

# PROFESSOR OF MECHANICAL ENGINEERING

(THERMO-FLUID AND  
ENERGY)



DR. HAMZEH DUWAIRI

## Personal Details:

**Name:** Dr. Hamzeh Mustafa Mohammad Duwairi

**Birthday:** 18, March, 1969  
Kitem, Irbid, Jordan

**Nationality:** Jordanian

**Address:** Mechanical Engineering Department,  
Faculty of Engineering & Technology,  
The University of Jordan,  
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## Education:

(1) 1997-2000 Technical University of Hamburg-Harburg (TUHH),  
GERMANY.

PhD. Degree in Fluid Mechanics & Heat Transfer, the title of my thesis is:  
**(Boundary Layer Analysis of Buoyancy-Pressure-Driven Liquid Film,  
Two-Phase Flow and Heat Transfer in a Capillary Porous Medium).**

(2) 1990-1992 Jordan University of Science & Technology (JUST),  
IRBID.

M.Sc. Degree in Thermal Power, the title of my thesis is:  
**(Non-Darcy Mixed Convection along Horizontal Wall in Saturated Porous  
Medium )**

(3) 1986-1990 Mosul University, IRAQ.  
B.Sc. Degree in Mechanical Engineering, I was ranked the second out of 80 students.

### **Academic & Administrative Experience:**

- (1) 2010-now Full professor at the University of Jordan
- (2) 2011-2012 Chair of Mechanical Engineering Department.
- (3) 2008-2010 Associate professor at the University of Jordan.
- (4) 2007-2008 Sabbatical leave year in Mechatronics Engineering Department at German-Jordanian University in Amman.
- (5) 2005-2007 Associate Professor at the University of Jordan.
- (6) 2002-2003 Head of Energy & Environment center.
- (7) 2000-2005 Assistant Professor at the University of Jordan.
- (8) 1994-1997 Full Time Lecturer at the University of Jordan.
- (9) 1993-1994 Mechanical Engineer in the Ministry of Energy & Minerals in the new & renewable energy resources department.
- (10) 1992-1993 Designer & Supervisor for: potable, domestic, industrial and fire water networks, compressed air system, fuel oil system, drainage and sewage networks and HVAC systems with the METAL EXPORT COMPANY (Polish-British company).
- (11) 1990-1992 Research & Teaching Assistant in Jordan University of Science & Technology (JUST).

## **Councils and Committees and Research Duties:**

1)- **Member of International Scientific Committee** of the *7th WSEAS International Conference on CIRCUITS, SYSTEMS, ELECTRONICS, CONTROL & SIGNAL PROCESSING (CSECS'08)*,  
Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/csecs>

2)- **Member of International Scientific Committee** of the *13th WSEAS International Conference on APPLIED MATHEMATICS (MATH'08)*,  
Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/MATH.pdf/>

3)- **Member of International Scientific Committee** of the *2nd WSEAS International Conference on COMPUTATIONAL CHEMISTRY (COMPUCHEM'08)*,  
Puerto De La Cruz, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/compuchem/>

4)- **Member of International Scientific Committee** of the *4th WSEAS International Conference on HEAT and MASS TRANSFER (HMT'07)*,  
Gold Coast, Queensland, Australia, January 17-19, 2007  
<http://www.wseas.org/conferences/2007/australia/hmt>

5)- **Member of International Scientific Committee** of the *4th IASME / WSEAS International Conference on Fluid Mechanics and Aerodynamics*,  
Elounda, Agios Nikolaos, Crete Island, Greece, August 21-23, 2006.  
<http://www.wseas.org/conferences/2006/crete/fluid>

6)- **Member of International Scientific Committee** of the *4<sup>th</sup> IASME/WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment*,  
21-23 August, Crete Island, Greece, 2006.  
<http://www.worldses.org/conferences/2006/>

7)- **Member of International Scientific Committee** of the *2006 IASME/WSEAS International Conference on Heat and Mass Transfer (HMT 06)*,  
18-20 January, Miami, Florida, USA, 2006.  
<http://www.worldses.org/conferences/2006/>

8)- **Reviewer** of Different International Journals, (Journal of Porous Media, Int. J. Heat & Technology, Heat and Mass Transfer, Int. J. Numerical Methods Heat Fluid flow, Chemical Engineering Communication).

