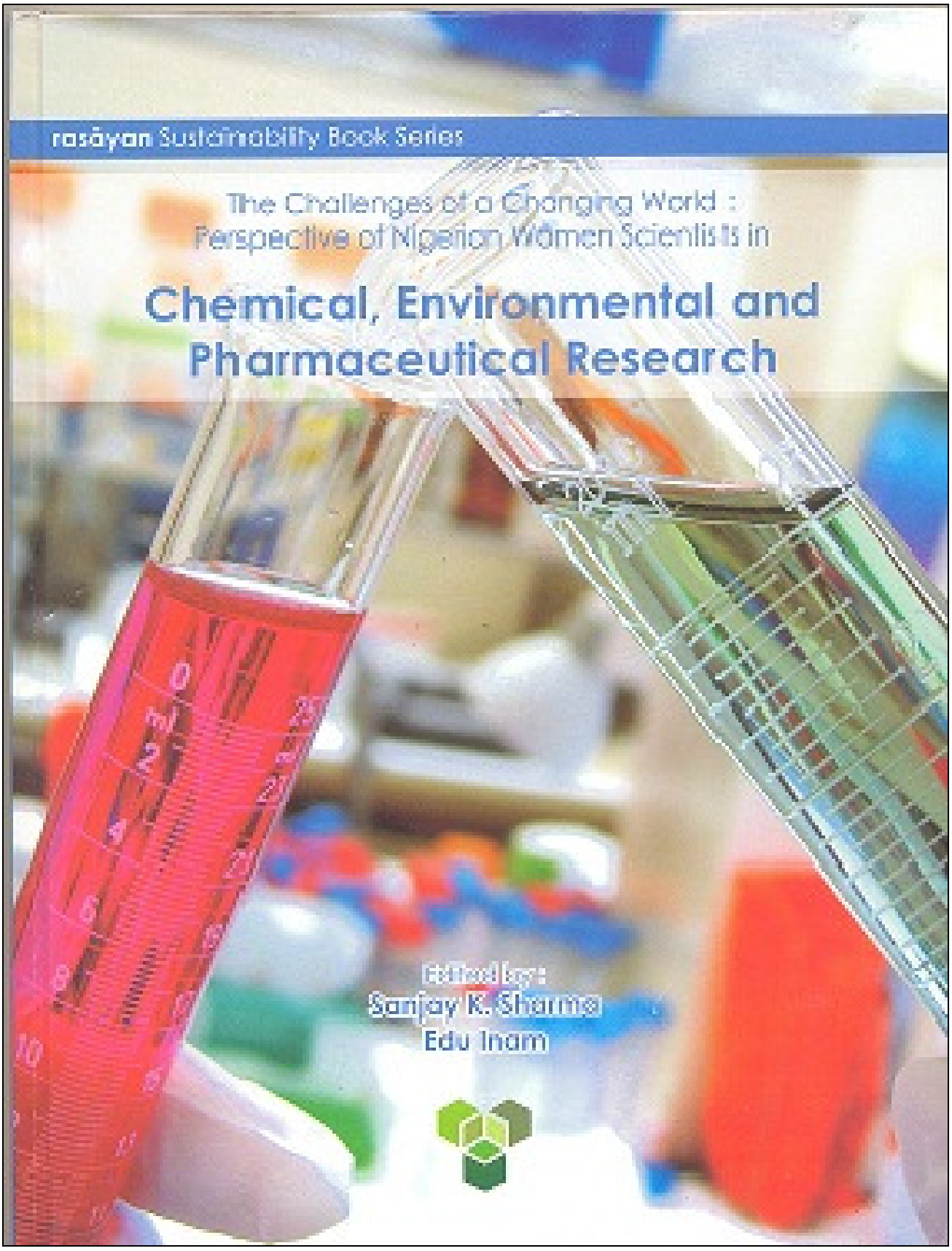
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The Challenges of a Changing World :
Perspective of Nigerian Women Scientists in
Chemical, Environmental and
Pharmaceutical Research
Edited by :
Sanjay K. Sharma
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The Challenges of a Changing World: Perspective of Nigerian Women Scientists in **Chemical, Environmental and Pharmaceutical Research**

Sanjay K. Sharma and Edu Inam

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Editorial Board

With due regard to Women Power…..which has power to change the world.

