



Volume 5(1) 2023

[www.nipesjournals.org.ng](http://www.nipesjournals.org.ng)

eISSN-2682-5821

pISSN-2734-2352



**Nigerian Institution of Professional  
Engineers and Scientists (NIPES)**

# Journal of Science and Technology Research



February, 2023

eISSN-2682-5821

pISSN-2734-2352



# NIPES

Journal of

# Science and Technology Research

---

**Volume 5(1) 2023**

*The Nigerian Institution of Professional Engineers and Scientists*

© 2023 NIPES Publications. All rights reserved

## The Nigerian Institution of Professional Engineers and Scientists (NIPES)

The Nigerian Institution of Professional Engineers and Scientists (NIPES) is a research community consisting of field experts in engineering and science. It was founded by a group of researchers in the University of Benin, Nigeria. NIPES is a member organization of Crossref (USA) and the National Chapter of the International Association of Professional Engineers and Scientists which is registered in accordance with the provision of the Allied Matters Act, Cap. C20, Laws of the Federation of Nigeria through the Commission. NIPES stands to promote and facilitate the exchange of research information among engineers and scientists and provide opportunities for interaction among members in the field including those in academia, research institutions, government agencies and industry.

### Our Mission

To promote engineering-science interaction and maintain very high standard research publications through critical review of manuscripts and ensure its entrenchment to reputable ethical code of practice

### Our Vision

To be the leading gateway for disseminating high quality and innovative research in engineering and science across Africa

### Journal Scope

The Journal of Science and Technology Research focuses on novel aspects of engineering, physical science and life science, especially in areas of modeling, optimization and experimentation.

### Editorial Board Members

#### Chief Editor

Prof. F.F.O Orumwense

University of Benin

#### Associate Editors

Dr. K. I. Falade

Kano University of Science and Technology, Kano

Prof. S. Enibe

University of Nigeria, Nsukka

Dr. E. F. Uchenna

Nnamdi Azikiwe University, Awka, Anambra

Prof. B. Mohammed

Federal University of Technology, Minna

Prof. M.O Ibrahim

University of Ilorin, Kwara

Dr. P.E Amiolemhen

University of Benin

Prof. B. S Lawal

University of Ibadan

Dr. Rufai A. Abu

Abubakar Tafawa Balewa University, Bauchi

Dr. O. Ogbeide

University of Benin

Prof. K.O. Obahiagbon

University of Benin

Dr. A. Erameh

Igbinedion University, Okada

### Executive Council Members

Dr. Collins Chike Kwasi-Effah University of Benin- Chairman /Managing Editor

Dr. Osarobo O. Ighodaro- University of Benin - Chief Executive Officer

Prof. Albert I. Obanor- University of Benin -President (Research)

Prof. Godfrey O. Ariavie- University of Benin -Executive Vice President (Research)

Dr. Godwin E. Sadjere- University of Benin -President (Operations)

Dr. Uche P. Onochie-Alex Ekweme University Ebonyi -Technical Associate (Research)

Engr. Osamudiamen Efofa University of Benin Executive Secretary

### Correspondence:

C/o Department of Mechanical Engineering, University of Benin, Benin City, Nigeria

Email: [nipesjournals@gmail.com](mailto:nipesjournals@gmail.com) Website: [www.nipesjournals.org.ng](http://www.nipesjournals.org.ng) Phone No: +2349057781486

**The National Secretariat of NIPES**, 22 Mashun Crescent, Cadastral Zone 4, Gwagwalada, Abuja

**Editorial Office:** Rm 137 Department of Mechanical Engineering, Faculty of Engineering, University of Benin, PMB 1154 Ugbowo, Edo

**Table of Contents**

<b>Title</b>	<b>Author</b>	<b>Page</b>
Studies on Phase Overlapping Analysis of Jatropha Oil Biodiesel Ternary Components at Different Temperatures	Kenneth Kennedy Adama and Lucy Uju Modebe	1-8
An Automatic Face-Recognition Platform for Monitoring University Students'and Lecturers' Class Attendance	Ugwuja, Nnenna Esther and Omankwu, Obinnaya Chinecherem Beloved	9-15
Optimization of Thermodynamic Properties of Liquid Au-Ni Alloys	Y.A. Odusote & P.O. Ogunmonewo	16-32
Analysis of Upstream Surface Water Quality Fluctuations of Vietnamese Mekong Delta Using Statistical Methods	Nguyen Thanh Giao	33-43
Evaluating Coastal Surface Water Quality in Ben Tre Province, Vietnam	Nguyen Thanh Giao	44-52
Application of Iterative Machine Learning in Predicting Fake Documents in Job Applications	Aru, Okereke Eze, Adimora, Kyrian Chinemeze, and Umunnakwe ,Franklin Ugochukwu	53-64
Joint Geophysical Investigation of Uteh Gully Erosion and Landslides Using Electrical Resistivity Tomography and Multichannel Analysis of Surface Waves	Egbo, D.O. and Airen, O.J.	65-83
Application of Transformation of Variables in Remediating Heteroscedasticity in Nigeria GDP, Conditioning and Some Fiscal Variables	Aideyan Donald Osaro	84-91
Influence of Cement Content and Compaction Pressure on the Mechanical Properties of Sandcrete Blocks	Okonkwo V. O, Ubani O. U, Anagbaoso A. K	92-100
Mitigating Faults Effects on Equipment and Personnel on Substations	Oputa, O, Ezeonye, C.S Obi, P.I & Onwuka, I. K.	101-111
Performance Analysis of Induction Motor with Variable Air-Gaps using Finite Element Method	Onwuka, I. K, Obi, P.I, Oputa, O and Ezeonye, C.S.	112-124