- 9)- **Reviewer** of Different Local and International Conferences.
- 10)- **Guest Editor** of IASME Transactions, Issue 8, Vol 2, October 2005.
- 11)- **Session Chairman**, session title: Convection Heat Transfer: Modeling & Experiment within 3<sup>rd</sup> IASME/WSEAS Conference,  
<http://www.worldses.org/conferences/2005/corfu/heat/index.html>
- 12)- **Session Organizer** within 3<sup>rd</sup> IASME/WSEAS Conference **Entitled:** *Convection Heat Transfer Modeling and Experiment*, **Topics:** Fundamentals of Convection Heat Transfer, Thermal Radiation-Convection Interaction, MHD-Convection Heat Transfer, Convection Heat Transfer during Manufacturing Process, Experimental Heat Transfer, Convection Heat Transfer With Change in Phase, Convection Heat Transfer during Combustion Process, Application of CFD on Convection Heat Transfer Problems.
- 13)- **Member of International Scientific Committee** of the 3<sup>rd</sup> IASME/WSEAS Conference of Heat Transfer, Thermal Engineering and Environment,  
20-22 August, Corfu Island, Greece, 2005.  
<http://www.worldses.org/conferences/2005/corfu/heat/index.html>
- 14)- **Member of International Scientific Committee** of *The International Conference for Advanced Mechanical Engineering*, (LMMC/DGM),  
30 Nov.-02 Dec., Algiers, Algeria, 2004.  
<http://www.umbb.dz>
- 15)- **Promotion Committee** either internal or external University.
- 16)- **Organization and Participation** of Several Engineering Workshops, Seminars, Meetings in various fields.
- 17)- **Member** of Several Tender National Committees.
- 18)- **Chairman and Member** of Several Tender Committees inside Department, Faculty and University.
- 19)- **Post Graduate** Department Committee (2005-2007).
- 20)- **Mechanical** Engineering Council (2000-present).
- 21)- **Examiner** of Large Number of MSc. Thesis Inside and Outside University.

### **M. Sc. And PhD. Thesis Supervision:**

- 1)- MHD-Mixed Convection Heat Transfer from Radiant Vertical Cylinder.  
(M. Sc. Thesis), January 2004.
- 2)- MHD-Conjugate Mixed Convection Over a Vertical Hollow Cylinder Embedded in a Saturated Porous Medium.  
(M. Sc. Thesis), April 2005.
- 3)- MHD-Convection Heat Transfer Over a Non-Isothermal Ellipse Embedded in a Fluid-Saturated Porous Medium.  
(M. Sc. Thesis), August 2006.
- 4)- Mixed Convection Heat Transfer for a Non-Newtonian Fluid Around a Cylinder or Sphere Embedded in Saturated Porous Media.  
(M. Sc. Thesis), July 2007.
- 5)- Modeling and Design of an AC Magnetohydrodynamic Micropump Using Lorentz Force.  
(PhD. Thesis), August 2007.
- 6)- MHD Natural Convection in Porous Media-filled Enclosures.  
(M. Sc. Thesis), November 2008.
- 7)- MHD Natural Convection in Porous Media-Filled Isoflux Enclosures.  
(M. Sc. Thesis), October 2010.
- 8)- Permeability Effect on the Propagation of Sound Waves in a Saturated Porous Media.

- (M. Sc. Thesis), November 2010.
- 9)- Forchheimer, Non-Boussinesq Natural Convection in Porous Media Filled Enclosure.  
(M. Sc. Thesis), July 2012.
- 10)- Slip Velocity and Temperature Jump Effects on Convection From Vertical Surface Embedded in Saturated Porous Media.  
(M. Sc. Thesis), November 2013.
- 11)- Stability of Horizontal Porous Layers Heated From Below Using Forchheimer's Model.  
(M. Sc. Thesis), December 2013.
- 12)- Modeling and Design of Smoke Control System for Regular Large Atrium Installed in Mercantile Buildings in Jordan.  
(M. Sc. Thesis), January 2014.
- 13)- Analytical and Numerical Solutions of a Hyperbolic Heat Conduction Inside an Infinite slab.  
(M. Sc. Thesis), August, 2014.
- 14)- Transient Thermal Dispersion Effects on Mixed Convection Heat Transfer in Porous Media with Viscous Dissipation.  
(M. Sc. Thesis), October 2014.
- 15)- Boundary Layer Analysis of Slip Velocity and Temperature Jump Effects on a Fluid Saturated Porous Media.  
(M. Sc. Thesis), December 2014.
- 16)- Brinkman Effects on Sound Wave Propagation in a Fluid

## Saturated Porous Media

(M. Sc. Thesis), July 2015.