-Sanjay K. Sharma and Edu Inam

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Forward

The Organization for Women in Science for the Developing World (OWSDW) formally the Third World Organization for Women in Science (TWOWS) African Region has broad objectives adopted from OWSDW International, which play a vital role in increasing womens's access to science and technology, promoting greater participation of women scientists and technologist in the developmental process of their respective countries in the region.

OWSDW uniquely unites female scientists not only within the African Region but also from the rest of the developing world with a global link primed towards enhancing collaboration in order to promote and achieve her objectives. Being one of the very many organizations that are focusing on the female scientists with a view to strengthening their roles in research and development, OWSDW supports all initiatives such as the collaboration between **University of Uyo, Nigeria** and **International Journal of Chemical, Environmental and Pharmaceutical Research (IJCEPR)** in India to produce a special edition (the book entitled- **"The Challenges of a Changing World: Perspective of Nigerian Women Scientists in Chemical, Environmental and Pharmaceutical Research"**).

It is a delight to note that such a bilateral collaboration of this nature can be achieved. I know that it will help boost and enhance capacity building amongst the female scientists by not only creating a platform for them to disseminate their research findings but also enhance networking and collaboration. This platform is also in tandem with one of the initiatives of OWSDW African region that is, the TWOWS African International Journal of Science and Technology (TAIJST) a biannual multi – disciplinary Journal providing coverage in all areas of Science, Technology, Science Education and Gender. The multi- disciplinary menu ensures that all areas of science and technology are covered and no one is left out.

OWSDW held her Fourth general Assembly and International conference in Beijing, China in June 2010 with the theme "Women Scientist in a Changing World". Over 600 female scientists mainly from the developing world and from 55 countries participated in this forum primarily showcasing their original research findings and interacting at many plenary and special scientific sessions. Generally, more than 1/3rd of participants were from the African region while the University of Uyo chapter of OWSDW was well represented and participated fully in all the sessions. This collaboration is therefore very much welcomed. This special edition of the International Journal of Chemical, Environmental and Pharmaceutical Research, IJCEPR (the book entitled **-"The Challenges of a Changing World: Perspective of Nigerian Women Scientists in Chemical, Environmental and Pharmaceutical Research"**), is born out of the inspiration of the Beijing 2010's theme.

It is not surprising therefore that the University of Uyo chapter who since her inauguration in 1996, has continuously displayed great enthusiasm for OWSDW philosophy and activities has promptly taken up the bold step to showcase her research findings through this Collaboration with IJCEPR. This is very timely. She has also extended this platform to those (both males and females alike) who could not attend the conference thereby stimulating them to report and share their research findings and breaking new grounds, thus enforcing the concept of mentorship as advocated very strongly by OWSDW Africa in particular and OWSDW in general. I believe that she will also in her stride and with this same token enhance the TWOWS Africa International Journal Of Science and Technology (TAIJST) the mouth piece of OWSDW for research and development in the region.

The need for the extra efforts made to enhance the status of females in Science and Technology is born out of the challenge posed by gender stereotyping in areas of Science and Technology where the average female faces some degree of discrimination and stereotyping both during her training or at work and almost throughout her life as a woman, mother and wife.

The female scientist therefore needs to acquire the necessary scientific and leadership skills and knowledge which will empower her to balance her professional and domestic life appropriately to effectively contribute towards national growth and development through her research.

I am therefore very proud to note their consistency in this direction and happy to write the forward to this special edition of IJCEPR which is a memorial to the 4th world Assembly of OWSDW for the University of Uyo Nigeria.

Best Complements to all contributors and the Editorial team of IJCEPR, India.

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The University of Uyo, Uyo (Akwa Ibom), Nigeria: A Brief Introduction

The **Univesity of Uyo, Uyo(Akwa Ibom), Nigeria** was established October 1, 1991 by the Federal Government of Nigeria. The University of Uyo inherited students, staff, academic programmes and the entire facilities of the erstwhile University of Cross River State established by Cross River State in 1983. Academic activities commenced during the 1991/92 Academic Session. The University is a leading institution of higher learning in Nigeria. Located in the heart of Uyo, capital of Akwa Ibom State, Nigeria's second largest oil producing state. Uyo is easily accessible by road and air via two international airports within a 150 km radius. The university currently operates from two temporary campus, the Main campus which accommodates the Central Administration, Faculties of Arts, Education, Social Sciences, Natural and Applied Sciences, Pharmacy and the Post Graduate and Annex campus, home for the Faculties of Agriculture, Business Administration, Law, Engineering, Environment Studies and General Studies. The permanent site of the university along Nwaniba Road Uyo is about 4.5km from the city center. The university has 14 faculties and over 50 departments.

