Curriculum Vitae and List of Works

Name	**Laith Jaafer Habeeb**
Year of birth	1974
Place of birth	Baghdad - Iraq
Status	Married
Gender	Male
Nationality	Iraqi
Weight	90
Height	170
Address	Baghdad - Iraq - P.O. Box (19006) , Postcode: 10
Phone	07801933814 - 07702614752
Email	laithhabeeb1974@gmail.com & Laith.J.Habeeb@uotechnology.edu.iq

Language	Evaluation	Explanation
Arabic	Excellent	Mother Tongue
English	Good	Reading, Writing & Speaking

University	Country	Diploma	From - To	Field
U.O.T.	Iraq	B. Eng.	1992-1996	Mechanical Engineering
U.O.T.	Iraq	M.Sc.	1996-1999	Power Generation
U.O.T.	Iraq	Ph.D.	2002-2008	Power Generation

U.O.T. =University of Technology

Undergraduate Project:

Study of Just–In Time Production System in Japanese Experiment for Cars Manufacturing.

M.Sc. Thesis:

Thermal Effects on Misaligned Gudgeon Pin Bearing in a Diesel Engine.

Ph.D. Thesis:

Numerical and Experimental Investigation of Heat Transfer Augmentation Using Vortex Generators.

Interests:

- Heat transfer, thermodynamics, thermophysical properties, pressure drop, computational fluid dynamics (CFD), vortex generator, multi-phase flow, natural, forced and mixed convection,

porous media, cavity, enclosure and duct flow, wind tunnel, renewable energy, thermal storage, solar hybrid system, photovoltaic solar panel, dish collector, solar tower receiver and solar applications, tracking system, thermosyphon, solar still and chemical additives, pipe flow, heat exchanger, turbulent and laminar flow regimes, passive and active heat transfer techniques, nanofluids and nano-technology, fluid-structure interaction, reciprocating air compressor, air conditioning and refrigeration, lid driven, microchannel and heat sink.

- Mathematics, rig design, magnetic field, aircraft engineering, aerodynamics, hydraulic machines, turbomachine, pumps, electrohydraulic system, computational applications in medicine and biology, carbon nanotubes, biofuel and contamination, vibration, aircraft, finite element.
- Electronic based learning, paperless learning.

Computer Skills

Operation System: DOS / Windows.
Language **:** Fortran 90, Visual Basic, and Data Base.
Software Tools **:** AutoCAD, Office, Tec plot, ANSYS APDL and workbench, Solidworks, Matlab, engineering equation solver (EES) and many other packages for computers.

EXPEREINCE TO DATE

- Working at the Mechanical Engineering Department / University of Technology – Baghdad – Iraq
- Working at the Training and workshop center / University of Technology – Baghdad – Iraq
- I have many groups (consist of tens of professors, teachers and others) inside and outside Iraq working in different fields of science of engineering (books, researches, theses, patents, etc.)

1) Academic Experiences

Title	Subject	Period
Assistant Lecturer	Heat Transfer Lab. Basic Fluid Lab.	1999-2001 U.O.T.

	• Basic Thermodynamics Lab. • Theory of Mechanics Lab.	
Assistant Lecturer	• Numerical and Geometrical Analysis. • Programming. • Programming Lab. • Undergraduate Projects.	2001-2002 U.O.T. & M.U.
Assistant Lecturer	• Drawing for Engineering. • Mathematics. • Undergraduate Projects.	2002-2008 U.O.T.
Lecturer	• Mathematics. • Numerical and Geometrical Analysis. • Undergraduate Projects.	2008-2013 U.O.T.
Lecturer	• CAE (Computer Aided Engineering / ANSYS). • CAD (Computer Aided Design / Solidworks).	2013-2014 U.O.T.
Lecturer	• Renewable Energy. • Air Conditioning and Refrigeration.	2013-2014 R.U.C.
Assistant Professor	• CAE (Computer Aided Engineering / ANSYS). • CAD (Computer Aided Design / Solidworks).	2014-2017 U.O.T.
Assistant Professor	• Electrical Workshop	2017-2020 U.O.T.
Assistant Professor	• Smoothing Workshop	2020-2023 U.O.T.

M.U. = Mustansiriyah University.
R.U.C. = Al-Rafidain University College.