17)- Modeling of Liquid Film Condensation in Saturated Porous Medium Using Forchheimer's Model.

(M. Sc. Thesis), August 2015.

18)- A new approach for Intermittent Unsteady Heating Load Calculation for a Jordanian Building.

(M. Sc. Thesis), August 2015.

19)- Modeling of Fluid Flow and Heat Transfer inside a Saturated Porous Conduit at Constant Surface Heat Flux.

(M. Sc. Thesis), August 2017.

20)- Passive cooling of photovoltaic (PV) modules using corrugated surfaces technology.

(M. Sc. Thesis), April 2019.

21)- The Effects of Fluctuating air Streams on the Output of a Wind Turbine.  
(M. Sc. Thesis), April 2019.

22)- Solar Energy Storage Using Non - Newtonian Fluid in a Saturated Porous Media.

(M. Sc. Thesis), April 2019.

23)- The Effects of Laminar and Turbulent Fluctuating Pressure Gradients on a Wind Turbine

(M. Sc. Thesis), July 2019.

24)-Turbulent Passive Cooling of Photovoltaic (PV) Modules Using corrugated Surfaces.

(M. Sc. Thesis), July 2019.

25)- The Effects of Turbulent Fluctuating air Streams on the Output of a Wind Turbine.

(M. Sc. Thesis), July 2019.

26)- The Effects of Fluctuating Pressure Gradients and Corrugated Surfaces on a Wind Turbine Output.

(M. Sc. Thesis), now.

27)- Modeling of tidal energy extraction using wavy surface hydrodynamics.

(M. Sc. Thesis), now.

28)- Solar Energy Storage Using no-Newtonian Fluid in a Circular Conduit Filled with Saturated Porous Media, now.

### **Research Activities:**

- Renewable energy (solar, wind, tidal, photovoltaic cells and geothermal).
- Convection heat transfer in plain media and porous media.
- Liquid film condensation.
- Two-phase flows.
- Surface tension driven flows.
- MHD heat transfer problems.
- Thermal radiation-Convection heat transfer interaction.
- Analytical solutions for heat and mass transfer problems.
- Numerical solutions for heat and fluid flow problems.
- Magnetic and viscous dissipation effects on Blood flow.
- Heat transfer effects during manufacturing process.
- Heat transfer during combustion process.
- Heat transfer during change in phase.
- Application of CFD in heat transfer problems.
- MEMS Fluid Mechanics and Heat Transfer Applications.
- Ac and Dc MHD micro pumps using constant and fluctuating Lorentz forces.
- Thermophoresis-convection interaction for fluid flowing in a saturated porous media.
- Sound waves propagation in fluids.

### **Teaching Activities:**

#### **A. Elementary Courses:**

- (1) Engineering Drawing and Descriptive Geometry Course.
- (2) Auto Computer Aided Drafting (ACAD).
- (3) Engineering Statics.
- (4) Fluid Mechanics I.
- (5) Fluid Mechanics II.



- (6) Fluid Mechanics (for Industrial Engineering.)
- (7) Fluid Mechanics laboratory.
- (8) Heat Transfer I.
- (9) Heat Transfer II.
- (10) Thermal Fluid Sciences (for Mechatronics Engineering)
- (11) Combustion Laboratory.
- (12) Thermodynamics I.
- (13) Thermodynamics II.
- (14) Energy Conversion Principles.
- (15) Hydraulic and Pneumatic systems.
- (16) Sanitary
- (17) Selected Topics in Mechanical Engineering.
- (18) Thermodynamic Laboratory.
- (19) Heat Transfer Laboratory.
- (20) Thermal Laboratory I.
- (21) HVAC Systems.
- (22) Structural Design for Fire and Life Safety.
- (23) Design of Fire Protection systems.
- (24) Passive fire Protection I.
- (25) Passive fire protection II.
- (26) Active Fire Protection I.
- (27) Active fire protection II.
- (28) Fire Modeling and Control.
- (29) Computer Applications (MATLAB)
- (30) Engineering Programming.
- (31) Graduation Project I.
- (32) Graduation Project II.