Vision

As a centre for academic excellence, the **Univesity of Uyo, Uyo(Akwa Ibom), Nigeria** shall strive towards sustainable human and technological development through the utilization of the vast resources available within its environs in teaching, research, Community Service and problem solving ventures without prejudice to maintaining a friendly environment.

Mission

The **Univesity of Uyo, Uyo(Akwa Ibom), Nigeria** shall be a centre of excellence in teaching, learning and research through the development, deployment and retention of sound scholarship. The rich cultural heritage of Nigeria shall be promoted. The economic growth of the country shall be sustained through active development in science and technology with sensitivity and response to global environmental changes.

For having more details, please log on: http://www.uniuyo.edu.ng/index.html

Preface

The positive contribution of women to national development is remarkable despite the glaring gender inequalities that beset them in many spheres. This compendium is a testimony of hard work by Nigerian female scientists in an ever challenging work environment. The Organization of Women in Science for the Developing World (OWSDW) aims among other things, to encourage women in the academia to continuously seek and play leading roles in proffering scientific solutions for societal problems. The 4th world assembly of OWSDW held from June 27 to 30, 2010 in Beijing, China served in helping women in science to showcase their scientific research contributions to global problems. Most of the papers published in this special volume of the **International Journal of Chemical, Environmental and Pharmaceutical Research** were presented by the members of the University of Uyo (Nigeria) branch of OWSDW at the 4th world assembly. These papers which are veritably eclectic in their assortment, cover the fields of Chemistry, Biology, Environmental Science, Pharmacy, Medicine, Information Science and Science Education. Individually and collectively, they constitute aspects of the intellectual contributions and scientific research input to solving some of intractable societal problems and are indicative of women's concern for local issues.

We warmly appreciate the kind support of the following people: Prof. (Mrs.) Comfort Ekpo (the Vice Chancellor, University of Uyo), Prof. Akaneren Essien (the immediate past Vice Chancellor, University of Uyo), Prof. J. N. Obinaju (the immediate past Deputy Vice Chancellor-academic), Mr. Friday Johnny (the University Liaison Officer at Abuja), Dr. (Mrs.) Eno Ituen (the former Branch Vice President, now National President of OWSDW), Dr. (Mrs.) Elizabeth Ekwere O. Akpan (the pioneer University of Uyo Librarian and immediate past Branch President), Prof. Fola Lasisi and Prof Akpan Ekpo (both former Vice Chancellors, University of Uyo). We thankfully acknowledge the generosity of the Chinese Academy of Science and the Government of China as well as the international body of the OWSDW, the Third World Academic of Science (TWAS) and also the support of the African regional group and our in-country members for their personal sacrifices.

We thank the Editorial and Production team of **ijCEPr** for their magnanimity in publishing the submissions in this special edition and the many anonymous referees who worked on the papers. We give thanks and glorify God for making this maiden publication project possible.

We welcome the feedback and constructive criticism from all our readers.

Happy Reading!

-Sanjay K. Sharma | *Editor, ijCEPr*
Edu Inam | President, *OWSDW-UUB*

Editor

Prof. (Dr.) Sanjay K. Sharma is a very well known author and Editor of many books, research journals and hundreds of articles from last twenty years. His recently published books are 'Handbook on Applications of Ultrasound: Sonochemistry and Sustainability' ,'Green Chemistry for Environmental Sustainability'(both from CRC Taylor & Francis Group, LLC, Florida, Boca Raton, USA) and 'Handbook of Applied Biopolymer Technology: Synthesis, Degradation and Applications'(From Royal Society of Chemistry, UK).

He has also been appointed as Series Editor by Springer's London for their prestigious book Series 'Green Chemistry for Sustainability'. His work in the field of Green Corrosion Inhibitors is very well recognized and praised by international research community. Other than this he is known as a person who is dedicated to educate people about environmental awareness, especially for Rain Water Harvesting.

Presently he is working as Professor of Chemistry at Jaipur Engineering College & Research Centre, JECRC Foundation, Jaipur (Rajasthan) India. Where he is teaching Engineering Chemistry and Environmental Engineering Courses to B. Tech. Students and pursuing his research interests. Dr. Sharma has delivered many guest lectures on different topics of applied chemistry in various reputed institutions. His students appreciate his teaching skills and hold him in high esteem.