Water Production Potentials of Present Enugu Water Supply Facilities	Okoye, E.C., Adinna, B.O, Okonkwo, V.O	
Machine Learning Algorithms for Predicting High-Risk of Prostate Cancer Using Prostate-Specific Antigen (PSA), Age and Body Mass Index (BMI)	Omankwu, Obinnaya Chinecherem, Osodeke, Efe Charlse, and Kanu, Chigbundu	133-149
Preparation and Characterization of Starch Microparticle for Drug Release Systems	I.G. Okunzuwa & B. Yaou	150-157
Phytoconstituents, Acute Toxicity and In-Vivo Anti-anxiety Activity of Chloroform and Ethylacetate Extracts of <i>Datura Stramonium</i> in Balb/C Mice	Osaro Iyekowa, Osamuyi H. Uwumarongie, Kingsley C. Emmanuel, Patrick I. Omoagbotse, Sarah O. Okhionsa, Chinecherem L. Izuegbunam, Mac-Henry A. Oligie, Lucky O. Eduwuirofo, Rukevwe M. Iyekekpolo, Vivian C. Okafor , Oghomwen T. Michael, and Ruth O. Oghomwen	158-170
High-Performance Liquid Chromatography (HPLC) Profile and Anxiolytic Activity of Hexane Extract of <i>Datura Metel</i> Leaves Extract in Balb/c Mice	Osaro Iyekowa Osamuyi H. Uwumarongie & Iyobosa G. Okunzuwa	171-178
Towards Automation of Building Integrity Tracking: Review of Building Collapse in Nigeria	J.U. Okoye, S.T. Apeh, E. Olaye & S.O. Osuji	179-194
Strength Comparative Analysis of Mechanical and Cement Stabilized Laterite Soil Used as Sub-Base in Pavement Construction	Kayode-Ojo, N & Ashinze, E. O.	195-201
Influence of Neem Seed Husk Ash (NSHA) on the Strength of Laterized Concrete	U.A. Aliyu, O.A.U. Uche, A. Mohammed, M.T. Abdulwahab	202-212
Quality Assessment and Safety of Poultry Feed Sold Within Delta State Metropolis	Opara, C. N and Anyiam, I. V.	213-217

Preliminary Investigation of African Oil Bean Husk as a Feasible Fluid-Loss Control Agent in Drilling Muds	Ifeanyi E.O., Ikpeseni S.C., Ogbue M.C., Ekpu M., Edomwonyi-Otu L.C.	218-229
Modelling Nigeria Crude Oil Prices using ARIMA Time Series Models	Mujtaba Suleiman , Isah Muhammad , Adamu Zakar Adamu , Yahaya Zakari , Rufai Iliyasu , Ali Muhammad , Ibrahim Adamu and Mannir Abdu	230-241
Enhanced Ratio-Type Estimator for Finite Population Mean using Auxiliary Variable in Simple Random Sampling	Isah Muhammad, Yahaya Zakari , Mannir Abdu, Rufai Iliyasu, Mujtaba Suleiman, Samaila Manzo, Ali Muhammad & Adamu Zakar Adamu	242-252
Effluent Quality Assessment and Treatment Efficiency of the Wastewater Treatment Plant of a Carbonated Drink Industrial Facility Located in Benin City, Nigeria	Akharam, M. O. & Ogbebor, J. U.	253-259
Application of SQC for Equipment Selection in an Agro-Based Industry	Kesiena Ezewu, Monday Esiri Amagre, Emmanuel C. Enujeke	260-271
Numerical Investigation of the Fluid Mixture Velocity on Critical Sand Settling Velocity in Multiphase Fluid Flow in Horizontal Pipes	Blessing Otamere, Kelani Bello	272-282
Emulation Technique in Digital Systems Design	Ifeyinwa Obiora-Dimson, Hyacinth Inyama, John Adejumo	283-287
Development of a Software for Some Applications of Superposition Principle in Well Testing	E.D. Akpobi, A.P. Obuzor, C.O. Ogbebor, A. A. Azuokwu	288-297
Investigation of Single-Phase, Single Voltage Source Multilevel Inverter with Voltage Boosting Gain Based on Different Sinusoidal Pulse Width Modulation Approach	G. C. Diyoke, O. Oputa, I. K. Onwuka, P. I. Obi	298-313
Determination of the Evapotranspiration Parameters of Benin City Based on the Penman-Monteith Equation from 1979 to 2013	Ogbeifun, P.N, Izinyon O.C. and Agbonaye A.I	314-335