2) Responsibilities Experiences

Responsibility	Academic year
Director of Laboratories	2001-2002
Coordinator	2001-2002
Adviser at the Ministry of Electricity / electric power generation in al-Dowra thermal plant	2001-2002
Adviser at the Ministry of Defense / Air Force	2001-2002

Rehabilitation Laboratory of the post-graduate studies	2001-2002
Procurement Committee	2001-2002
Supervision of maintenance work and receive	2001-2002
Maintenance and repair of scientific instruments laboratory	2001-2002
Student Affairs	2002-2003
Rehabilitation of buildings University of Technology - Laboratory modulation	2002-2003
Supervise the maintenance services of the department	2002-2003
Supervising the elections of the National Union of Iraqi students	2002-2003
Various activities	2003-2005
Purchase of equipment and laboratory equipment	2005-2008
Committees to publish a link to the university lectures and curriculum development	2008-2009
Coordinator of the Department Council	2009-2010
Coordinator of the Department Council	2010-2011
Official in the section of the Scientific Committee	2011-2012
Chief, Division of examination committee and alumni affairs	2012-2015
Member of the Post Graduate Studies Committee	2015-2020
Iraqi GLP Committee, Laboratory Quality ranking (LQ Ranking) for GLP	2017-2022
In addition to the examination committee and other committees and responsibilities and member of the committees for Ph.D. and M.Sc. students	

Society Memberships

- Member of ASME (American Society of Mechanical Engineers).
- Member of AASCIT (American Association for Science and Technology).
- Member of ASTFE (American Society of Thermal and Fluids Engineers).
- Member of editorial board of JMERD (Journal of Mechanical Engineering Research and Developments).
- Member of IEEE (The Institute of Electrical and Electronics Engineers).

- Member of Iraqi Engineers Association (Consulting Member).
- Member of Iraqi Inventors & Society
- Member of Iraqi Forum of Inventors
- Reviewer in International Journal of Numerical Methods for Heat and Fluid Flow.
- Reviewer in Thermal Science, International Scientific Journal.
- Reviewer in International Journal of Mechanical Engineering and Automation (IJMEA).
- Reviewer in Computer Applications in Engineering Education Journal.
- Reviewer in Most Iraqi Journals and many International Journals and Conferences.

Special Training Courses

Course	Training Responsibility	Country	Year
Using Internet	Ministry of Transport and Communications	Iraq	2001
Turbo-machinery	Engineering Collage of Military	Iraq	2003
CFD	Engineering Collage of Military	Iraq	2003

Heat Transfer	Baghdad University	Iraq	2003
Teaching Techniques	University of Technology	Iraq	2008
DASYLab	University of Salahddin-Hawler	Iraq	2010
ABET	ULP / IREX	Iraq	2012
PBL	ULP / IREX	Iraq	2015
Anti-Browser Spy and Anti-Malware	U.O.T.	Iraq	2017
How to write references	U.O.T.	Iraq	2017
Arab Student Starpack	Ministry of Planning - Central Organization for Standardization and Quality Control	Iraq	2017
Train of the Trainers - TOT	Arab Academy for Science, Technology & Maritime Transport (AASTMT) - Productivity & Quality Institute	Iraq	2018
Laboratory Quality ranking for GLP – Procedure documentation and Work Flowchart Coding	U.O.T.	Iraq	2018
EFQM and RADAR	U.O.T.	Iraq	2019

Some of the Supervision on B. Sc. Degree Students
Use black stone to conserve heat in the heating process and reduce energy loss / 2001 (A study to conserve heat)
Maintenance and rehabilitation gas thermometer device / 2002 (A study to isolate the heat)
Inverted trickle solar heater / 2003 (A study to get benefit from