He is a member of American Chemical Society (USA), International Society for Environmental Information Sciences (ISEIS, Canada) and Green Chemistry Network (Royal Society of Chemists, UK) and is also life member of various international professional societies including International Society of Analytical Scientists, Indian Council of Chemists, International Congress of Chemistry and Environment, Indian Chemical Society, etc.

Dr. Sharma has 12 Books of Chemistry from National-International Publishers and over 48 research papers of National and International repute to his credit, which is an evident of his track record as a researcher.

Dr. Sharma is also serving as Editor-in-Chief for four international research journals 'RASAYAN Journal of Chemistry', 'International Journal of Chemical, Environmental and Pharmaceutical Research' , 'International Journal of Water Treatment & Green Chemistry' and 'Water: Research & Development'. He is also a reviewer for many other international journals including the prestigious Green Chemistry Letters & Reviews.

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Dr. (Mrs.) Edu Inam received her PhD in Chemistry from Loughborough University, United Kingdom in 2005 under the supervision of Prof. Peter Warwick. She has participated in various professional training in the United Kingdom and United Nations University Japan. She recently completed three years postdoctoral studies at the International Environmental Research Centre, Gwangju Institute of Science and Technology, Korea.

Dr. Inam has published in several international journals, is a Schlumberger Faculty for the Future fellow and her research interest includes non-metal complexation with humic and fulvic acids, environmental monitoring and risk assessment, climate change and pollution impact on water quantity and quality, and the remediation of contaminated soils. Edu currently lectures at the University of Uyo, Nigeria.

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Editorial Assistance*:*

Dr. Elizabeth Ekwere Otu Akpan, Dr. Imaobong Udousoro, Dr. Magaret Bassey, Prof. Lawrence Etim and Prof. Ini Uko (All from University of Uyo, Nigeria).

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1

The Interaction of Phosphorus with Humic Acid

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ABSTRACT
The interaction of phosphorus with humic acid (HA) has been studied in a system consisting of HA with P (V). Batch experiments were performed at varying pH (3-12), and concentration of phosphorus (0-100 mg dm^{-3}). The extent of the interaction was greater in the pH range 8-9, and showed strong pH dependency due to aqueous speciation of phosphorus. The logarithmic conditional association constant for the reaction was found to be 2.00 ± 0.03 indicating the formation of weak complexes with humic acid. The interaction is postulated to involve bridging metals and deprotonated functional groups within HA.
Key words: Phosphorus, Humic acid, Speciation, Adsorption, Conditional Association Constants.

2

Analysis of Chemistry Resources Available in Three Universities in South-South Nigeria

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ABSTRACT
The study assessed the availability of chemistry resources collections in three universities in South South Nigeria. The area of study consisted of Akwa Ibom, Cross River and Rivers States. The population comprised all users of chemistry resources collections registered in 2008-2009 academic session in the study universities. Multi-stage sampling technique was used to select 1015 respondents. Research questions and hypotheses directed the study. The instrument used was the questionnaire, and the study design was a survey. Data was analysed using physical counting, chi-square and Product Moment Correlation. The findings showed that University of Calabar had the highest available volumes of chemistry information resources followed by University of Port Harcourt and lastly the University of Uyo.

However, in the level of satisfaction, the post hoc test revealed University of Uyo as ranking first, followed by University of Port Harcourt, while University of Calabar ranked last. It was recommended that University of Calabar should undergo some weeding exercise to ensure that users have up-to-date information sources. University of Uyo should build a larger and more spacious library to enable placement of projects, theses and dissertation along with its other chemistry resources. Formation of library advisory committee for advice on library matters was also recommended.
Keywords: Academic libraries in West Africa; User utilization; Library collection availability; Chemistry resources collections in libraries.

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Copper Impacting Potential of Boiling Ring during Water Heating

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ABSTRACT

Two sets of water samples were used for this study namely: Deionized water samples boiled with different sizes of boiling ring and deionized water samples boiled with the same boiling ring but at different time durations. Deionized water obtained from the same source but not boiled was used as the Control. These samples and Control were analyzed for their copper levels using atomic absorption spectrophotometer. Results obtained revealed that, boiling ring can contribute a substantial amount of copper to the boiled samples and the quantity of copper deposited in water was directly proportional to the duration of boiling. The recorded copper levels in water samples were observed to be inversely proportional to the thickness of the boiling ring. These results have justified the aim of the study which was to ascertain the impact of boiling ring on the copper level of the boiled water. Results recorded have been critically evaluated and discussed with respect to their health implications.
Key words: Boiling ring, Water, Copper, pollution and Nigeria.

