

Dr. Abdulrazak J. OTARU

Associate Professor

Personal Data:

Nationality | Nigerian
Date of Hire | 20th August 2023
Date Rank Obtained | 10th February 2025
Department | Chemical Engineering
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Education:

Academic Degree	Major	specialty	Place of Issue	Address	Date
Doctorate (PhD)	Chemical Engineering	Modelling and Simulation	The University of Nottingham, Nottingham, United Kingdom	University Park Campus, NG7 2RD	12 th December 2018
Masters (M.Sc.)	Chemical Engineering	Chemical Engineering	Federal University of Technology, Minna, Nigeria	Gidan-Kwano Campus, Minna, Nigeria	30 th January 2013
Bachelor (B.Sc.)	Chemical Engineering	Chemical Engineering	Abubakar Tafawa Balewa University, Bauchi, Nigeria	Yelwa Campus, Bauchi, Nigeria	7 th May 2009

PhD, Master or Fellowship Research Title: (Academic Honors or Distinctions):

Post-Ph.D.	- Best Research Article (MAMI-D-19-00676R1) Award by Metal and Materials International (Q1-cited Journal), Issue 4, 2021. Sixth (6) Position – Committee of Deans of Engineering and Technology of Nigerian Universities (CODET) Publication Competition, 2023. Title of Article: Three-Dimensional High-Resolution Image Inversion and Pore Level CFD Characterization of the Effective Thermal Conductivity of Replicated Microcellular Structures. Authors: A.J. Otaru, M. Abdulkadir, A.S. Kovo, M.R. Corfield, N. Tanko, O.A. Odey, A. Kenfack & U.O. Aroke
PhD	- The 2014 University of Nottingham Dean of Engineering Research Scholarship for International Excellence. - The 2014 Petroleum Technology Development Fund (PTDF) Nigeria.
Master	The 2012 Zeno Karl Schindler Foundation Master Thesis Grant/Award, Viganello, Switzerland
Bachelor	- Certificate of Dean's List, 2008 - Best Student in Transport Phenomena I and Chemical Engineering Thermodynamics I, 2006.

Experiences:

Title of Job	Address of Work	Country	Date	
Academic Role	Federal University of Technology Minna, Nigeria, P.M.B. 065, Gidan-Kwano Campus, Minna, Nigeria.	Nigeria	From	19th Jan., 2012
			To	19 th Aug., 2023
Computational Fluid Dynamics (CFD) Demonstrator/Instructor.	The University of Nottingham, University Park Campus, Nottingham, NG7 2RD, United Kingdom,	United Kingdom	From	9 th Nov., 2014
			To	16 th Aug., 2016
Academic Role	King Faisal University, P.O. 380, Al Ahsa, Saudi Arabia	Saudi Arabia	From	20 th Aug. 2023
			To	Till date

Research Interests: Modelling and Simulation

1. Machine Learning and AI Applications
2. Thermal Analysis
3. Advanced Imaging and Multiscale Modelling
4. Experimental and Computational Fluid Dynamics (CFD)
5. Porous Media Transport and Acoustics

Publications: Twenty (20) selected published articles (2nd September 2025).

#	Name of author(s)	Title of Publication	Publisher and Date of Publication	Link of Publication
1	Albin Zaid, Z.A.A. & Otaru, A.J.	Experimental Measurements, Convolutional Deep Neural Networks, and Thermo-kinetic analyses of the Thermal Decomposition of Phoenix dactylifera L./Polylactic Acid Composites	Industrial Crops and Products, Elsevier (2025) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.indcrop.2025.121489
2	Otaru, A.J.	Circular Economy: Kinetic-Triple, Thermodynamic, and Gradient Descent Optimisation Algorithm of Deep Learning Models for the Thermal Degradation of Walnut Shell.	Case Studies in Thermal Engineering, Elsevier (2025). Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.csite.2025.106942
3	Albin Zaid, Z.A.A. & Otaru, A.J.	Analysis of the Thermal Degradation of Recycled Saudi Coffee and PLA Biopolymer Blends: Experimentation, Kinetics, Thermodynamics and Convolutional DNN.	Case Studies in Thermal Engineering, Elsevier Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.csite.2025.106799
4	Otaru, A.J. & Albin Zaid, Z.A.A.	On the Thermal Degradation of Palm Frond and PLA 3251D Biopolymer: TGA/FTIR Experimentation, Thermo-Kinetics, and Machine Learning CDNN Analysis.	Fuel, Elsevier (2025) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.fuel.2025.134724