**B. Advanced Courses:**

- (33) Advanced Fluid Mechanics (M. Sc. course).
- (34) Viscous Fluid Flow (PhD. course).
- (35) Computational Fluid Dynamics (CFD) (PhD. course).
- (36) Research Methodology (PhD. course).
- (37) Advanced Heat Transfer (M. Sc. course).
- (38) Convection Heat Transfer (PhD. course).
- (39) Conduction Heat transfer (PhD. Course).
- (40) Selected Topics in Mechanical Engineering.
- (41) M.Sc. Thesis supervision.
- (42) PhD. Thesis supervision.
- (43) Energy efficiency

### Research Grants:

1)- Grant # 45/2001 “Surface Tension Driven flow From Vertical Cylinder Embedded in Saturated Porous Medium” from the Deanship of Scientific Research at The University of Jordan.

2)- Grant # 56/2003 “MHD- Rayleigh Flow From Radiate Vertical Porous Plate With Constant Surface Temperature” from the Deanship of Scientific Research at The University of Jordan.

### Honors and Prizes:

- (1) Mosul University Honor Degree.
- (2) Jordan University of Science and Technology Assistantships (1990-1992).
- (3) DAAD (Deutsche Akademische Austausch Dienst-German Fellowship) for PhD. study (1997-2000).
- (4) DFG (Deutsche Forschungsgemeinschaft-German Fellowship) for research (Summer 2004).
- (5) Arab Fund for Economic and Social Development Distinguished Scholar Award for Academic Year 2007/2008.

### Publications in Specialized and Indexed Journals:

(1)-T. K.Aldoss, M. A. Jarah and **H. M. Duwairi**, Wall Effects On Mixed Convection From Horizontal Surfaces With Variable Surface Heat Flux.  
*The Canadian Journal of Chemical Engineering*, Vol. 72, pp. 33-43, 1994.

(2)- Z. Kodah and **H. M. Duwairi**, Inertia Effects On Mixed Convection For Vertical Plates With Variable Wall Temperature In Saturated Porous Media.  
*Heat and Mass Transfer*, vol. 31, pp. 333-338, 1996.

(3)- **H. M. Duwairi**, T. K. Aldoss and M. A. Jarah, Nonsimilarity Solutions for Non-Darcy Mixed Convection from Horizontal Surfaces in a Porous Medium.  
*Heat Mass Transfer*, vol. 33, pp. 149-156, 1997.

(4)- **H. M. Duwairi**, Boundary Layer Analysis of Buoyancy-Pressure-Driven Liquid Film, Two-Phase Flow and Heat Transfer in a Capillary Porous Medium.

*Fortschritt-Berichte VDI*, Reihe 3, Verfahrenstechnik, Nr. 653, 2000.

(5)-**H. M. Duwairi** and Rebhi A. Damseh, Magnetohydrodynamic Natural Convection Heat Transfer From Radiate Vertical Porous Surfaces.  
*Heat Mass Transfer*, vol. 40, pp. 787-792, 2004.

(6)- **H. M. Duwairi** and Rebhi A. Damseh , MHD-Buoyancy Aiding And Opposing Flows With Viscous Dissipation Effects From Radiate Vertical Surfaces.  
*The Canadian J. of Chemical Engineering*, vol. 82, no.3, pp. 613-618, 2004.

(7)- **H. M. Duwairi**, H. A. Al-Tahaineh and M. A. Alhusein, Dimensional Analysis Of Non-Convective Salt Gradient Solar Pond.  
*Int. J. of Heat and Technology*, vol. 22, no. 2, pp. 65-68, 2004.

(8)- **H. M. Duwairi** , Bourhan Tashtoush and Rebhi A. Damseh, On Heat Transfer Effects of a Viscous Fluid Squeezed and Extruded Between Two Parallel Plates.  
*Heat Mass Transfer*, vol. 41, no. 2, pp. 112-117, 2004.

(9)- **H. M. Duwairi** and R. M. Duwairi Thermal Radiation Effects on MHD-Rayleigh Flow With Constant Surface Heat Flux.  
*Heat Mass Transfer*, vol. 41, no. 1, pp. 51-57, 2004.

(10)- **H. M. Duwairi** and R. M. Duwairi, MHD-Natural Convection Heat Transfer in Unsteady Couette Flow of Gray Fluids.  
*Int. J. of Heat and Technology*, vol. 22, no. 2, pp. 103-107, 2004.

(11)-**H. M. Duwairi**, Viscous And Joule Heating Effects On MHD-Forced Convection Flow From Radiate Isothermal Porous Surfaces.  
*Int. J. of Numerical Methods for Heat and Fluid Flow*, vol. 15, no. 5, pp. 429-440, 2005.