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Analysis of the Quality of Borehole Water in Akwa Ibom State of Nigeria

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ABSTRACT

This work covered twelve Local Government Areas of Akwa Ibom State namely: Eket, Ibeno, Ibesikpo, Ika, Ikono, Ikot Abasi, Ini, Mbo, Nsit Ubium, Onna, Udung Uko, Uruefong Uruko, from which samples of borehole water were taken for the study as part of the ongoing project on water quality of borehole water in the State. The quantities investigated, for this phase of the work, were temperature, pH value and electrical conductivity. The objective of the work was to assess the level of these parameters and compare with the standard for the drinking water. A total of 180 samples were used for this study so that average values of the quantities were used for the analysis. Temperature was found to be 23.3-28.9 (26.80±0.03; n=180)^{0}C, electrical conductivity 3-254(57.8±1.39; n=180) µS/cm and pH 4.1-6.41(5.46±0.19; n=180). The pH was generally low; below 6.5 which may be as a result of the characteristic high temperatures in all the Local government Areas which reduces pH according to literature. Most of the electrical conductivity values are below the WHO-EU's limit of 250µS/cm .This study also investigated the relationships between these parameters compared with theoretical models. The measured values compared favourably with that of the theoretical plots given by $pH(X) = pH(S) + (E_S - E_X) F/ RTln10$; for pH versus temperature and $\sigma_T = \sigma_{T'}\{1 + \alpha(T-T')\}$; electrical conductivity versus temperature. These results fit into this existing model obtained for water quality prediction.
Keywords: Borehole water, pH value, electrical conductivity, temperature, water quality.

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Assessment of the Effect of Water Soluble Fractions of Toluene and Hexane by Two Microalgae

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ABSTRACT

The assessment of the effects of water soluble hydrocarbons of crude oil by two microalgae namely *Scenedesmus quadricauda* and *Oscillatoria borneii* were carried out in the laboratory. The microalgae were grown in a batch culture in the presence of various concentrations (0%, 25%, 50%, 75% and 100%) of the water soluble fractions of Toluene and Hexane. Their growth pattern was assessed in a 14 days experiment. Algal growth was measured using HACH DR 2000 spectrophotometer at absorbance of 745nm. Growth stimulation was recorded by both microalgae in control, 25% and 50% concentrations of the water soluble fractions of both hydrocarbons while 75% and 100% concentrations of the WSFs of both hydrocarbons inhibited growth. Percentage inhibition of WSF of the aromatic hydrocarbon (Toluene) was more than that of the aliphatic (hexane). Comparatively, the Cyanobacteria was more inhibited than the chlorophyte by the WSF of both hydrocarbons.
Key words : Assessment, WSF (water soluble fractions), OD (Optical density), Microalgae.

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Distribution and Bioconcentration of Toxic Heavy Metals in Improved Varieties of Rice grown in Irrigated Soils in Nsit Ubium, Akwa Ibom State, Nigeria

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ABSTRACT
Four improved varieties of rice (ITA, CISADANE, WITA 4 and MARS) cultivated in an irrigated field environment in Nsit Ubium, Nigeria were studied for natural interactions between soils and rice plants. The soils were found to be polluted with toxic heavy metals (Pb, Fe, Zn and Ni) with regard to standard limits. A significant concentration of Pb was transferred from soil to CISADANE, WITA 4 and ITA plants, and Fe from soil to WITA 4 plant. The roots of all rice varieties concentrated a significant amount of the toxic heavy metals compared to the stems, leaves and grains. All roots of rice varieties and stems of MARS plants had the capacity to bioconcentrate Zn, Fe, and Ni while ITA stems and MARS leaves accumulated Ni and Fe respectively. The concentrations and bioconcentration factors of toxic heavy metals in rice plant parts followed the pattern: root > stems > leaves > grains. The grains of rice plants did not bioconcentrate toxic heavy metals but the absorbed amounts of Pb (in ITA, CISADANE and WITA 4) and Zn in all varieties were much higher than levels for food safety.
Key words: Toxic heavy metals, soil, improved rice varieties, distribution, bioconcentration factor, Nsit Ubium (Akwa Ibom, Nigeria).

