



Volume 3(4) 2021

www.nipesjournals.org.ng

eISSN-2682-5821

pISSN-2734-2352



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

Journal of Science and Technology Research



<https://doi.org/10.37933/nipes>

November, 2021

eISSN-2682-5821

pISSN-2734-2352



NIPES

Journal of

Science and Technology Research

Volume 3(4) 2021

The Nigerian Institution of Professional Engineers and Scientists

© 2021 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 Website: 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

Title	Author	Page
Theoretical Study of a Model for Dengue and its Co- Endemicity with Chikungunya Virus	R.U. Akhaze and O.O. Olowu	1-15
Assessing Surface Water Quality in In-Field Water Bodies in Ben Tre Province, Vietnam	Nguyen Thanh Giao	16-27
Uncertainty and Reliability Analysis in Gully Slope Stability Prediction: A Case Study of Iguosa Gully, Benin City	Obanor J. O., Ehiorobo J. O., Ogirigbo O. R. and Nwankwo E.	8-37
Assessment of Coastal Surface Water Quality in Southern Vietnam	Nguyen Thanh Giao	38-48
Investigation of the Thermal Effect in Nano Silicon on Insulator (SOI) MOSFET	S.M.Gana, G.S.M.Galadanci ,T. H. Darma, A. Tijjani	49-57
Effect of X-Ray Irradiation on the Growth and Yield Parameters of Four Cowpea (<i>Vigna Unguiculata</i> (L.) Walp) Genotypes	Andrew, Osivmete Victor., Egbucha, Kelechukwu Chris., Omosun, Garuba., Akanwa, Franklin Eberechi and Akpanudo, Samuel Innocent	58-68
Modified Milne's Method for Solving IVP Using Matlab	Subhi Abdalazim Aljily Osman, Abdel Radi Abdel Rahman Abdel Gadir Abdel Rahman, Arafat Abdelhameed Abdelrahman and Ragaa Mohammed Haj Ibrahim	69-77
A Taguchi- Single Response Approach to Optimize Bead Geometry in TIG Mild Steel Weld	Ashama O.O. and Achebo J.I.	78-85
Analysis of Management Participation and Economic Influence for a Re-Contextualization of Osha Portable Concept in the Industrial Sector in Nigeria Using Analytic Hierarchy Process	Cordelia Ochuole Omoyi, Adeleke T.B.	86-96
Analysis and Computer Simulation of Handoff Decision in 4G Networks	Udo, E. U, Oleh, U. Q., Odo, G. O.	97-108
Impact of Kerosene, Diesel and Gasoline Treatments on the Morphology, Growth Indices and Plant Based Component of an Aquatic Macrophyte <i>Eichhornia Crassipes</i>	Eguagie, M.O. & Unah J. A	109-118

Optimization of the Production Capacity of a Manufacturing Company as Linear Programming Model	Amosun, S.T and Muhammed, M.A	119-124
Design and Implementation of Home Automation System Based on Raspberry Pi	I. Makama , S.M. Gana	125-134
Empirical Study of UDPuploss in IEEE802.11b/G WLAN System	Ayidu, Nneka Joy and Iruansi, Usiholo	135-140
A Comparative Study of Machine Learning Models for Solar Power Generation Forecasting Using Weather Parameters: A Case of Benin City	A. Obayuwana, Godwin O. Monica	141-152
Microcontroller-Based Generic Remote Process Monitoring System Using Fully Expanded State Transition Table	Chiagunye, T. T, Okey, D. O, Ilo, S. F, Obidiwe T. A	153-162
Modelling of a Deep Learning Based SMS Spam Detection Application	Osa E. , Elaigwu. V.O	163-173
Design of Solar Electricity (PV) System to Power UBTH, Accident & Emergency Operating Theatre	Odiase F.O. & Aikhoje P.T.	174-180
Achieving the Appropriate Measures of Trade Facilitation Using Intellectual Property Rights in Engineering and Trade Facilitation, for a Sustainable Global Trade	Kingsley- Omoyibo, Queeneth Adesuwa	181-193
Public-Private Partnership (PPP), A Veritable Tool for a Sustainable Energy Mix in Subnational and Municipal Public Infrastructure Projects	Kingsley- Omoyibo, Queeneth Adesuwa	194-203
Design and Analysis of a Ladder Chassis Frame for use in the Construction of a Lightweight Utility Vehicle	Eghosa O. Igbinosa, A. O. Akii Ibadode, Raphael S. Ebhojiaye and Daniel Okwoka	204-212
Comparative Study of Melon (Colocynths Ecirrhosus) Depodding Techniques for Effective Post-Harvest Processing	Ikpe Aniekan Essienubong, Eghosa Omo-Oghogho, Osasumwen Godswill Ogiemudia	213-226
Application of Chan Plot in Water Control Diagnostics for Field Optimization: Water/Gas Coning and Cusping	Mekunye Francis & Paul Osaze Ogbeide	227-232
Performance of Multiple Linear Regression and Artificial Neural Network in Predicting Risk Index	Ekiugbo A., Amiolemhen P. and Ariavie. G.O	233-244

Design, Modelling, Simulation, Fabrication and Performance Evaluation of a Portable Foot Operated Dispenser	Onochie U.P., Obilikpa S.C. Onwurah C., Kwasi-Effah C.C., Itabor N.A., Damisah L. E, Akingba O. O.	245-258
Mathematical Models of Seasonal Dynamics of Bedload Sediments in Eco-Geomorphologic Units of the Tropical Rivers, Southeastern Nigeria	Ikpong Sunday Umo; Angela Iweka Enwereuzor; Mary N. Ezemonye	259-270
Climate Variability and the Issues in Flood Disaster Risk Awareness in Nigerian Communities	Ikpong Sunday Umo; Patience E. N. Okoroafor; Ifeanyi Gerry Ukwe	271-282
Impact of Kerosene, Diesel and Gasoline Treatments on the Morphology, Growth Indices and Plant Based Component of an Aquatic Macrophyte Eichhornia Crassipes	Eguagie, M.O and Unah J. A	283-292
Usability Evaluation of the Polytechnic Portal/Website with Different End-User Groups	Alawode A. John and Buoye A. Peter.	293-296
Design and Simulation of an Optimized Link State Routing Mobile Network	Ogodo O.E	297-313
Optimization of the Weld Bead Volume of Tungsten Inert Gas Mild Steel Using Response Surface Methodology	E.C. Etin-Osa and O.O. Ogbeide	314-321
The Place of Innovation and Indigenous Technology in National Economic Transformation	I. T. Okafor, V.O. Ughwumiakpor, I. E. Okonkwo	322-332
Effect of Bacterial Bio-Calcination on the Strength and Durability of Cement Mortar	Aruwan, F. S.; Kaura, J. M. & Ocholi, A	333-341
Formulation, Evaluation, and Comparison of Herbal Shampoo with Marketed Synthetic Shampoos	Newton A. Ihoeghian, Esther Akwara	342-348
Development of a UFAA-19 Series Hybrid Electric Vehicle	C.C. Kwasi-Effah, U.E. Igbeka, B.C. Ataman, A.I. Emenime, F. Max-Eguakun	349-366
Solid – State Current Limiting Star – Delta Starter for A 3-Phase Squirrel Cage Induction Motor	T.A. Aika and F.O. Odiase	367-375