(12)- M. Q. Al-Odat, Rebhi A. Damseh and **H. M. Duwairi**, Free Convection of Radiative Fluid From Vertical Wavy Surfaces.  
*Int. J. of Heat and Technology*, vol. 23, no. 1, pp. 73-80, 2005.

(13) Bourhan Tashtoush, **H. M. Duwairi** and A. Al-Salaymeh, Hydromagnetic Flow on A power Law Stretching Surface With Suction and Injection of Non-Newtonian Fluid.  
*Int. J. of Heat and Technology*, vol. 23, no. 1, pp. 55-60, 2005.

- (14)- Bourhan Tashtoush and **H. M. Duwairi**, Transient Mixed Convection With Internal Heat Generation and Oscillating Plate Temperature.  
*Acta Mechanica*, vol. 174, pp. 185-199, 2005.
- (15)- **H. M. Duwairi** and A. J. Chamkha, Transient Free Convection Flow of a Micropolar Fluid Over a Vertical Surface.  
*Int. J. of Fluid Mechanics Research*, vol.32, no. 3, pp.255-268, 2005.
- (16)- **H. M. Duwairi**, Radiation Effects on Mixed Convection over Non-Isothermal Cylinder and Sphere in Porous Media.  
*Journal of Porous Media*, vol. 9, no. 3, pp. 251-259, 2006.
- (17)- Rebhi A. Damseh, **H. M. Duwairi** and M. AL-Odat, Similarity Analysis of Magnetic Field and Thermal Radiation Effects on Forced Convection Flow.  
*Turkish J. Eng. Env. Sci.*, vol. 30, pp. 83-89, 2006.
- (18)- **H. M. Duwairi**, Rebhi. A. Damseh and Bourhan Tashtoush, Transient Non-Boussinesq MHD-Free Convection Flows Over a Vertical Surface.  
*Int. J. Fluid Mechanics Research*, vol. 33, no. 2, pp.152-173, 2006.
- (19)- **H. M. Duwairi** and Y. Al-Kablawi, MHD-Conjugate Mixed Convection Heat Transfer Over a Vertical Hollow Cylinder Embedded in a Porous Medium.  
*Int. J. of Heat and Technology*, vol. 24, no. 1, pp. 123-128, 2006.
- (20)- **H. M. Duwairi** and Mustafa Abdullah, Thermal and Flow Analysis of a Magneto-hydrodynamic Micropump.  
*Microsystem Technologies*, vol. 13, no. 1, pp. 33-39, 2007.
- (21)- **H. M. Duwairi**, Rebhi. A. Damseh and Bourhan Tashtoush, Transient Mixed Convection Along a Vertical Plate Embedded in Porous Media With Internal Heat generation Heat and Oscillating Plate Temperature.  
*Chemical Eng. Comm.*, vol. 194, no. 11, pp. 1516-1530, 2007.
- (22)- **H. M. Duwairi**, Osama Abu-Zeid and Rebhi. A. Damseh, Viscous and Joule Heating Effects over an Isothermal Cone in saturated Porous Media.  
*Jordan Journal of Mechanical and Industrial Engineering*, Vo. 1, No. 2, pp. 115-120, 2007.
- (23)- **H. M. Duwairi**, Isentropic Sound Waves Propagation in a Tube Filled with a Porous Media.  
*Int. J. Mechanics*, vol. 1, no. 2, pp. 33-38, 2007.
- (24)- **Hamzeh M. Duwairi**, Non-Isentropic Sound Waves Propagation of a

Stationary or Flowing Fluid in Porous Media Filled Enclosures.

*WSEAS Transactions on Fluid Mechanics*, vol. 2, no. 4, pp.77-84, 2007.

(25)- M. S. Shawaqfah, Rebhi. A. Damseh, A. J. Chamkha, **H. M. Duwairi** and Moduar H. Zgoul, Forced Convection of Blasius Flow of “SECOND-GRADE” Visco-Elastic Fluid.

*Int. J. of Heat and Technology*, vol. 25, no. 1, pp. 145-151, 2007.

(26)- Morad Al-Zubi and **H. M. Duwairi**, MHD Convection over non Isothermal Ellipse Embedded in Fluid Saturated Porous Medium.

*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 29-24, 2007.

(27)- Mustafa Abdullah and **H. M. Duwairi**, Analysis of Fluid Flow in a Magneto-Hydrodynamic Micro Pump.