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Environmental Safety Policy Initiatives and Weed Management Practices among Nigerian Rural Women Farmers

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ABSTRACT
The aim of the study was to determine environmental safety policy initiatives for sustainable weed management practices among Nigerian rural women farmers with, a view to facilitate environmental protection. A survey study employing comparative research design was conducted in Akwa Ibom State of Nigeria. Research hypotheses were tested @p<0.05 and the research question was answered. The population consisted rural women farmers, staff of agricultural extension organization and agricultural professional in universities. The sample was 1,200 subjects drawn using stratified random sampling technique. Validated Questionnaire having a four point rating with the cutt-off point at 2.0, was used as research instrument. Mean and One-Way Analysis of Variance Statistics were used for data analysis. In the findings eight (8) environmental safety policy initiatives for weed management practices were determined, including;1) deployment of environmental specialists in rural areas to encourage adherence to healthy routines in chemical weed management' with the highest mean of 3.76, seconded by 'institutionalization of monitoring mechanisms in rural areas to ensure proper waste disposal in weed management in rural communities' with mean at 3. 44. The third was 'fire regulation policy to control incessant bush burning as weed control measures' with mean at 3.35 among other policies, No significant differences between research groups existed on the determined environmental policy alternatives.
Keywords: Environmental Protection, Policy, Rural Agriculture, Women.

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A Comparative Indoor and Outdoor Air Quality in Uyo Metropolis, Niger Delta, Nigeria

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ABSTRACT
The aim of this research was to determine the indoor and outdoor air quality of some locations within Uyo metropolis, the capital of Akwa Ibom State, a major oil producing state in Nigeria. At each location, noxious gases and other parameters were determined. Results obtained showed that the air quality in the selected homes were reflections of the gases produced near the homes. Indoor CO (mg/dm^3) ranged from 14.3 ± 1.50 – 42.5 ± 2.38 and 18.1 ± 0.10 – 39.3 ± 0.50 for the outdoor. The indoor SOx (mg/dm^3) ranged from 0.1 ± 0.00 – 0.8 ± 0.46 while the outdoor level was 0.20 ± 0.04 – 1.5 ± 1.03. Indoor H_2S (mg/dm^3) ranged from 0.1 ± 0.00 – 0.7 ± 0.57 and 0.2 ± 0.06 – 1.5 ± 1.03 for outdoor. NH_3 (mg/dm^3) ranged from 0.1 ± 0.14 – 6.3 ± 0.50 and 1.0 ± 0.05 – 5.3 ± 1.52 for the indoor and outdoor, respectively. Generally, most of the readings were within statutory limits indicating that indoor air are of acceptable quality excepting at few locations where raised values were obtained because of prevailing activities within the neighbourhood of the sampling locations. The health implications of some gaseous pollutants determined have been reported.
Key words: Indoor & Outdoor Air Quality; Uyo metropolis; Niger Delta region; gaseous pollutants; Health hazards.

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Toxicokinetic Studies of Manganese and Copper in Goats Following Intratracheal and Intravenous Administration of Particulate matter

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ABSTRACT
Toxicokinetics of manganese and copper present in dusts collected around Maiduguri metropolis have been investigated. Dusts in the form of suspended particulate matter (SPM) were collected at four different areas of Maiduguri, Nigeria by gravitational deposition and administered intratracheally and intravenously to experimental animals. The extent of absorption, distribution and the pathways and rates of elimination were determined by measurement of blood and tissue concentrations of the elements following administration using Atomic Absorption Spectrometric techniques. Results indicated that elements present in the dust were readily absorbed following intratracheal administration and distributed to various organs and tissues. Highest concentration of various elements occurred in the excretory organs (liver and kidney) in all groups studied. The elements studied were observed to be eliminated in a bi-phasic process by all the routes of administration used.
Key words: Toxicokinetics**,** Suspended Particulate Matter (SPM)

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Macroinvertebrate Composition and Community Structure of a Tropical Rainforest Pond in Uyo, Nigeria

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ABSTRACT
The community structure of macroinvertebrates in a tropical freshwater pond was studied for two years (November 2006 – October 2008) at ten stations using the classification method. A total of 24 species were identified, dominated by Insecta. Macroinvertebrate fauna was dominated numerically by Diptera (35.90%) with *Chironomus* sp as the most abundant species with mean density of 120.0m^{-2} constituting