renewable energy - solar)
The expense of cooling and heating requirements for residential house in the city of Baghdad / 2003 (A study to control heat load in Iraq)
Rehabilitation, operation and repair of two laboratories devices: device of experience of achieving Newton's second law of motion and device of experience of theory of parallel axes / 2004 (A study to control forces and reduce friction)
Rehabilitation, operation and repair of laboratory device: Device of experience of Dynamic rotary pump / 2004 (A study to reduce pumping power)
Maintenance, rehabilitation and installation of three devices: the measurement of specific heat, measuring device ratio between the two specific heats and the development of air-cooling system in a car in the automobile workshop 2005 (A study to reduce heat loss)
Maintenance and operation of the device for measuring specific heat of copper 2005 (A study to reduce energy losses)
Foundation of electronic library in Mechanics & Equipment Eng. Department 2006 (An establishment of a large electronic library for the students and professors include researches, books and theses in heat, power and mechanics)
Maintenance and operation of laboratory device for measuring thermal conductivity for solids 2007 (A study to reduce conductivity losses)
Reduce the consumption of electric power using alternative solar energy / 2008 (A study to reduce consuming of electrical power by using solar energy)
Flow through porous media / 2008 (A study for energy conservation)
Development of electronic library in Mechanics & Equipment Eng. Department / 2009 (Add many references for power generation and energy courses)
Introduction to multi-phase flow / 2009 (A study to pressure losses)
Diagnosis malfunction cars by computer / 2010 (A study to maximize efficiency)
Introduction to nanotechnology / 2010 (A study of new techniques in mechanical Eng.)
Hybrid cars and how it work / 2011 (A study of reducing fuel consumption in cars)
Development the electronic library in the department / 2012 (Indexing and reorganization of the contents and add the new department's theses)
Study of aerodynamic behavior of a car using Fluent code / 2012 (A CFD study of pressure losses)

Supervision on M. Sc. Degree Students
Heat Transfer Analysis of Integral - Fin Tubes
Heat Transfer in a partially Opened Cavity Filled with a Porous Media
Studying the Heat Transfer Characteristics in an Enclosure with Horizontal-Vertical Parallel Heated Plates
Investigation of Heat Transfer and Flow with NanoFluid in a Double Pipe Heat Exchanger
Magnetic Field Effect on Nanoparticles Migration and Heat Transfer of Nanofluid in a Pipe
Solar Absorption Hybrid Cooling System with High Latent Cooling Load
Steady the Performance of Cooling Photovoltaic-Thermal Solar Panel by Using Heat Pipe at Baghdad Clement
Numerical and Experimental Investigation of Solar Receiver
Study the effect of porous materials on increasing the hot water supply time for the solar collector
Pool Boiling Heat Transfer Enhancement Using Nano-Fluids and Micro Finned Surfaces
Simulation of Temperature Variation in a Car Passenger Compartment
Numerical Modeling of Heat Transfer and pressure Drop in Plate Fin Heat Exchangers
Magnetic Field Effect on Nano-Ferrofluid Flow and Heat Transfer in a Pipe
Experimental and Numerical Study of Solar PV Powered Air Conditioning System
One-way interaction between flow and structure for multi prototypes of boats
Numerical Modelling of Nano-Enhanced Phase Change Material (NEPCM) Inside an Enclosure with Variable Temperature
Numerical Investigation on Two-Phase Flow Characteristic in Steam Boiler Design with Various Boundary conditions
Numerical Investigation a Conventional type of Solar desalination system (or Solar Distiller Units) by using ANSYS FLUENT software
Investigation of Composite Materials in Air Conditioning System

Supervision on Ph. D. Degree Students
One way and two-way interaction study of nano-fluid characteristics in a circular tube having fins and twisted tapes / 2016
Experimental and Numerical Study of Multi-Phase Flow with Turbulator
Pool Boiling Heat Transfer Enhancement for the Nanofluids on Micro-

Finned Surfaces

The Variation of Flow Pattern in Pipes with Multi Phase Flow

Contribution to the study of Dynamic behavior of Gasoline direct injection engines in presence of failures

Publication Papers and Books

[1] "Thermal Effects on Misaligned Gudgeon Pin Bearing in a Diesel Engine", Engineering and Technology journal, University of Technology, Baghdad, Iraq, 1999.

[2] "Numerical Investigation into Velocity and Temperature Fields over Smooth and Rough Ducts for Several Types of Turbulators", Engineering and Technology journal, University of Technology, Baghdad, Iraq, Vol. 25, No.10, 2007, pp.1107-1124.

[3] "The Effects of Vortex Generator Types on Heat Transfer and Flow Structure in a Rectangular Duct Flows", Al-Khwarizmi Engineering Journal, Baghdad, Iraq, Vol.4, No.1, 2008, pp.27-47.

[4] "Experimental and Numerical Study of Gas-Solid Flow Behavior in the Standpipe of a Fluidized Bed", Proceedings of International Conference on Engineering and Information Technology Sep. 17-19, 2012, Toronto, Canada, pp. 104-115.