*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 91-96, 2007.

(28)- I. M. Hammad and **H. M. Duwairi**, Mixed Convection Heat Transfer for a Non-Newtonian Fluid around a Cylinder or Sphere Embedded in Porous Media.

*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 97-102, 2007

(29)- **H. M. Duwairi** and Mustafa Abdullah, Numerical Computation of Fluid Flow in a Magnetohydrodynamic Micropump.

*Turkish J. Eng. Env. Sci.*, vol. 32, pp. 1-5, 2008.

(30)- I. M. Al-Hamad, **H.M. Duwairi**, Effect of Heat Generation/Absorption on Heat transfer for a non-Newtonian Fluid.

*Int. J. Heat and Technology*, vol. 26, no. 2, pp. 172-132, 2008.

(31)- **H. M. Duwairi** and Rebhi. A. Damseh, Effect of Thermophoresis Particle Deposition on Mixed Convection from Vertical Surfaces Embedded in Saturated Porous Medium.

*Int. J. of Numerical Methods for Heat and Fluid Flow*, vol. 18, no. 2, pp. 202-216, 2008.

(32)- Mustafa Abdullah and **Hamzeh M. Duwairi**, Thermal and Flow Analysis of Two-Dimensional Fully Developed Flow in an AC Magneto-hydrodynamic Micropump.

*Microsystem Technologies*, vol. 14, no. 8, pp. 1117-1123, 2008.

(33)- Rebhi. A. Damseh, Anis A. Shatnawi, A. J. Chamkha and **H. M. Duwairi**, Transient Mixed Convection Flow of a Second-Grade Visco-Elastic Fluid Over Vertical Surfaces.

*Nonlinear Analysis: Modeling and Control*, vol. 13, no. 2, pp. 169-179, 2008.

(34)-Mustafa Abdullah and **Hamzeh M. Duwairi**, Numerical Computation of Two-dimensional flow in an AC Magneto hydrodynamic Micropump.

*Canadian J. of Physics*, vol. 86, no. 11, pp. 1321-1325, 2008.

(35)- Rebhi. A. Damseh and **H. M. Duwairi**, Thermophoresis Particle Deposition - Natural Convection Interaction from Vertical Permeable Surfaces Embedded in Porous Medium.

*J. porous Media*, vol. 12, no. 1, pp. 79-88, 2009.

(36)- **Hamzeh. M. Duwairi** and Hazim. M. Dwairi, On the Propagation of Sound Waves in a Cylindrical Tube Filled with a Porous Media.

*J. Porous Media*, vol. 12, no. 6, pp. 537-548, 2009.

(37)- **H. M. Duwairi** and Rebhi. A. Damseh, Thermophoresis Particle Deposition -Thermal Radiation Interaction on Natural Convection Heat and Mass Transfer from Vertical Permeable Surfaces.

*Int. J. Numerical Methods for Heat and Fluid Flow*, vol. 19, no. 5, pp. 617-632, 2009.

(38)- **H. M. Duwairi**, and Rebhi. A. Damseh, Thermophoresis Particle Deposition -Thermal Radiation Interaction on Mixed Convection from Vertical Surfaces Embedded in Porous Medium.

*Canadian J. of physics*, vol. 87, no. 2, pp. 161-167, 2009.

(39)- **Hamzeh. M. Duwairi** and Hazim. M. Dwairi, On The Vertical Velocity Component Effects on Sound Waves Propagation of a Stationary or lowing Fluid in a Cylindrical Tube Filled With a Porous Media.

*J. Porous Media*, vol. 12, no. 6, pp. 537-548, 2009.

(40)- F. G. Shehadeh and **H. M. Duwairi**, MHD Natural Convection in Porous Media-Filled Enclosures.

*Applied Mathematics and Mechanics Journal*, vol. 30, no. 9, pp. 113-120, 2009.

(41)- **Hamzeh M. Duwairi**, On the non-Isentropic Sound Waves Propagation in a Cylindrical Tube Filled with Saturated Porous Media.

*Transport in Porous Media*, vol. 79, no.2, pp. 285-300, 2009.

(42)- F. G. Shehadeh and **H. M. Duwairi**, MHD Natural Convection With Joule and Viscous Heating Effect in Porous Media-Filled Enclosures.

*Int. J. Heat & Technology*, vol. 28, no. 1, pp. 31-36, 2010.