18.70% of all macroinvertebrates. Non-dipteran invertebrates were less diverse particularly the pollution sensitive species. Total invertebrate densities ranged from 344.3 – 401.1m^{-2} and varied between stations and substrate type. Species richness and diversity were higher at stations with thick littoral vegetation and leaf litter. Temporal variation indicated greater abundance during dry season than wet season. Macroinvertebrate distribution and abundance in the pond was influenced by water quality, pond depth, substrate type, vegetation cover and litter input.
Keywords: Aquatic macroinvertebrates, seasonal changes, vegetation cover, substrate, depth distribution, water quality.

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Tissue Distribution of Heavy Metals in Fin Fish From a Tidal Fish Farm in South East Nigeria

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ABSTRACT

The concentration of heavy metals: Lead (Pb), Cadmium (Cd), Iron (Fe) and Zinc (Zn) in tissues of fin fish from a tidal fish farm in Calabar, South East Nigeria, was determined. The mean levels of heavy metals (µg/g) in gills, muscle tissues, liver and intestines of catfish were Pb: 2.39±1.24; Cd: 0.87±0.83; Fe: 3.96±1.55; Zn: 8.15±3.18.Mean levels in Tilapia were Pb: 0.035±0.002; Cd: 0.61±0.05; Fe: 1.09±0.61; Zn: 2.17±0.53. There was no significant difference ($p<0.05$) in tissue concentrations of Pb and Cd whereas a significant difference ($p<0.05$) was observed between Pb and Zn concentrations for both species of fish. Concentrations were also higher in liver, gills and intestines than the muscle. Highest concentrations were observed in the liver and gills in both species. Generally, higher concentrations were observed in liver, gills and muscles of Catfish than in Tilapia and *Heterotis niloticus*. Concentrations of Pb and Fe in Catfish were significantly higher ($p<0.05$) than the WHO limits, while Zn and Cd were lower. Tissue concentrations of all the metals in Tilapia and *H.niloticus* were however, within the WHO recommended limits. The concentrations in all the fish tissues were significantly higher ($p<0.05$) than in the surrounding water. The observed values in Catfish indicate environmental threat to the health of the fish and indeed the humans that consume them and therefore call for environmental surveillance in the area.

Keywords: Fin fish, tidal fish, south east Nigeria, heavy metals.

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Seasonal Variation and Impact of Brewing Effluent on the Receiving Pond Water

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ABSTRACT

The microbiological and physicochemical attributes of brewing effluent and its impact on the receiving pond water was investigated using standard procedures. The resultant high nutrient status of the pond water (SO_4^{2-} 11.94mg/l and 10.88mg/l; PO_4^{3-}, 10.42mg/l and 8.92, NO_3^- 3.15mg/l and 2.89mg/l) for the wet and dry seasons respectively had a negative effect on the BOD and COD of the pond water. Heavy metal analysis revealed that the impacted pond had high concentrations of Fe, Zn and Pb. The effluent contributed to the total heterotrophic bacterial and fungal loads of the pond water ($2.7x10^6$ cfu/ml and $5.2x10^2$ cfu/ml) respectively. Faecal coliforms, Clostridia, Salmonellae and Shigellae were readily detected in the impacted pond water. Farming in the area and the use of the impacted water for irrigation may be of serious health risk to consumers of the contaminated farm produce due to the presence of bacterial pathogens.

Key words: Waste water, Impact, Brewery, Seasonal, Pond.

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Microbial Quality of Selected Salad Vegetables

