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Google Scholar: <https://scholar.google.ae/citations?user=DYjjHeQAAAAJ&hl=en>

Institution: P.O. Box 17555, Mechanical Engineering Department, United Arab Emirates University

I. Education**Institution & Location Degree Year Conferred Field of Study**

Illinois Institute of Technology, Chicago, IL	Ph.D.	1999	Mechanical Engineering
Jordan University of Science and Technology	M.S.	1992	Mechanical Engineering
Jordan University of Science and Technology	B.Sc.	1989	Mechanical Engineering

II. Employment History

20014-present Associate Professor, UAE University

2007-2014 Assistant Professor, UAE University

1999-2004 Senior Project Engineer, Detroit Diesel Corporation, MI, USA

2003-2004 Senior Research Engineer, Illinois Institute of Technology, Department of Chemical & Environmental Engineering, IL, USA

1999-2003 Senior Engineer , Quantum Controls Inc., MI, USA

III. Honors and Awards

Awarded IIT Teaching Assistantship for the year 1994-1999.

V. RESEARCH INTERESTS

Thermal Management: Microchannels, Nanofluid, heat loop pipe, Vortex tube

Diesel engine combustion and diesel emission control.

Design and development (hardware/ Software) of testing systems of variety of systems:

Industrial control, vision inspection systems and high speed data acquisition systems.

Flow Instability and Receptivity, utilizing an active excitation control methods: mechanical and acoustic forcing.

Renewable resources: wind energy, solar system, fuel cells and hydrogen storage.

VI. TRAINING

LABVIEW Image Processing Class, **2001**

Computer Related Systems Validation, **2001**

Reliability and Maintainability Class, **2003**

Diesel Combustion and Emission Control, **2005**

Diesel Combustion and Emissions Class, **2006**

Excelling as a First-Time Manager or Supervisor, **2007**

VII. COURSES TAUGHT

Advance Fluid Mechanics (MECH 6505)

Thermodynamics of Material (MECH 604)
 Introduction to Aerospace Engineering (MECH 550)
 Applied Thermodynamics (MECH 311)
 Fluid Mechanics (MECH 340)
 Thermofluid design and Analysis (MECH 426)
 Thermal Engineering Laboratory Integrated Lab (MECH 430)
 Capstone Graduation Project (MECH 585)
 Air Condition (MECH 511)
 Turbo-Machinery (MECH 514)
 Design and Ethics (GENG 215)
 Thermodynamics (GENG 220)
 Freshman Lab (GENG 250)
 STATICS (GENG 240)

VIII Patents

Patent applications/disclosures (title, inventor (s), application date, commercialization?)

- *"Filter and Process of use to Produce Carbon Nanotubes from Automotive Exhaust", Haik Y., Aldajah S. and **Elnajjar E.**, United States, Patent Application Publication, Pub. No. US2011/0000198 A1.*

VIII. Selected Journal Publications

1. A.-A.B. Al Omari, **Emad Elnajjar.**, "Using Liquid Metals to Enhance Heat Transfer from Hot Water in Mini-Channel Systems", *Accepted by FDMP March (2013)*.
2. Emad Elnajjar, Mohammad O. Hamdan, Yousef Haik., "Experimental investigation of Internal Channel cooling via Jet Impingement", *Accepted by FDMP March (2013)*.
3. Mohamed Y.E. Selim, Professor Yousef Haik, Dr Salah B. Al-Omari, **Dr Emad I. Elnajjar**, "Combustion of waste chocolate oil biofuel in a diesel engine", *Journal of Ambient Energy (2013) 1-28*.
4. Hamdan, M. O., Alsayyed, B, **Elnajjar. E.**, (2013), "Nozzle parameters affecting vortex tube energy separation performance", *Heat and Mass Transfer 1, 162*.
5. **Emad Elnajjar**, Mohammad O. Hamdan, Mohamed Y.E. Selim, "Experimental investigation of dual engine performance using variable LPG composition fuel", *Renewable Energy 56 (2013) 110-116*.
6. FM Allan, **E. Elnajjar** "The Role of Mathematical Modeling in Understanding the Groundwater Pollution" *Int. J. of Thermal & Environmental Engineering 4 (2), 171-176, (2012)*.
7. Hamdan, M. O., **Elnajjar. E.**, Haik, Y., (2011), "Measurement and Modeling of Confined Jet Discharged Tangentially on a Concave Semicylindrical Hot Surface", *ASME Journal of Heat Transfer 133(11)*.
8. Saud A. Khashan, **Emad Elnajjar**, Yousef Haik" Numerical simulation of the continuous biomagnetic separation in a two-dimensional channel", *International Journal of Multiphase Flow, (2011)*.