(43)- **H. M. Duwairi**, Rebhi. A. Damseh, A. J. Chamkha and M. S. Abdel-Jaber, Transient Convection Flow of a Viscoelastic Fluid Over a Vertical Surface.

*Applied Mathematics and Mechanics Journal*, vol. 31, no. 5, pp. 557–564, 2010.

(44)- Y. Al-Badawi and **H. M. Duwairi**, MHD Natural Convection in Iso-flux enclosures Filled with Porous Medium.

*Int. J. Heat & Technology*, vol. 28, no. 2, pp. 89-93, 2010.

(45)- Y. Al-Badawi and **H. M. Duwairi**, MHD Natural convection with Joule and viscous heating effects in Iso-flux enclosures Filled with Porous Medium.

*Applied Mathematics and Mechanics Journal*, vol. 31, no. 9, pp. 1105-1112, 2010.

(46)-Laith R. Batarseh and **H. M. Duwairi**, Isentropic Sound Analysis and Optimization Over Flat Plate Embedded in Saturated Porous Media With Variable Permeability.

*Int. J. Heat & Technology*, vol. 29, no. 1, pp. 55-62, 2011.

(47)-Laith R. Batarseh and **H. M. Duwairi**, Permeability effect on Sound Wave Propagation in Saturated Porous Layer Laid Over Flat Plate.

*Int. J. Heat & Technology*, vol. 29, no. 2, pp. 25-32, 2011.

(48)- Laith R. Batarseh and **H. M. Duwairi**, Sound Wave Propagation in Porous Media, Published book:

*Lap Lambert Academic Publishing*, 2012, ISBN: 13:978-3-8484-9288-6.

(49)- **H. M. Duwairi**, Sound Waves Propagation within Porous Layers Using Forchheimer's Model,

*J. of Porous Media*, vol. 17, no. 8, pp. 723-730, 2014.

(50)- **H. M. Duwairi**, A. Al-Qaisiah and L. Batarseh, Isentropic Sound Wave Propagation in a Saturated Porous Media,

*ChemXpress*, vol. 5, no. 1, 2014.

(51)- A. M. Osman and **H. M. Duwairi**, Forchheimer, Non-Boussinesq Natural Convection in Porous Media Filled Enclosure.

*Int. J. Heat & Technology*, vol. 32, no 1&2, pp. 245-250, 2014.

(52)- **H. M. Duwairi** and V. M. Al-khleifat, Slip Velocity Effects on Convection From Vertical surface embedded in Porous Media,

*J. of Porous Media*, vol.17, no.12, pp.1053-1059, 2014.

(53)- Rebhi A Damseh, **HM Duwair** and Benbella A Shannak, Thermophoresis Particle Precipitate on Heated Surfaces. *World Academy of Science*, vol. 8, no. 4, pp. 682-685, 2014.

(54)- V.M. Al-khiefat and **H. M. Duwairi**, Darcian Velocity and Temperature Jump Effects on Convection From Vertical Surface Embedded in Porous Media. *Int. J. Heat & Technology*, vol. 33, no-2, pp. 97-102, 2015.

(55)- A. Al-Ameen and **H. M. Duwairi**, Stability Of Horizontal Porous Layer Heated From Below Using Forchheimer's Model. *Int. J. Heat & Technology*, vol.33, no.3, pp.109-114, 2015.

(56)- Awni Alkhazaleh and **Hamzeh Duwairi**, Analysis of Mechanical System Ventilation Performance in an Atrium by Consolidated Model of Fire and Smoke Transport Simulation. *Int. J. Heat & Technology*, vol.33, no.3, pp.121-126, 2015.

(57)- A. M Osman, **H. M Duwairi**, Forchheimer, non-Boussinesq natural Convection in porous media filled enclosure. *Int. J. Heat Tech*, vol. 33, no. 4, pp. 191-196, 2015

(58)- **H. M. Duwairi** and Husam Aldeen Bani Issa, Analytical and Numerical Solutions of Hyperbolic Heat Conduction Equation for the Case of Constant surface Heat flux. *Int. J. Heat & Technology*, vol.33, no.3, pp.xx-xx, 2015.

(59) Ibraheem Nasser and **H. M. Duwairi**, Thermal Dispersion Effects on Convection Heat Transfer in Porous Media with Viscous Dissipation. *Int. J. Heat & Technology*, vol.34, no.2, pp.207-212, 2016.

