Aug, 2006

Kuwait, Jun, 2003 - Aug, 2003

CONSULTATION

Aug, 2020 - Aug, 2021 **Collaboration agreement for consultation and training**, Kuwait Institute for Training & Engineering Simulations (KITES)

PROFESSIONAL MEMBERSHIPS

Since 2020	Institute of Refrigeration (IOR), Member	<i>UK</i>
Since 2017	International Institute of Refrigeration (IIR), Member	<i>USA</i>
Since 2008	Kuwait Environment Protection Society (KEPS), Member	<i>Kuwait</i>
Since 2006	Voluntary Work Center (VWC), Member	<i>Kuwait</i>
Since 2006	Kuwait Society of Engineers (KSE), Member	<i>Kuwait</i>
Since 2004	American Society for Mechanical Engineers (ASME), Member	<i>USA</i>
Since 2004	American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Member	<i>USA</i>

SERVICE AND OUTREACH

Jul, 2024	Chair a technical session (R-28: HVAC System Enhancements) at 19th International Refrigeration and Air Conditioning Conference at Purdue, July 15-18, 2024, Chair
Feb, 2024	Speaker in panel discussion (Emerging Environmental Technologies in Scientific Research) at 3rd Scientific Research Conference 2024 at Kuwait University, February 19-20, 2024, Speaker
Jan, 2024	Chair a paper session (CPS 14: Heat Sinks, Thermochemical Energy Storage and Thermal Energy System) at 2024 ASHRAE Winter Conference in Chicago, IL, USA, January 20-24, 2024, Chair
Nov, 2023	Co-Chair a technical session (HVAC&R Systems 3) at 8th International Conference on Energy Research and Development (ICERD-8) in Kuwait City, Kuwait, November 28-30, 2023, Co-Chair
Oct, 2023	Chair a technical session (Construction and Material Engineering) at 1st GCC Engineering Symposium in Kuwait City, Kuwait, October 29-31, 2023, Chair
Aug, 2023	Chair a technical session (Commission E1: Refrigerants, Equipments) at 26th IIR International Congress of Refrigeration ICR 2023 conference in Paris, France, August 21-25, 2023, Chair
Jul, 2022	Chair a technical session (R-28: Advanced HX and Manufacturing) at 19th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2022, Chair
Nov, 2019	Chair a technical session (Alternative Energy) at 7th International Conference on Energy Research and Development (ICERD-7) in Kuwait City, Kuwait, November 19-21, 2019, Chair
Aug, 2019	Chair a technical session (Desiccant Heat Pumps) at 25th IIR International Congress of Refrigeration ICR 2019 conference in Montréal, Québec, Canada, August 24-30, 2019, Chair
Jul, 2018	Chair a technical session (R-32: Condensation Heat Transfer) at 17th International Refrigeration and Air Conditioning Conference at Purdue, July 9-12, 2018, Chair
Jul, 2016	Vice-chair two technical sessions (R-3: Heat Exchanger Design Improvements and R-7 Heat Exchanger Design Optimization) at 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016, Vice-Chair

EDITORIAL

Since 2024 **Energy Science & Engineering (Wiley)**, Reviewer

Since 2024 **Journal of Applied and Computational Mechanics (Shahid Chamran University of Ahvaz)**, Reviewer

Since 2024 **Sustainable Production and Consumption (Elsevier)**, Reviewer

Since 2024 **Heliyon (Cell Press)**, Reviewer

Since 2023 **Results in Engineering (Elsevier)**, Reviewer

Since 2023 **Industrial & Engineering Chemistry Research (ACS Publications)**, Reviewer

Aug, 2023 **16th International Congress of Refrigeration**, Reviewer

Since 2023 **Optimization and Engineering (Springer)**, Reviewer

Since 2023 **Materials (MDPI)**, Reviewer

Since 2023 **Journal of Building Engineering (Elsevier)**, Reviewer

Since 2022 **Applied Sciences (MDPI)**, Reviewer

Since 2022 **Sustainability (MDPI)**, Reviewer

Since 2022 **Case Studies in Thermal Engineering (Elsevier)**, Reviewer

Since 2022 **Buildings (MDPI)**, Reviewer

Since 2021 **Journal of Applied Fluid Mechanics (Isfahan University of Technology)**, Reviewer

Since 2021 **Energies (MDPI)**, Reviewer

Jun, 2021 **2022 ASHRAE Annual Conference**, Reviewer

Mar, 2021 **Special issue in the SCI Journal of Sustainability 'Advanced Heat System for Sustainable Energy Usage in Winter Condition'**, Guest Editor

Since 2020 **Science and Technology for the Built Environment (Taylor & Francis)**, Reviewer

Since 2020 **International Journal of Heat and Mass Transfer (Elsevier)**, Reviewer

Since 2020 **International Journal of Science and Technology (Scientia Iranica)**, Reviewer

Nov, 2019 **7th International Conference on Energy Research and Development (ICERD-7)**, Reviewer

Since 2018 **Applied Thermal Engineering (Elsevier)**, Reviewer

Since 2017 **International Journal of Refrigeration (Elsevier)**, Reviewer

SOFTWARE SKILLS

Computer Software Programs, LabVIEW, CHEMCAD, ANSYS, MATLAB, EES, MAPLE, MATHEMATICA, MS OFFICE

Programming Languages, PYTHON, C++, LaTeX