9. Saud A. Khashan, **Emad Elnajjar**, Yousef Haik" CFD simulation of the magnetophoretic separation in a microchannel" Journal of Magnetism and Magnetic Materials 323(2011)2960–2967.
10. Saud A. Khashan, Yousef Haik, **Emad Elnajjar**," CFD SIMULATION FOR BIOMAGNETIC SEPERATION INVOLVING DILUTE SUSPENSIONS", The Canadian Journal of Chemical Engineering, (2012).
11. Hamdan, M. O., Alawar A., **Elnajjar E.**, Siddique W., (2011), "Experimental Analysis on Vortex Tube Energy Separation Performance", Journal of Heat and Mass Transfer, DOI 10.1007/s00231-011-0824-6.
12. Saud Aldajah*, Yousef Haik, **Emad Elnajjar**" A Novel Dual Effect Soot Filtering System " JJMIE Volume 4, Number 1, ISSN 1995-6665 Pages 75 – 78 (Jan. 2010).
13. **Emad Elnajjar**, Mohamed Y. E. Selim, Farag Omar "Comparison Study of Dual Fuel Engine Performance and Overall Generated Noise under Different Dual Fuel Types and Engine Parameters" International Journal of Basic & Applied Sciences IJBAS-IJENS Vol: 11 No: 03.(2011).
14. Hamdan, M. O., **Elnajjar, E.**, (2009), "Thermodynamic Analytical Model of a Loop Heat Pipe", Journal of Heat and Mass Transfer 46, pp. 167-173, DOI 10.1007/s00231-009-0555-0

X. Selected Conference Publications

1. **Elnajjar E.**, Hamdan, M. O., Haik Y., "Experimental Investigation of Impinging Jet Flow on a Heated Curved Surface", 6th International Conference on Thermal Engineering, Istanbul, Turkey, May 22-25, 2012. ICTEA2012.
2. **Elnajjar, E.**, Hamdan, M. O., Selim, M., "Experimental Investigation of Dual Engine Performance under Using Variable LPG Composition Fuel", Proceedings of the 2nd International Conference on Renewable Energy, March 4-7, 2012. ICRE2012.
3. **Elnajjar, E.**, Haik, Y., Hamdan, M. O., Khashan, S. A., "Experimental Study of Convective Heat Transfer of MWCNT in Aqueous Fluid Flow inside Micro-circular Tube", Proceeding of the 3rd International conference of Nanotechnology, AlAin, UAE, November 27-30, 2011. ICN2011.
4. Alsayyed, B., Hamdan, M. O., **Elnajjar, E.**, "Optimal Parametric Model for Vortex Using DOE", Proceeding of the annual ASME International Mechanical Engineering Congress and Exposition, Denver, Colorado, November 11-17 2011. IMECE2011.
5. **Elnajjar, E.**, Selim, M., Hamdan, M. O., "Effect of Variable LPG Composition Fuel on Dual Fuel Engine Performance", The 11th Conference on Energy for a Clean Environment, Lisbon, Portugal, 5-8 July 2011.
6. Hamdan, M. O., Alawar A., **Elnajjar E.**, Siddique W., "Feasibility of Vortex Tube Air-Conditioning System", Proceeding of to the 8th ASME/JSME Thermal Engineering Joint Conference, Honolulu, Hawaii, March 13-17 2011. AJTEC2011.
7. **Emad Elnajjar**, Falah Awwad, Fathi M. Allan " Assessing the Efficiency of the Use of Laptops on the UAEU Students' Various Activities" IAT_TEC_2011 Abu Dhabi UAE, March 2011.
8. Saud A. Khashan, Yousef Haik. and **Emad Elnajjar**, "Magnetophoresis and Diffusion Interactions involving the Transport of Magnetic Microparticles", 7th International

Conference on Heat Transfer, Fluid Mechanics and Thermodynamics HEFAT2010, Antalya, Turkey, July 2010

9. **Emad Elnajjar**, Saud Aldajah and Yousef Haik "Synthesis of Green Carbon Nanotubes from Diesel Soot", ICREGA, AL-Ain, March 8-10, 2010
10. Saud Aldajah, **Emad Elnajjar** and Yousef Haik "A Novel dual Effect soot filtering system" International Conference and Exhibition on Green Energy & Sustainability for Arid Regions & Mediterranean Countries (ICEGES 2009) Le Royal Hotel Amman, Jordan November, 10-12 2009.
11. Hamdan, M. O. and **Elnajjar, E.**, "Loop Heat Pipe: Simple Thermodynamic Model", Proceedings of World Academy of Science, Engineering and Technology, Vol. 40, April 2009, ISSN: 2070-3740, pp. 161-167.
12. Hamdan, M. O., Khashan, S., **Elnajjar, E.**, "Numerical Investigation of Dimpled Surfaces to Enhance Energy Recovery and Heat Transfer", Proceedings of the Tenth Annual Research Conference, Al-Ain, UAE, April (2009), pp. 883-888.
13. **Elnajjar, E.**, Khashan, S., Hamdan, M. O., "Acoustic Excitation of instability waves in free Shear Layer of an Axi-Symmetric Cylinder", Proceedings of the Tenth Annual Research Conference, Al-Ain, UAE, April (2009), pp. 841-849.
14. **Emad Alnajjar**, Hassan Nagib and Ahmed Naguib 2000. "Receptivity of an Axi-symmetric Jet to Mechanical Excitation Using a Piezoelectric Actuator" AIAA 2000-2557.
15. **Alnajjar, E.**, Naguib, A., Nagib, H., and Christophorou, C 1997. "Receptivity of High Speed Jets to Excitation Using An Array of MEMS- Based Mechanical Actuators." Proceedings, 1997 ASME Fluid Engineering Division Summer Meeting. Paper FEDSM97-3224.
16. C. Huang, K. Najafi, **E. Alnajjar**, C. Christophorou, A Naguib and H. Nagib 1998. "Operation and Testing of Electrostatic microactuators and Micromachined Sound Detectors for Active Control of High Speed Flows." IEEE 11th Annual International Workshop on Micro Electro Mechanical Systems MEMS 1998 .

