

Nigerian Journal of Technology

VOLUME 34, NUMBER 4, OCTOBER 2015.

... publishing original technical and scholarly reports since 1975

www.nijotech.com

nijo.tech@unn.edu.ng



Editor's Note

NIJOTECH IS 40!

The very first issue of Nigerian Journal of Technology was published in 1975. That issue had only seven articles but the then Editor, Engr. Prof. Mike A. Nwachukwu of blessed memory made it clear that “... *it is better to get off to a quick start from a narrow base and later spread out than to try, ab-initio, to involve a much larger group and run the risk of being bogged down by inevitable communicational and management problems*”. The managing body of NIJOTECH then was called “Nsukka Technological Group” and they the journal off the ground in 1975.

The second volume came in 1978 i.e. three years later with only five articles. It was not difficult to know why such a delay occurred despite the high initial starting torque, but apparently there weren't substantial submissions to warrant a publication. Issues continued to appear until 1991.

Between 1992 and 1994, there were no publications at all. This period was also characterized by a mass exodus of academics from Nigeria to other countries on account of low wages, national strikes, local strikes and several retarding dynamics in the governance of this country. It was within this period that most people lost interest in academics. That was the time an ordinary foodstuff retailer would open a register of debtors (academic staff of universities) who buy cups of rice and beans

on credit. If contributors could exist in this form, NIJOTECH could not have been exempted.

In 1995, NIJOTECH published again. Still it was one issue per year; in fact the print issues of 1995 to 1997 were in a single bound volume. Yes three issues in one publication, to save cost and again to show that articles were actually very few in number. The reappearance of the journal within this period was not due to any marginal improvement in the academic staff remunerations but due to the doggedness of our Engineering Faculty.

The years 1998 and 1999 did not witness any publication and no reason was advanced, but the slim nature previous issues attest to the same fact that submissions were still very low.

In 2000, the journal continued its annual appearance with more articles per issue. It was in 2005 that two issues were published for the first time in one year. This was sustained until 2010 when three issues were published and was again sustained till 2013. It was in 2012 that the website www.nijotech.com was launched and before the end of 2013, all back issues were uploaded on the website. Owing to this, the visibility of NIJOTECH increased beyond the imagination of all. In 2014, we were forced to publish four issues in a year due to the large number of submissions coming in. The geographical spread of the source of papers has also increased tremendously and it is now clear that NIJOTECH is already an international journal with no other like it in Sub-Saharan Africa.

Our indexing has been steadily growing. We now have over 500 visits on the website daily and some papers have been downloaded more than 2000 times as at 9:30pm on September 30, 2015. We can only accept 43% of what we receive based on review reports. Now originality of articles matters more to us that ever before

It is not difficult to predict the future of NIJOTECH and even though the Nsukka Technological Group is no longer here, her original philosophy permits us to celebrate our 40TH anniversary, ... and we are much more stronger than when we started.

Engr. Prof. E. S. Obe, Editor & Journal Manager

TABLE OF CONTENTS

SECTION A: BUILDING, CIVIL & GEOTECHNICAL ENGINEERING

Textural Dependence of Shear Strength and Consolidation of Colliery Wastes for Use as Construction Materials	E. O. Eze	664
Rice Husk as Filler in the Production of Bricks Using Gboko Clay	J. O. Akinyele, O. T. Olateju and O. K. Oikelome	672
Effect of Partial Replacement of Sand with Quarry Dust on the Structural Characteristics of Sandcrete Blocks.	C. U. Anya and N. N. Osadebe	679
Numerical and Experimental Modeling of the Static Response of Simply Supported Thin-Walled Box Girder Bridges	G. C. Ezeokpube, B. Singh and N. N. Osadebe	685
Partial Replacement of Cement with Bagasse Ash in Hot Mix Asphalt	A. A. Murana and L. Sani	699

