Abbas Jawad Sultan

عباس جواد سلطان عبود العقابي

Associate Professor

PROFILE

I am a senior researcher at the Missouri University of Science and Technology and a faculty member at the Department of Chemical Engineering, University of Technology- Iraq.

ACADEMIC TITLES

2023-02-13 **Associate Professor**

ADMINISTRATIVE POSITIONS

2020-06-01 - Present **Director of the Scientific Affairs Department**

PUBLICATIONS (98)

1. **Results in Engineering**
2. **Experimental cross-sectional mapping of heat transfer behavior in a fluidized bed column**
   Chemical Engineering Journal | 2026
3. **Numerical modeling of the hydrodynamic behavior of MgO-water nanofluid in plate-fin heat exchangers under varying operating conditions**
   Scientific Reports | 2026
4. **Green-synthesized silver nanoparticles from Tulsi leaf extract: synergistic antimicrobial activity against bacterial and fungal pathogens**
   Journal of Umm Al-Qura University for Applied Sciences, 1-11, 2026 | 2026 | Cited: 2
5. **Insights of quantitative imaging and instantaneous heat transfer coefficient measurement in spouted bed column**
   International Journal of Heat and Fluid Flow 117, 110152, 2026 | 2026
6. **Flow regime characterization in bubble column equipped with internals**
   AIP Conference Proceedings | 2025
7. **Experimental Study of Forced Convective Heat Transfer in a Copper Tube Using Three Types of Nanofluids**
   Fluid Dynamics and Materials Processing | 2025
8. **Zinc Removal from Wastewater by Emulsion Liquid Membrane Technique: Utilizing Response Surface Methodology to Improve Optimization and Analyze Data**
   Petroleum Chemistry | 2025
9. **Numerical investigation of the effect of external helical fins reinforced with rectangular fins on improving convective heat transfer in helical coils**
   International Journal of Thermofluids, 101345, 2025 | 2025 | Cited: 8
10. **Comparative Study on the Local Heat Transfer Coefficient in the Fluidized Bed Reactor with Longitudinal Fin and Plan Vertical Tubes**
    Russian Journal of Applied Chemistry | 2025
11. **Characterizing Heat Transfer Performance in a Slurry Bubble Column Reactor Equipped with a Real Heat Exchanger**
    Petroleum Chemistry | 2025

CONTACT

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abbas.j.sultan@uotechnology.edu.iq

EDUCATION

Doctorate (2018-05-12)
Multiphase reactors
Missouri University of Science and Technology

Master's Degree (2015-05-01)
Chemical Process Engineering
Missouri university of science and Technology

Master's Degree (2005-06-01)
Chemical Process Engineering
University of Technology- Iraq

Bachelor's Degree (2003-07-01)
Chemical Process Engineering
University of Technology- Iraq

RESEARCH METRICS

h-index (Scopus)	23
h-index (GS)	0
Citations (Scopus)	1411
Citations (GS)	0
Documents (Scopus)	78
Documents (GS)	0

12. **Central Composite Design Optimization of the Biological Decolorization of Cationic Dyes by Mix Algae Biomass in Bubble Column Reactor**
Petroleum Chemistry 65 (9), 1057-1075, 2025 | 2025

13. **Experimental Investigation of Heat Transfer Behavior in Spouted Bed Reactors under Different Operating Conditions**
Petroleum Chemistry 65 (5), 576-588, 2025 | 2025 | Cited: 1

14. **The usage of non-aligned multi-circular winding injectors for efficient fuel mixing inside the scramjet engine**
Energy | 2024

15. **Utilizing machine learning algorithms for prediction of the rheological behavior of ZnO (50%)-MWCNTs (50%)/ Ethylene glycol (20%)-water (80%) nano-refrigerant**
International Communications in Heat and Mass Transfer | 2024

16. **Thermal performance of forced convection of water- NEPCM nanofluid over a semi-cylinder heat source**
Case Studies in Thermal Engineering | 2024

17. **Numerical investigation of heat transfer improvement in a latent thermal energy storage system using a composite of phase change material and nanoparticles in a porous medium**
Thermal Science and Engineering Progress | 2024

18. **Numerical evaluation of the impact of using spiral innovative turbulator on improving the thermal performance of a helical double-pipe heat exchanger**
International Journal of Thermofluids | 2024