[5] "Simulation of Natural Convection in Concentric Annuli between an Outer Inclined Square Enclosure and an Inner Horizontal Cylinder", World Academy of Science, Engineering and Technology 69 2012. ICAMAME 2012: International Conference on Aerospace, Mechanical, Automotive and Materials Engineering Berlin, Germany, September 19-20.

[6] "Natural Convection Heat Transfer in Horizontal Annuli with Inner Elliptic and Circular Cylinder", Proceedings of International Conference on Engineering and Information Technology Sep. 17-19, 2012, Toronto, Canada, pp. 74-83.

[7] "Experimental Study of Forced Convection Heat Transfer in a Partially Opened Box Filled with Porous Medium", Proceedings of International Conference on Engineering and Information Technology, Sep. 17-19, 2012, Toronto, Canada.

[8] "Numerical Simulation of Convective Heat Transfer and Fluid Flow through Porous Media with Different Moving and Heated Walls", World Academy of Science, Engineering and Technology 69 2012. ICAMAME 2012: International Conference on Aerospace, Mechanical, Automotive and Materials Engineering Berlin, Germany, September 19-20.

[9] "Free Convective Heat Transfer in an Enclosure Filled with Porous media with and without Insulated Moving Wall", World Academy

of Science, Engineering and Technology 69 2012. ICAMAME 2012: International Conference on Aerospace, Mechanical, Automotive and Materials Engineering Berlin, Germany, September 19-20.

[10] "Heat Transfer in a partially Opened Cavity Filled with Porous Media", 3rd Scientific International Conference 2013 / Najaf, pp. 601-614.

[11] "Natural convection in a partially Opened Box Filled with a Porous Medium", Qadisiya Journal for Scientific Engineering, Vol.6, No.4, 2013, pp. 400-414.

[12] "Experimental Study and CFD Simulation of Two-Phase Flow Around Triangular Obstacle in Enlarging Channel", International Journal of Engineering Research and Applications (IJERA), Vol. 3, Issue 4, Jul-Aug 2013, pp.2036-2048.

[13] "Experimental Study and CFD Simulation of Two-Phase Flow Around Multi-Shape Obstacles in Enlarging Channel", American Journal of Mechanical Engineering (ajme) / Science and Education Publishing, Vol. 1, No. 8, 470-486, August 2013.

[14] "Steady and Unsteady Bubbly Two-Phase Flow (Gas-Liquid Flow) around a Hydrofoil in Enlarging Rectangular Channel", International Journal of Computational Engineering Research, Vol. 03, Issue. 9, September 2013, pp.44-62.

[15] "Experimental and Numerical Study of Two Phase Flow Regimes around a Circular Cylinder through Enlarging Channel", The Iraqi Journal for Mechanical and Materials Engineering, volume: 14 issue: 1, pp. 129-144, 2014.

[16] "Studying the Heat Transfer Characteristics in a box with Horizontal Parallel Heated Plates", Mitteilungen Klosterneuburg Journal, Volume 64 (10), 2014, pp. 12-35.

[17] "Heat Transfer Augmentation Using Vortex Generators", Lambert Academic Publishing, 2013, OmniScriptum GmbH & Co. KG, Germany.

[18] "MATHEMATICS for Mechanical Engineering", Lambert Academic Publishing, 2014, OmniScriptum GmbH & Co. KG, Germany.

[19] "Free and Forced Convection Heat Transfer Characteristics in an Opened Box with Parallel Heated Plates", The American Association for Science and Technology (AASCIT), American Journal of Energy and Power Engineering, Vol. 2, No. 1, 2015, pp. 1-11.

[20] "Heat Transfer Analysis of Integral-Fin Tubes", The American Association for Science and Technology (AASCIT), Journal of Engineering and Technology, Vol. 2, No. 2, 2015, pp. 23-34.

[21] "Heat Transfer Enhancement in a Circular Tube Fitted with Passive Technique as Twisted Tape Insert in Turbulent Flow Regime: A Review of the Recent Literature", The American Association for Science and Technology (AASCIT), Journal of Nanoscience, Vol. 1, No. 4, 2015, pp. 43-49.

[22] "Passive Heat Transfer Augmentation Technique in a Circular Tube Fitted with Different Geometry of Twisted Tape Swirl Flow Generators in Laminar Flow Regime: A Review", The American Association for Science and Technology (AASCIT), Journal of Energy, Vol. 2, No. 5, 2015, pp. 61-68.