XI. Papers submitted for Publications

1. **Emad Elnajjar**, Yousef Haik, Mohammad O. Hamdan, Saud Khashan, " Heat Transfer Characteristics of Multi-walled Carbon Nanotubes Suspension in a Channel Flow ", *Submitted to* International Journal of Multiphase Flow (Sep. 2012).
2. **Elnajjar, E.**, Hamdan, M. O., Haik, Y., "Comparison Study of Central and Side Confined Jet Discharging on Uniformly Heated Curved Surface", *Submitted to* Experimental Thermal and Fluid Science Journal (June 2011).
3. Hamdan, M. O., Selim M., Al-Omari S.A., **Elnajjar E.**, "External Combustion Heat Release Characteristics of Stabilized Water-Diesel Emulsions", *Submitted to* Energy Conversion and Management Journal (February 2011).
4. **Elnajjar, E.**, Hamdan, M. O., Haik, Y., "CFD Turbulence Modeling and Measurements Validation of Impinging Jet Flow on a Heated Curved Surface", *Submitted to* Heat and Mass Transfer (February 2011).

XII. Recent Previous Funding Selected Journal Publications

- 2014-2017: 400,000AED: PI-Investigator of THE UAEU INTERDISCIPLINARY CENTER-BASED RESEARCH GRANT COMPETITION-2014 "Using different types of local wastes as gaseous fuel for dual fuel diesel engines".
- 2014-2017: 490,000AED: Co-PI-Investigator of Energy Center-Based Interdisciplinary " Experimental Research on nano liquid-metal fluids with phase change particles for enhanced heat transfer applications".
- 2013-2015: 120,000, Co-PI-Investigator INTERDISCIPLINARY FUND, UAEU "Liquid metals and nano-liquid-metals fluids as coolants"

• Funding Agent: United Arab Emirates University)

Internal fund: AED 30,000 (Co-PI)

Title: Utilizing Solar Concentrator to Enhance Solar Chimney Efficiency

Investigators: Mohammad O. Hamdan and **Emad Elnajjar**

Year: Starting 2011

Duration: 1 years

• Funding Agent: United Arab Emirates University

Internal fund: AED 120,000 (PI)

Title: Investigation of Formation Mechanism of Carbon Nanotube from Diesel exhaust

Investigators: **Emad Elnajjar**, Yousef Haik, Saud Al Dajah, Mohammad O. Hamdan and Ahmed Ayesb

Year: Starting 2011

Duration: 3 years

Funding Agent: United Arab Emirates University

• Internal fund: AED 15,000 (Co-PI)

Title: Analysis and Feasibility of Vortex Tube Air-Conditioning Device

Investigators: Mohammad O. Hamdan, Ahmad Alawar and **Emad Elnajjar**

Year: Starting 2010

Duration: 1 years

Funding Agent: United Arab Emirates University.

• Internal fund: AED 15,000 (PI)

Title: Studying the Effects of different LPG fuel composition and Engine parameters on Dual Fuel Engines Cyclic Variability

Investigators: **Emad Elnajjar**, Mohamed Y.E. Selim and Mohammad Hamdan

Year: Starting 2010

Duration: 1 years

Funding Agent: United Arab Emirates University

• Description: Experimentally investigates the performance and the feasibility of utilizing vortex tube for automobile air-conditioning.

Internal fund: AED 20,000 (Co-PI)

Title: Thermal augmentation in internal cooling passage utilizing impingement jet to induce swirl flow

Investigators: Mohammad O. Hamdan, Yousef Haik and **Emad Elnajjar**

Year: Starting 2009

Duration: 1 years

• Funding Agent: United Arab Emirates University

Internal fund: AED 20,000 (PI)

Title: Single Phase Heat Transfer in Micro-tube heat sink for Microelectronics Cooling.

Investigators: **Emad Elnajjar**, Saud Khashan and Mohammad O. Hamdan

Year: Starting 2009

Duration: 1 years

- Funding Agent: United Arab Emirates University

Internal fund: AED 20,000 (PI)

Title: Receptivity of Axi symmetric shear layer to acoustic excitation.

Investigators: **Emad Elnajjar**, Saud Khashan

Year: Starting 2008

Duration: 1 years

XIII. Industrial Article

- **Emad Alnajjar**, Tim Bennett "DAQ System for Steering Column Assembly Testing" Instrumentation newsletter 2002, Technical News from National Instruments.
- **Emad Alnajjar**, "Transfer Case Inspection Using LABVIEW and IMAQ Vision" NI Week 2000, Test and Quality User Solution