19. **Insights into water-lubricated transport of heavy and extra-heavy oils: Application of CFD, RSM, and metaheuristic optimized machine learning models**
Fuel | 2024

20. **Geometrical optimization of solar venetian blinds in residential buildings to improve the economic costs of the building and the visual comfort of the residents using the NSGA-II algorithm**
International Communications in Heat and Mass Transfer | 2024

21. **Forecasting sustainable water production in convex tubular solar stills using gradient boosting analysis**
Desalination and Water Treatment | 2024

22. **Flow Regimes in Bubble Columns with and without Internals: A Review**
Fluid Dynamics and Materials Processing | 2024

23. **The Impact of Nano Copper Oxide Coating on Glass Beads for Enhancing Heat Transfer in Gas-Solid Fluidized Beds**
Petroleum Chemistry | 2024

24. **Study the Convective Heat Transfer Intensification by Using Nanotechnology: A Review**
Russian Journal of Applied Chemistry | 2024

25. **Influence of Heat Exchanging Tubes on Local Heat Transfer Coefficient in Fluidized Bed Reactor**
Petroleum Chemistry | 2024

26. **Impact of Industrial Heat Exchanger on Flow Regime Identification in Bubble and Slurry Bubble Columns for Fischer Tropsch Application**
Petroleum Chemistry | 2024

27. **An Experimental Assessment of Using Different Sizes of Immersed Heating Surfaces on Heat Transfer Coefficient in Gas-Solid Fluidized Bed Reactor**
Petroleum Chemistry | 2024

28. **Effect of FIPs strategy and nanoparticles additives into the renewable fuel blends on NOX emissions, PM size distribution and soot oxidation in CRDI diesel engine**
Results in Engineering, 101748, 2024 | 2024 | Cited: 41

29. **Nano-Iron Oxide Coating for Enhanced Heat Transfer in Gas–Solid Fluidized Bed Systems**
ChemEngineering 8 (1), 9, 2024 | 2024

30. **Incorporating of TiO2 with oxygenated fuel and post-injection strategy in CRDI diesel engine equipped with EGR: A step towards lower NOX, PM and enhance soot oxidation reactivity**
Case Studies in Thermal Engineering 53, 103894, 2024 | 2024 | Cited: 53

31. **The computational study of silicon doping and atomic defect influences on the CNT's nano-pumping process: Molecular dynamics approach**
International Communications in Heat and Mass Transfer 152, 107302, 2024 | 2024

32. **Investigation of the effect of model structure type on the thermal performance of phase change materials through molecular dynamics simulation**
Case Studies in Thermal Engineering 56, 104226, 2024 | 2024

33. **Using shock generator for the fuel mixing of the extruded single 4-lobe nozzle at supersonic combustion chamber**
Scientific Reports 14 (1), 6405, 2024 | 2024

34. **Combining artificial intelligence and computational fluid dynamics for optimal design of laterally perforated finned heat sinks**
Results in Engineering 21, 102002, 2024 | 2024

35. **Thermal performance of forced convection of water-NEPCM nanofluid over a semi-cylinder heat source for energy storage applications**
Case Studies in Thermal Engineering, 104149, 2024 | 2024

36. **Nano-Iron Oxide Coating for Enhanced Heat Transfer in Gas–Solid Fluidized Bed Systems. ChemEngineering 2024, 8, 9**
2024

37. **Recent progress in performance improvement strategies for quantum dot sensitization methods: Challenges, achievements, and future prospects**
APL Materials 11 (9), 2023 | 2023 | Cited: 9

38. **2D numerical simulation for hydrodynamic parameters on cylindrical split reactor**
AIP Conference Proceedings 2787 (1), 2023 | 2023

39. **A Comprehensive Review Of The Influence Of Heat Exchange Tubes On Hydrodynamic, Heat, And Mass Transfer In Bubble And Slurry Bubble Columns**
Tech Science Press 19 (10), 2613, 2023 | 2023

40. **Cooling a cavity equipped with a hot electrical element using nano-encapsulated phase change material/water: Study of mixed convection and natural convection**
Case Studies in Thermal Engineering 50, 103412, 2023 | 2023 | Cited: 2