[23] "Investigations of Heat Transfer Augmentation for Turbulent Nanofluids Flow in a Circular Tube: Recent Literature Review", The American Association for Science and Technology (AASCIT), Journal of Nanoscience, Vol. 1, No. 4, 2015, pp. 60-65.

[24] "Fluid-Structure Interaction Investigations in Liquid Filled Tube Systems: Recent Literature Review", The American Association for Science and Technology (AASCIT), Journal of Materials, Vol. 1, No. 3, 2015, pp. 69-74.

[25] "Investigations of Heat Transfer Enhancement for Laminar Nanofluids Flow in a Circular Tube: Recent Literature Review", The American Association for Science and Technology (AASCIT), Journal of Nanoscience, Vol. 1, No. 4, 2015, pp. 66-73.

[26] "ANSYS Workbench for Mechanical Engineering, A Step by step to learn ANSYS Workbench", Lambert Academic Publishing, 2015, OmniScriptum GmbH & Co. KG, Germany.

[27] "Solidworks for Mechanical Engineering", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[28] "MATLAB FOR MECHANICAL ENGINEERING Beginner and Intermediate level", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[29] "RIG DESIGN FOR MECHANICAL ENGINEERING Applied Mechanics Part One", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[30] "RIG DESIGN FOR MECHANICAL ENGINEERING Heat Treatments and Mechanical Properties Part Two", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[31] "Investigation of flow and heat transfer in a double pipe heat exchanger with nano fluid", American-Eurasian Network for Scientific Information (AENSI Publication), Advances in Natural and Applied Sciences. 2016 August 10(12): pages 8-15.

[32] "Air-Water Flow Investigation around Hot Circular Cylinder inside Channel", American-Eurasian Network for Scientific Information (AENSI Publication), Advances in Natural and Applied Sciences. 2016 August 10(12): pages 16-27.

[33] "RIG DESIGN FOR MECHANICAL ENGINEERING Stress Analysis Part Three", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[34] "ANSYS APDL for Mechanical Engineering Part One: Mechanical Engineering Drawing", NOOR Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[35] "Introduction to Simulation with ANSYS Mechanical APDL", Lambert Academic Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[36] "Learn AutoCAD 2014 For Beginners", NOOR Publishing, 2016, OmniScriptum GmbH & Co. KG, Germany.

[37] "THE EFFECT OF MAGNETIC FIELD WITH NANOFLUID ON HEAT TRANSFER IN A HORIZONTAL PIPE", Al-Khwarizmi Engineering Journal, Baghdad, Iraq, Vol.4, No.1, 2016, pp.27-47.

[38] "Rig Design for Aircraft Engineering", NOOR Publishing, 2017, OmniScriptum GmbH & Co. KG, Germany.

[39] "SELECTED TOPICS IN MECHANICAL ENGINEERING Fluid flow", NOOR Publishing, 2017, OmniScriptum GmbH & Co. KG, Germany.

[40] "Investigation on Solar Hybrid Cooling System with High Latent Cooling Load", Advances in Environmental Biology, 11(4) April 2017, Pages: 24-36.

[41] "Experimental Investigation of Laminar Convective Heat Transfer and Pressure Drop of Al_2O_3/Water Nanofluid in Circular Tube Fitted with Twisted Tape Insert", International Journal of Energy Applications and Technologies, Vol. 4, Issue 2, pp. 73-86, 2017.

[42] "SELECTED TOPICS IN MECHANICAL ENGINEERING Fluid flow and Heat transfer", NOOR Publishing, 2017, International Book Market Service Ltd., member of OmniScriptum Publishing Group.

[43] "Cooling Photovoltaic Thermal Solar Panel by Using Heat Pipe at Baghdad Climate", International Journal of Mechanical & Mechatronics Engineering IJMME-IJENS Vol.:17 No.:06, December 2017.

[44] "Solution Manual for Hydraulic Machines", KATSON BOOKS, S.K. KATARIA & SONS, New Delhi, First Edition: 2018, India.

[45] "Learning using computer and its impact on the development of curricula, teachers and students and meet some of the requirements of the labor market", Second International Scientific Conference, Al-Mustafa University college, 17-18/3/2018.

[46] "Electronic Based Learning in the University: Mechanical Engineering", First Scientific Conference, Private Higher Education Directorate, 19/4/2018.