SECTION B: CHEMICAL, INDUSTRIAL, MATERIALS, MECHANICAL, METALLURGICAL, PETROLEUM & PRODUCTION ENGINEERING

Effect of Pre-Ageing Thermal Conditions on the Corrosion Properties of Antimony-Modified Al-Si-Mg Alloy	G. O. Adeboye, M. Abdulwahab, F. Asuke, S. A. Yaro	705
Strength and Ductility of Forged 1200 Aluminum Alloy Reinforced with Steel Particles	S. O. Adeosun, A. Oyetunji and E. I. Akpan	710
Optimisation of Solid State Fermentation of Banana Peels for Citric Acid Production	N. A. Amenaghawon, O. Oiwoh and O. E. Ebeuwele	716
Optimising the Effect of Stimulants on Citric Acid Production From Cocoyam Starch using Aspergillus Niger	N. A. Amenaghawon, O. U. Osazuwa, O. E. Ebeuwele	724
Effects of Mixed Alkaline Earth Oxides in Potash Silicate Glass	F. I. Ashiedu and E. E. Akpan.	731
Hydprocessing Microalgae Derived Hydrothermal Liquefaction Bio-Crode for Middle Distillate Fuels Production – A Review	B. Bello-Zakari	737
Tensile and Hardness Property Evaluation of Kaolin- Sisal Fibre-Epoxy Composite	I. M. Dagwa, K. K Adama, A. Gadu and N. O. Alu	750
Design, Construction and Performance Comparison of Two Solar Stills having Different Absorber Design	A. A. Ibrahim, M. Dauda, G. Y. Pam and D. O. Obada	761
A Mathematical Model for Predicting Output in an Oilfield in the Niger Delta Area of Nigeria	M. H. Oladeinde, A. O. Ohwo and C. A. Oladeinde	768

SECTION C: COMPUTER, TELECOMMUNICATIONS, SOFTWARE, ELECTRICAL & ELECTRONICS ENGINEERING

Determination of Total Harmonic Distortion (THD) on a 33kV Distribution Network: A Case Study of Island Business District	L. M. Adesina and O. A. Fakolujo	773
A Digital Lego-Based Learning Environment for Fraction Ordering	O. C. Agbonifo and A. O. Ogunmoroti	781
System Hardening Architecture for Safer Access to Critical Business Data	A. E. Ibor and J. N. Obidinnu	788
Effects of Unified Power Flow Controller (UPFC) on Distance Relay Tripping Characteristics in the North-Central Nigerian 330kV Network	Latifa Yusuf and M. N. Nwohu	793

Quantification of Rain Induced Artifacts on Digital Satellite Television Reception	O. O. Obiyemi, T. S. Ibiyemi, T. H. Ogunbeku, A. Y. Abdulrahman and M. K. Abdulmajeed	802
Radio Frequency EMF Exposure Due to GSM Mobile Phones Base Stations: Measurements and Analysis in Nigerian Environment	O. D. Ojuh and J. Isabona	809
Fuzzy Control Technique Applied to Modified Mathematical Model for Malaria Control	P. E. Orukpe and A. O. Muhammed	815
Using Energy Efficient Temperature Sensor for Automatic Control of the Heating and Cooling System in the Home	P. Oshevire, D. Okene and E. Okhuelegbe	822
Integrated Identity and Access Management System for Tertiary Institutions in Developing Countries	B. U. Stephen, G. A. Chukwudebe and C. P. Ezenkwu	830
Determination of Optimal Tilt Angle for Maximum Solar Insolation for PV Systems in Enugu-Southern Nigeria	Y. N. Udoakah and N. I. Okpura	838
Multichannel Distribution Meter: A Veritable Solution in Power Distribution and Theft Prevention in Congested Environments	O. Uzedhe and G. Ofualagba	844
The use of Artificial Neural Networks in the Theoretical Investigation of Faults in Transmission Lines	T. C. Madueme and P. G. Wokoro	851

SECTION D: AGRICULTURAL, BIORESOURCES, BIOMEDICAL, FOOD, ENVIRONMENTAL & WATER RESOURCES ENGINEERING

Comparative Performance of Saccharum Officinarum (Sugar Cane) Bagasse and Parkia Biglobosa (Locust Bean) in Wastewater Treatment	A. Adamu and M. S. Ahmadu	861
Evaluation of Municipal Solid Waste Management System and Willingness-to-Pay for its Improvements in Ilorin, Kwara State, Nigeria	A. M. Ayanshola, A. S. Aremu, S. O. Jacob, S. O. Bilewu and A. W. Salami	868
Hydrogeochemical and Biophysical Characterization of Groundwater in Eastern Nigeria: A Case Study of Onitsha and Environs	M. I. Isikhueme and O. M. Omorogieva	875
Chemical Adjustment of Effluent from Cassava Processing Plant Prior to Safe Disposal	I. M. Jideofor	883
Modeling of Evaporation Losses in Sewage Sludge Drying Bed	J. I. Obianyoy, J. C. Agunwamba A. Sobowale, A.M. Omotayo, J. O. Olobashola, P. Abdulsalaam-saghir, K. Elemo, B. Badu-apraku, M. Oladapo and L. Omonayajo	890
Low Cost Constant – Head Drip Irrigation Emitter Ffor Climate Change Adaptation In Nigeria: Engineering Design and Calibration	A. O. Sojobi, S. I. Dahunsi and A.O. Afolayan	907

LATEST INDEXING BODIES

**CrossRef®, African Journal Online (AJOL) ®
Directory of Open Access Journals (DOAJ) ®
Scholar Google®, EBSCO Host®, ProQuest®**