41. **Advancements in Liquid Desiccant Technologies: A Comprehensive Review of Materials, Systems, and Applications**
Sustainability 15 (18), 14021, 2023 | 2023 | Cited: 1

42. **Towards a promising systematic approach to the synthesis of CZTS solar cells**
Scientific Reports 13 (1), 15418, 2023 | 2023 | Cited: 22

43. **Enhancing Heat Transfer Performance in Simulated Fischer–Tropsch Fluidized Bed Reactor through Tubes Ends Modifications**
ChemEngineering 7 (5), 85, 2023 | 2023 | Cited: 2

44. **A Detailed Hydrodynamic Study of the Split-Plate Airlift Reactor by Using Non-Invasive Gamma-Ray Techniques**
ChemEngineering 6 (1), 18, 2022 | 2022 | Cited: 6

45. **Study of Gas Holdup Distribution in Cylindrical Split Airlift Reactor by Using Gamma-Ray Densitometry (GRD)**
Processes 10 (5), 910, 2022 | 2022 | Cited: 4

46. **An in-depth analysis of nucleation and growth mechanism of CdS thin film synthesized by chemical bath deposition (CBD) technique**
Scientific Reports 12 (1), 15295, 2022 | 2022 | Cited: 9

47. **Study of the Impact of Tube Configurations on the Local Heat Transfer Coefficient in Mimicked Fischer-Tropsch Bubble Column Reactor**
Processes 10 (5), 976, 2022 | 2022 | Cited: 3

48. **Experimental investigation on the impact of tube bundle designs on heat transfer coefficient in gas-solid fluidized bed reactor for Fischer-Tropsch synthesis**
International Communications in Heat and Mass Transfer 136, 106169, 2022 | 2022 | Cited: 8

49. **Experimental Investigation and Computational Fluid Dynamic Simulation of Hydrodynamics of Liquid–Solid Fluidized Beds**
ChemEngineering 6 (3), 37, 2022 | 2022 | Cited: 4

50. **Experimental Investigation on Heat Transfer in A Gas-Solid Fluidized Bed with A Bundle of Heat Exchanging Tubes**
Engineering and Technology Journal 40 (9), 1-12, 2022 | 2022 | Cited: 4

51. **Effect of a Triangular Configuration of Heat Exchanging Tubes on Local Heat Transfer Coefficient in Bubble Column Reactor**
Iraqi Journal of Oil and Gas Research (IJOGR) 2 (2), 13-26, 2022 | 2022

52. **Mechanism of Chemical Bath Deposition of CdS Thin Films: Influence of Sulphur Precursor Concentration on Microstructural and Optoelectronic Characterizations**
Coatings 12 (10), 1400, 2022 | 2022 | Cited: 22

53. **New systematic study approach of green synthesis CdS thin film via Salvia dye**
Scientific Reports 12 (1), 12521, 2022 | 2022 | Cited: 32

54. **Integration of dynamic growth modeling and hydrodynamics in an internal-loop split photobioreactor**
Journal of Chemical Technology & Biotechnology | 2022 | Cited: 4

55. **Experimental Investigation of the Impact of Tubes Arrangement on Local Heat Transfer Coefficient in Fluidized Bed Reactor for Fischer-Tropsch Synthesis**
2021 AIChE Annual Meeting, 2021 | 2021

56. **Aldol condensation reaction of acetone on MgO nanoparticles surface: An in-situ drift investigation**
Molecular Catalysis 501, 111333, 2021 | 2021 | Cited: 37

57. **Split internal-loop photobioreactor for Scenedesmus sp. microalgae: Culturing and hydrodynamics**
Chinese Journal of Chemical Engineering 33, 236-248, 2021 | 2021 | Cited: 13

58. **Experimental investigation and COMSOL modeling for different geometrical configurations of extended surfaces**
Heat Transfer 50 (2), 1612-1630, 2021 | 2021 | Cited: 3

59. **Adsorption of methyl green stain from aqueous solutions using non-conventional adsorbent media: Isothermal kinetic and thermodynamic studies**
Bioresource Technology Reports 14, 100680, 2021 | 2021 | Cited: 80