[47] "Engineering Learning in the University using Computer and Information Technologies", Seven Scientific Conference, Baghdad College of Economic Sciences University, 15/4/2018.

[48] "Modern Methods and Technology in University Engineering Education Using Computer Programs", Second International Scientific Conference, Al Nisour University College, 5-6/5/2018.

[49] "Solar Panel Cooling and Water Heating with an Economical Model Using Thermosyphon", Jordan Journal of Mechanical and Industrial Engineering (JJMIE), Volume 12, Number 3, October 2018, pp. 1-6.

[50] "Numerical Simulation of 3-D One-Way Fluid-Structure Interaction in a Tube with Twisted Tape under Laminar and Turbulent Flow Regime", International Journal of Applied Engineering Research, Research India Publications, ISSN 0973-4562 Volume 13, Number 18 (2018), pp. 13622-13631.

[51] "Basics of Thermal Engineering", NOOR Publishing, 2018, International Book Market Service Ltd., member of OmniScriptum Publishing Group, 2018.

[52] "MATHEMATICS For Mechanical Engineering A SOLUTION MANUAL", 'Mathematics for Mechanical Engineers: Problems and Solutions', KATSON BOOKS, S.K. KATARIA & SONS, New Delhi, First Edition: 2019, India.

[53] "EXPERIMENTAL ANALYSIS OF TWO-PHASE FLOW THROUGH CYLINDERICAL OBSTRUCTION IN VERTICAL PIPE", International Journal of Mechanical Engineering and Technology (IJMET), Volume 10, Issue 01, January 2019, pp. 74–88, Article ID: IJMET_10_01_008.

[54] "Study the Effect of Diameter and Depth of Parabolic Dish Collector on the Concentration Ratio and Temperature Amount of Solar Tower Receiver", Journal of University of Babylon for Engineering Sciences, Vol. (27), No. (1): 2019.

[55] "CFD Modeling of Laminar Flow and Heat Transfer Utilizing Al_2O_3/Water Nanofluid in a Finned-Tube with Twisted Tape", Faculty of Mechanical Engineering, FME Transactions, VOL. 47, No 1, 2019, 89-100, doi: 10.5937/fmet1901089H.

[56] "Basics of Thermal Engineering", KATSON BOOKS, S.K. KATARIA & SONS, New Delhi, First Edition: 2019, India.

[57] "EXPERIMENTAL AND NUMERICAL STUDY IN HORIZONTAL TUBE BY USING SWIRL DEVICE", Journal of Engineering and Applied Sciences, Medwell Journals, Volume 14 Issue 14:4905-4918, 2019.

[58] "Turbomachine for engineering students", KATSON BOOKS, S.K. KATARIA & SONS, New Delhi, First Edition: 2019, India.

[59] "Renewable Energy Technologies for Engineering", Scholars' Press, 2019, International Book Market Service Ltd., member of OmniScriptum Publishing Group.

[60] "How to Use Engineering Equation Solver (EES) Refrigeration and Heat Transfer Applications", Ohio Publishing and Academic Services, 2019, USA.

[61] "Nanofluids and Computational Applications in Medicine and Biology", Book chapter of 'Applications of Nanobiotechnology', IntechOpen, 2019.

[62] "Turbulent Flow Simulations", Book chapter of 'Direct Numerical Simulations-An Introduction and Applications', IntechOpen, 2019.

[63] "One and Two-Way Interaction of Finned Tube Containing Nanofluid and Twisted Tape", Book chapter 'AERA', Advanced Engineering Research and Applications, 2019.

[64] "Numerical Investigation of Free Convection Heat Transfer from Two-Dimensional Rectangular Enclosure with Discrete Isothermal Heating from Bottom Side", International Journal of Heat and Technology, Vol. 37, No. 4, December 2019, pp. 1141-1150.

[65] "Study the Effect of Unstable Air Flow in the Suction and Discharge System on the Performance of Reciprocating Air Compressor", Journal of Advanced Research in Fluid Mechanics and Thermal Sciences 65, Issue 1 (2020) 54-71.

[66] "EXPERIMENTAL ANALYSIS OF PARABOLIC SOLAR DISH WITH RADIATOR HEAT EXCHANGER RECEIVER", Journal of Engineering Science and Technology, School of Engineering, Taylor's University, Vol. 15, No. 1 (2020) 473 - 454.