5	Kovo, A.S., Holmes, S.M., Rios, C.A., Otaru, A.J. , Abdulkareem, A.S. & Eluwa, C.E.	Synthesis of Zeolites from Different Kaolin Deposits Worldwide.	Applied Clay Science, Elsevier (2025). Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.clay.2025.107757
6	Otaru, A.J. & Albin Zaid, Z.A.A.	Thermal Degradation of Palm Fronds/Polypropylene Biocomposites: Thermo-Kinetics and Convolutional Deep Neural Networks Techniques	Polymers, MDPI (2025) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.3390/polym17091244
7	Otaru, A.J.	Kinetics Study of the Thermal Decomposition of Date Seed Powder/HDPE Plastic Blends	Bioresource technology Reports Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.biteb.2025.102028
8	Alhulaybi, Z.A. & Otaru, A.J.	Machine Learning Backpropagation Analysis of Enhanced Biodegradable Phoenix Dactylifera L./HDPE Composite Thermograms.	Polymers, MDPI (2024) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.3390/polym16111515
9	Otaru, A.J. & Auta, M.	Machine Learning Backpropagation Network Analysis of Permeability, Forchheimer Coefficient and Effective Thermal Conductivity of Macroporous Foam-Fluid Systems.	International Journal of Thermal Science, Elsevier Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.ijthermalsci.2024.109039
10	Otaru, A.J.	Research of the Numerical Simulation and Machine Learning Backpropagation Networks Analysis of the Sound Absorption Properties of Cellular Soundproofing Materials.	Results in Engineering, Elsevier (2023) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.rineneng.2023.101588
11	Otaru, A.J. , Alhulaybi, Z.A. & Owoseni, T.A.	On the Hydrodynamics of Macroporous Structures: Experimental, CFD and Artificial Neural Network Analysis,	Chemical Engineering Journal Advances, Elsevier (2023) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.cejadv.2023.100545
12	A.J. Otaru, M. Abdulkadir, A.S. Kovo, M.R. Corfield, N. Tanko, O.A. Odey, A. Kenfack & U.O. Aroke	Three-Dimensional High-Resolution Image Inversion and Pore level CFD Characterization of Effective Thermal Conductivity of Replicated Microcellular Structures	International Journal of Thermofluids, Elsevier, (2022) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.ijft.2022.100141
13	A.J. Otaru, O.E. Odumu, Z. Manko, A.G. Isah, R.O. Isa & M.R. Corfield	The Impact of Microcellular Structures on the Sound Absorption Spectra for Automotive Exhaust Performance Mufflers	Applied Acoustics, Elsevier, (2021) Q1 – Journal	https://doi.org/10.1016/j.apacoust.2021.108508
14	Abdulrazak J. Otaru	The Permeability of Replicated Microcellular Structures in the Darcy Regime	American Institute of Chemical Engineers AIChE J, Wiley Blackwell (2020) Q1 - Journal (Clarivate & Scopus)	https://doi.org/10.1002/aic.16915

15	A.J. Otaru	Enhancing the Sound Absorption Performance of Porous Metals using Tomography Images.	Applied Acoustics, Elsevier (2019) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.apacoust.2018.09.007
16	A.J. Otaru & A.R. Kennedy	Investigation of the Pressure Drop across Packed Beds of Spherical Beads: Comparison of empirical models with pore-level computational fluid dynamics simulations	Journal of Fluids Engineering – Transactions of the ASME (2019) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1115/1.4042957
17	A.J. Otaru, H.P. Morvan & A.R. Kennedy	Numerical Modelling of the Sound Absorption Spectra for Bottleneck Dominated Porous Metallic Structures.	Applied Acoustics, Elsevier (2019) Q1 Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.apacoust.2019.03.014
18	Otaru, A.J., Morvan, H.P. & Kennedy, A.R.	Modelling and Optimisation of Sound Absorption in Replicated Microcellular Metals	Scripta Materialia, Elsevier (2018) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.scriptamat.2018.03.022
19	A.J. Otaru, H.P. Morvan & A.R. Kennedy	Measurement and Simulation of Pressure Drop across Porous Aluminium in the Darcy-Forchheimer Regime.	Acta Materialia, Elsevier (2018) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.actamat.2018.02.051
20	A.J. Otaru & A.R. Kennedy	The Permeability of Virtual Macroporous Structures Generated by Sphere-Packing Models: Comparison with analytical models	Scripta Materialia, Elsevier (2016) Q1 – Journal (Clarivate & Scopus)	https://doi.org/10.1016/j.scriptamat.2016.06.037 https://doi.org/10.1016/j.actamat.2018.02.051

Language Proficiency:

1. English (Fluent)
2. Ebra (Fluent)
3. Arabic (Learning)