60. **Advanced Non-Invasive Radioactive Particle Tracking (RPT) and Dual-Sources Gamma Ray Computed Tomography (CT) Techniques for 3D Hydrodynamics Measurement for Multiphase Flow ...**
2019 Spring Meeting and 15th Global Congress on Process Safety, 2019 | 2019

61. **Influence of heat-exchanging tubes diameter on the gas holdup and bubble dynamics in a bubble column**
Fuel 236, 1191-1203, 2019 | 2019 | Cited: 20

62. **Impact of heat exchanging internals configurations on the gas holdup and bubble properties in a bubble column**
International Journal of Multiphase Flow 112, 63-82, 2019 | 2019 | Cited: 19

63. **Investigating the cross-sectional gas holdup distribution in a split internal-loop photobioreactor during microalgae culturing using a sophisticated computed tomography (CT ...**
Chemical Engineering Research and Design 149, 13-33, 2019 | 2019 | Cited: 14

64. **Advanced Non-Invasive on-Line Gamma-Ray Densitometry (GRD) for Hydrodynamics Measurements**
2019 Spring Meeting and 15th Global Congress on Process Safety, 2019 | 2019

65. **Investigating the cross-sectional gas holdup distribution in a split internal-loop photobioreactor during microalgae culturing using a sophisticated computed tomography (CT) technique**
Chemical Engineering Research and Design | 2019

66. **OVERCOMING THE GAMMA-RAY COMPUTED TOMOGRAPHY DATA PROCESSING PITFALLS FOR BUBBLE COLUMN EQUIPPED WITH VERTICAL INTERNAL TUBES (vol 96, pg 2206, 2018)**
The Canadian Journal of Chemical Engineering | 2019

67. **Mapping of microalgae culturing via radioactive particle tracking**
Chemical Engineering Science 192, 739-758, 2018 | 2018 | Cited: 23

68. **Overcoming the Gamma-Ray Computed Tomography Data Processing Pitfalls for Bubble Column Equipped with Vertical Internal Tubes**
The Canadian Journal of Chemical Engineering, 2018 | 2018 | Cited: 27

69. **Impact of heat-exchanging tube configurations on the gas holdup distribution in bubble columns using gamma-ray computed tomography**
International Journal of Multiphase Flow 106, 202-219, 2018 | 2018 | Cited: 31

70. **Influence of the size of heat exchanging internals on the gas holdup distribution in a bubble column using gamma-ray computed tomography**
Chemical Engineering Science 186, 1-25, 2018 | 2018 | Cited: 33

71. **Non-Invasive Imaging of Distribution of Coarse Aggregate in Hardened States Concrete Using Advanced Gamma Ray Computed Tomography**
2018 AIChE Annual Meeting, 2018 | 2018

72. **Local Hydrodynamics Characteristics of Cylindrical Split AirliftReactor via Radioactive Particle Tracking (RPT) Technique**
2018 AIChE Annual Meeting, 2018 | 2018

73. **Influence of Heat Exchanging Dense Internals on the Flow Dynamics Parameters in Bubble Column with and without Internals via Radioactive Particle Tracking (RPT) Technique**
2018 AIChE Annual Meeting, 2018 | 2018

74. **Investigating the influence of the configuration of the bundle of heat exchanging tubes and column size on the gas holdup distributions in bubble columns via gamma-ray computed tomography**
Experimental Thermal and Fluid Science | 2018

75. **Hydrodynamics study of the bubble columns with intense vertical heat-exchanging tubes using gamma-ray computed tomography and radioactive particle tracking techniques**
Missouri University of Science and Technology, 2018 | 2018 | Cited: 8

76. **Investigating the influence of the configuration of the bundle of heat exchanging tubes and column size on the gas holdup distributions in bubble columns via gamma-ray computed ...**
Experimental Thermal and Fluid Science 98, 68-85, 2018 | 2018 | Cited: 26

77. **Assessment of RPT Calibration Need during Microalgae Culturing and other Biochemical Processes**
IEEE, 2017 | 2017 | Cited: 14

78. **Study the effect of dense internals on the liquid velocity field and turbulent parameters in bubble column for Fischer–Tropsch (FT) synthesis by using Radioactive Particle ...**
Chemical Engineering Science 161, 228-248, 2017 | 2017 | Cited: 50