[67] "Experimental Investigation Of Thermal Performance And Climatological Parameters For Trough Parabolic Collector With Manual Tracking System", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 3, pp. 86-105, 2020.

[68] "Heat Transfer Enhancement by Using Twisted Tape in Horizontal and an Inclined Tube", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 3, pp. 106-124, 2020.

[69] "Heat and mass transfer investigation in a single slope passive solar still using chemical additives", 1st AL-Noor International Conference for Science and Technology (NICST), IEEE Xplore: 23 March 2020. Sulimanyiah - Kurdistan Region- IRAQ, pp. 20-25.

[70] "The Influence of Water Temperature Change on Static Pressure in a Centrifugal Pump", 1st AL-Noor International Conference for Science and Technology (NICST), IEEE Xplore: 23 March 2020. Sulimanyiah - Kurdistan Region- IRAQ, pp. 26-31.

[71] "Regulation of height position-multi-grid motor shelter on laser electrohydraulic system of automatic beam", 1st AL-Noor International Conference for Science and Technology (NICST), IEEE Xplore: 23 March 2020. Sulimanyiah - Kurdistan Region- IRAQ, pp. 42-47.

[72] "Numerical Analysis of Transient Compressible Flow over Backward-facing Step", 1st AL-Noor International Conference for Science and Technology (NICST), IEEE Xplore: 23 March 2020. Sulimanyiah - Kurdistan Region- IRAQ, pp. 48-53.

[73] "Experimental And Numerical Investigation Of Heat Transfer Enhancement By Using Different Geometry Coiled Tubes", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 4, pp. 92-104, 2020.

[74] "The Rooms Air Conditioning by Cooling the Conventional Water Tank Using Hot Summer Air and Solar Energy", International Journal of Heat and Technology, Vol. 38, No. 2, June, 2020, pp. 472-478.

[75] "A Visualization Low Speed Subsonic Wind Tunnel Design and Construction for Laboratory Application and Uses", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 17-28, 2020.

[76] "Study the effect of Nano fluid on Heat Transfer in Finned Pipe with Internal V-Cut Twisted Tape", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 161-177, 2020.

[77] "Effect of Nano-Fluid and Magnetic Field on the Heat Transfer", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 272-282, 2020.

[78] "Numerical Investigation for the Discharging Process in Cold-Water Storage Tank", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 295-306, 2020.

[79] "Enhancement the Performance of Compression Refrigeration Cycle by Cooling Condenser Air in Hot Climate", Journal of

Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 307-317, 2020.

[80] "Computational Investigation on Free and Forced Convection inside an Enclosure", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 318-331, 2020.

[81] "Three Dimensional Study of Baffles Effect on Heat Transfer in Shell and Tube Heat Exchanger", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 332-345, 2020.

[82] "Numerical Analysis of Nose shape on the Aerodynamic Characteristics of Rocket", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 346-354, 2020.

[83] "Thermal Performance Improvement of Double Pass Solar Air Heater", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 5, pp. 355-372, 2020.

[84] "Experimental and Numerical Studies of Two-Phase Flow in Ribbed Periodic Vertical Channel", Journal of Advanced Research in Fluid Mechanics and Thermal Sciences 68, Issue 1 (2020) 34-53.

[85] "Biofuel Addition to Kerosene-A Way to Reduce the Level of Contamination", Journal of Advanced Research in Fluid Mechanics and Thermal Sciences 68, Issue 2 (2020) 51-57.

[86] "Experimental investigation on the enhancement of heat transfer by using carbon nanotubes CNT taunit m series", IOP Conf. Series: Materials Science and Engineering 791 (2020) 012003. IV International Scientific and Technical Conference “Energy Systems”.

[87] "Thermophysical Properties of Nanomodified Liquids", Advanced Materials & Technologies. No. 1(17), 2020.01.pp.018-026.

[88] "Introduction to Engineering Thermodynamics", KATSON BOOKS, S.K. KATARIA & SONS, New Delhi, 2020, India.

[89] "Cooling of a Vertically Oriented Air-Ventilated Square Cavity", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 23-38, 2020.

[90] "Numerical Study of Lid Driven Mixed Convection in Inclined Wavy Cavity", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 184-196, 2020.

[91] "Natural Convection Heat Transfer in an Inclined Elliptic Enclosure with Circular Heat Source", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 207-222, 2020.

[92] "Porosity Influence on Natural Convection Heat Transfer from a Heated Cylinder in a Square Porous Enclosure", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 236-254, 2020.