(60)- Hassan Adeeb AlMasa'deh and **Hamzeh Mustafa Duwairi**, Modeling of Fluid Flow and Heat Transfer inside a Saturated Porous Conduit at Constant Surface *Modeling, Measurement and control B*; Vol. 86; No. 3; pp 740-770, 2017.

(61)- Bashar R. Qawasmeh, Hamzeh Duwairi , Mohammad Alrbai, Forced convection heat transfer of Williamson fluid in porous media. *J. of Porous Media*, vol.x, no.x, pp.xx-xx, 2018.

(62)- B. Al-Qallab and **H. Duwairi**, The effects of fluctuating air streams on the output of a wind turbine, *European Journal of Electrical Engineering*, vol. no.x, pp.xx-xx, 2019.



(63)- **Hamzeh Duwairi** and Mohammad Qasem, Corrugating Photovoltaic modules enhances thermal efficiency and Power Output, *Solar Energy*, vol. 188, pp. 318-326, 2019.

### **Publications in Refereed and Specialized Conferences:**

(1)- T. K. Aldoss, M. A. Jarah and **H. M. Duwairi**, Nonsimilarity Solutions For Non-Darcy Mixed Convection From Horizontal Surfaces in a Saturated Porous Medium-Variable Wall Temperature.

*AMSE Confer. Engineering Problems*, Manama (Bahrain), 18-20 April, AMSE Press, Vol. 2, pp. 149-167, 1994.

(2)- **H. M. Duwairi**, Nonsimilarity MHD-Forced Convection Heat Transfer From Radiate Porous Constant Heat Flux Surfaces.

*Conference of Thermal Engineering: Theory and Application*, 31 May-4 June, Lebanon, 2004.

(3)- **H. M. Duwairi** and Sufian Al-Araj, MHD-Mixed Convection Along Radiant Vertical Cylinder. *Conference of thermal Engineering: Theory and Application*, 31May-4June, Lebanon, 2004.

(4)- A. Al-Salaymeh, **H. M. Duwairi**, Thermal Radiation Effects on Boundary Layer of a Non-Newtonian Fluid with Suction or Injection Surface.

*International Mechanical Engineering Conference and Expo.*, 5-8 December, Kuwait, 2004.

(5)- **H. M. Duwairi**, Thermal Radiation Effects on Mixed Convection Over an Isothermal Cone. *International Mechanical Engineering Conference and Expo.*, 5-8 December, Kuwait, 2004.

(6)- **H. M. Duwairi**, Forchheimer's Sound Waves Propagation in a Cylindrical Tube Filled with a Porous Media.

*1<sup>st</sup> WSEAS International Conference on Computational Chemistry*, 19-31 December, 2007, Cairo, Egypt, 2007.

(7)- **H. M. Duwairi**, On the non-Isentropic Sound Waves Propagation of a Stationary or Flowing Fluid in a Cylindrical Tube Filled with Porous Media.

*13<sup>th</sup> International conference on Applied Mechanics and Mechanical Engineering AMME-1*, 27-29 May, 2008, Cairo, Egypt.

(8)- On the Isentropic Sound Waves Propagation in a Cylindrical Tube Filled with Porous Media.

*5<sup>th</sup> International conference on Fluid Mechanics (FLUIDS'08)*, 27-29 January, 2008, Acapulco, Mexico.

## **Industrial Projects:**

(1)- I worked at Siegen University in Germany on a project considering designing and building an air/bag system (that works as hindlers) to shut down gas power stations in cases of emergency.  
(Summer 2004/100000 \$).

(2)- Estimation and reducing electric power consumption and design of new transmit systems for Jordanian cutting saws.  
(Summer 2005/5000\$).

(3)- Upgrading of Jordanian steel-building industry; where unused raw steels is melted in furnaces and then given the desired shape using rolling machines; this includes furnaces, chimneys and rolling machines redesign.  
(Summer 2006/5000\$).

(4)- Using thrown iron oxides from steel building industry as fertilizer; this includes mixing materials and design of mechanical systems to treat these wasted materials.  
(Summer 2007/5000\$).

(5)- Testing of thermal conductivity and heat flow calculations for United Emirates Metal Company for the recommendation of anew product for building in Jordanian local market. (2009/2000\$).

(6)- Testing of thermal conductivity, heat flow calculations and fire resistance test for GRC Company for the recommendation of a new product for building in Jordanian local market (2010/2000\$)

## **Membership in the Professional Societies:**

- Jordanian Engineers Association.
- Jordanian Society for Renewable Energy.