79. **Radioactive Particle Tracking (RPT) Technique for Pilot-Scale Bubble Column**
2017 AIChE Annual Meeting, 2017 | 2017

80. **Local Flow Dynamics in Split Airlift Reactor (Experimental and Validation of CFD Simulations)**
2017 AIChE Annual Meeting, 2017 | 2017

81. **Experimental and CFD Simulation Study of Bubble Column Equipped with a Bundle of Heat Exchanging Tubes (Internals) for Fischer-Tropsch (FT) Synthesis**
2017 AIChE Annual Meeting, 2017 | 2017

82. **Gamma-ray Computed Tomography (CT) Technique for Pilot-Scale Bubble Column Reactor**
2017 AIChE Annual Meeting, 2017 | 2017

83. **Study the effect of dense internals on the liquid velocity field and turbulent parameters in bubble column for Fischer-Tropsch (FT) synthesis by using Radioactive Particle Tracking (RPT) technique**
Chemical Engineering Science | 2017

84. **Investigating the effect of heat exchange tubes size on phase distribution of bubble columns for Fischer Tropsch synthesis by using gamma ray computed tomography (CT) technique**
24th International Symposium on Chemical Reaction Engineering (ISCRE 24) | 2016

85. **Investigating the Influence of Bundle of Heat Exchanger Tubes (internals) on the Gas Holdup Distributions in Pilot Scale Bubble Column with Internals for Fischer- Tropsch Synthesis (FT) Via Gamma-Ray Computed Tomography (CT) Technique**
8th World Congress on Industrial Process Tomography | 2016

86. **Gas Holdup Distribution in Bubble Column with Heat Exchange Tubes (Internals) for Gas-to-Liquid (GTL) Technology as Alternative Energy**
2016 Midwest Energy Policy Conference and Laufer Energy Symposium | 2016

87. **Microalgae's Cells Mapping by Radioactive Particle Tracking (RPT)**
2016 AIChE Annual Meeting | 2016

88. **Impacts of dense heat exchanging internals on gas holdup cross-sectional distributions and profiles of bubble column using gamma ray Computed Tomography (CT) for FT synthesis**
Chemical Engineering Journal 300, 317-333, 2016 | 2016 | Cited: 69

89. **Study the Effect of Dense Internals on the Liquid Velocity Field and Turbulent Parameters in Bubble Column for Fischer–Tropsch (FT) Synthesis by Using Radioactive Particle Tracking (RPT) Technique**
Chemical Engineering Science | 2016

90. **Visualization Phases Distributions in the Pilot-Scale Bubble Column with Internals via γ-Ray Computed Tomography (CT) Technique**
2016 AIChE Annual Meeting | 2016

91. **Imaging and Visualization of phase distribution for Microalgae culturing in split photo bioreactor column via Gamma Ray Computed Tomography (CT)**
8th World Congress on Industrial Process Tomography | 2016

92. **Study the Effect of Dense Internals on the Liquid Velocity Field and Turbulent Parameters of Bubble Column Using Radioactive Particle Tracking Technique (RPT)**
8th World Congress on Industrial Process Tomography | 2016

93. **Investigating the Impact of Vertical Internals on the Gas Holdup Distribution in Pilot Scale Bubble Column for Fischer-Tropsch Synthesis via Gamma-Ray Computed Tomography (CT) Technique**
International-Mexican Congress on Chemical Reaction Engineering, (IMCCRE) | 2016

94. **CFD Simulation for Bubble Column with and without Internals of Fischer Tropsch (FT) Synthesis**
2016 AIChE Annual Meeting | 2016

95. **Impact of Internals Height from the Gas Distributor on Hydrodynamics in a Bubble Column Reactor**
12th International Conference on Gas-Liquid & Gas-Liquid-Solid Reactor Engineering (GLS12) | 2015

96. **Prediction of Heat Transfer Coefficient of Pool Boiling Using Back propagation Neural Network**
Eng.&Tech. Journal 30 (8), 1293-1305, 2012 | 2012 | Cited: 2

97. **Heat Transfer of Single and Binary Systems in Pool Boiling**
Al-Khwarizmi Engineering Journal | 2010

98. **Heat Transfer of Single and Binary Systems in Pool Boiling**
University of Technology, Baghdad, Iraq, 2006 | 2006 | Cited: 6