[93] "Numerical Investigation of Heat Transfer in Enclosed Square Cavity", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 388-403, 2020.

[94] "Numerical Investigation of Nanofluid in a Rectangular Microchannel Heat Sink", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 404-417, 2020.

[95] "Natural Convection in Eccentric Annuli Packed with Spheres", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 418-439, 2020.

[96] "Three-Phase Flow over Rectangular and Semicircular Ribbed Vertical Channel", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 456-471, 2020.

[97] "Combined Free and Forced Convection inside an Enclosure", Journal of Mechanical Engineering Research and Developments, Vol. 43, No. 6, pp. 472-486, 2020.

[98] "Review on Mixed Convective Heat Transfer in Different Geometries of Cavity with Lid Driven", Journal of Mechanical Engineering Research and Developments, Vol. 43, Special Issue: Mechanics and Energy, pp. 12-25, 2020.

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2- "Heat Transfer Characteristics inside Box with Holes and Heat Sources Putted Horizontally and Vertically in Parallel" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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6- "Temperate Water Device - Heat Exchanger" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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11- "Hybrid Enhancement Method for Heating Houses Device by Hot Water with Using Nanofluids and Twisted Tapes Inside Finned Tubes" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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14- "A hybrid method to cool and enhance thermal PV panel and heating water by using heat pipes" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
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16- "Elevator works on air compressor - Iraq 2" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
17- "Solar power elevator - Iraq 3" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
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21- "Elevator works on liquids and weights - Iraq 7" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
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and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

23- "Improve Productivity of Double Slope Solar Distillation by Modification in Design" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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25- "Two - way hammer - Baghdad 2" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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27- "A safe device for training on acrobatic movements of motorcyclists" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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30- "Increase the Efficiency of Solar Distillation by Three Stages" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

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32- "Gear box keeps the refrigeration compressor running continuously - Technology 1" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

33- "Spring & Air Compression Shoe - Sport 1" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

34- "Torsional Spring Tensioning System for a Power Transmission Chain" / Patent (Hardware), United States, Patent Application Publication, US 2020/0318715 Al, Oct. 8, 2020.

35- "Study of a New Type of Solar Energy Receiver to Convert Water into Steam with High Efficiency" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

36- "Hybrid Solar Cooling System - Hasanen 1" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

37- "Hybrid Solar Cooling System Using Variable Speed Compressor – Hasanen 2" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

38- "Augmentation of pyramid solar distiller performance using reflectors, cooling cycle, and dangled cords of wicks" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.

39- "Elevator operating on water and gravity - Iraq 9" / Industrial Design, Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
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41- "Development of an electric elevator that adopts tanks and weights" / Patent (Hardware), Ministry of Planning - Central Organization for Standardization and Quality Control - Department of Technical and Administrative Services - Industrial Property Department - Division of Patents and Industrial Designs.
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Scientific Studies and Community Services

1. Modelling and dynamic simulation of a parabolic trough power plant.
2. Cooling water tanks on the roofs of Iraqi houses in the hot summer.
3. Reducing contamination of Iraqi bread (Samoun) produced in stone ovens in Iraq by using biofuels from restaurant waste oils.
4. An electric elevator developed to dispense with the main engine.
5. An economical elevator that works on a fluid pump without an electric motor.
6. Self-elevator that works on air compressor and solar energy.
7. Development of an electric elevator based on tanks and weights.
8. An elevator operating on fluids and pumps.
9. A scientific study to protect the electrical distribution transformers in Iraq.
10. Study of Parabolic Dish Solar Collector with Radiator Heat Exchanger Receiver.
11. Modulating a cooling system with the help of solar energy.
12. Hybrid solar cooling system using variable speed compressor.
13. Modification of the design of the dual tilt solar distillation.
14. Increasing the efficiency and productivity of a solar distillate by more than one development.
15. The simulation.
16. The electronic documentation.
17. The use of biofuels in the operation of vehicles and their impact on the environment.

Books of thanks and appreciation, decorations, shields and rewards

Many books of thanks, appreciation, decorations, shields and rewards in various scientific fields from various officials in the country over a period of 22 years, such as conferences, exhibitions, dozens of seminars, courses, workshops, multiple positions, discussions of postgraduate students, the service of universities and different ministries, and other various scientific activities.

Links to some personal websites

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