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ABSTRACT

Four selected vegetables commonly used for preparing salad; cabbage (*Brassica oleracea*), lettuce *(Lactuca sativa)*, cucumber *(Cucumis sativus)* and carrot *(Daucus carota*) were examined for their microbial quality using standard methods. Samples of these vegetables were purchased from different locations in Uyo metropolis. The results obtained showed mean counts of $1.3X10^7$cfu/g, $7.3X10^6$ cfu/g and $4.6\ X10^6$ cfu/g for total heterotrophic, total coliform and total fungal counts for cabbage, respectively, while those of lettuce were $1.5X10^7$ cfu/g, $7.4\ X10^6$ cfu/g and $5.0X10^6$ cfu/g, respectively. These are higher than acceptable standards for ready- to-eat vegetables. Results of aerobic plate count for carrot samples ranged from $2.07X10^4$ to $2.40X10^4$cfu/g and $4.30X10^3$ to $1.38X10^4$ cfu/g for cucumber samples. The coliform counts ranged from $4.10X10^3$ to $4.80X10^3$ cfu/g and $3.5X10^3$ to $4.30X10^3$ cfu/g for carrot and cucumber respectively. Fungal counts ranged from $2.80X10^3$ to $3.20X10^3$ cfu/g and $2.10X10^3$ to $2.60X10^3$ cfu/g, respectively for carrot and cucumber samples. Statistical analysis using Analysis of Variance (ANOVA) showed that contaminating organisms were significantly higher (p=0.05) in fresh leafy vegetables (cabbage and lettuce) than in carrot and cucumber. There was however, no significant difference among microbial load of the vegetables from different locations (p=0.05). Predominant organisms obtained from the cultural and biochemical characterization of isolates revealed the presence of *Staphylococcus aureus, Bacillus sp, Enterobacter sp, E.coli* in addition *to Pseudomonas sp, Serratia sp, Streptococcus sp, Citrobacter sp, Klebsiella sp, Shigella sp and Aspergillus flavus, Botrytis sp, Rhizopus sp, Fusarium sp, Saccharomyces cerevisiae and Canidida tropicalis* in cabbage and lettuce. Five genera of fungi isolated from carrot included *Rhizopus stolonifer*, *Fusarium oxysporium, Aspergillus fumigatus, Candida pseudotropicalis, C. tropicalis and Saccharomyces cerevisiae. Candida tropicalis* and *Saccharomyces cerevisiae* were the only yeasts isolated from cucumber samples. The occurrence of some organisms of public health significance indicates the need for proper sanitary procedures on storage and handling/processing of these vegetables.

Keywords: Microbial quality, Salad vegetables.

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Baseline Estimation of Solid Waste Generation in Uyo, Akwa Ibom State, Nigeria

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ABSTRACT
The generation of municipal solid waste(s) (MSW) for Uyo, the capital city of Akwa Ibom State of Nigeria, was studied daily for 10 consecutive days. Measurements of solid wastes in different containers and on ground heaps; carried out daily in nearly all the streets, markets and business premises in this city; showed that approximately 286.85 cubic meters or 55.77 metric tons of solid wastes were generated daily. Solid waste composition for the different streets and locations were determined. On the average, organic matter was the highest content with 45.51%.. It was followed by metal with 12.73%, plastics 9.98%. Others included paper 8.67%; rag, 5.84%; glass, 9.18% and soil 9.98%. Wastes distribution with the standard of living of the citizens was examined too
Keywords: Municipal solid waste(s) (MSW), Waste generation, Waste management, Housing density, Refuse, and Waste disposal.

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Anti-Plasmodial Activity of the Ethanolic Stem-Bark Extract of *Anthocleista djalonensis* on Chloroquine Sensitive Plasmodium

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ABSTRACT
Anti-plasmodial activity of the ethanolic stem-bark extract of *Anthocleista djalonensis* on chloroquine sensitive Plasmodium berghei infection in mice was investigated in-vivo, to confirm its traditional use as an alternative malaria remedy. Phytochemical screening was carried out to identify the phytochemical constituents of the plant extract. The extract at various concentrations were evaluated for blood schizontocidal activity against Chloroquine–sensitive Plasmodium berghei infection in mice during early

stage and established infections. The Lethal Dose (LD_{50}) of the extract was determined to be 2236mg/kg. while doses of 2500mg/kg/day and above were found to be lethal to the mice. *Anthocleista djalonenesis* extract administered (220, 440 and 660mg/kg/day) exhibited dose-dependent chemosupression with a mean survival time comparable to that of the standard drug, Chloroquine (5mg/kg/day) at P <0.05, level of significannce. Evaluation of the schizontocidal activity of the plant extract at different concentrations as well as the standard drug (Chloroquine) were examined.The result indicated a dose-dependent chemosuppression of the parasitemia in early infection and a dose-dependent reduction in the parasitemia level during established infection stage, thus revealing the curative effect of the plant extract, justifying its wide spread use in herbal and traditional medicine, thus recommended for exploitation in malaria malarial therapy.

Keywords; Schizontocidal Activity, Chemosupression, Phytochemical.

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Associated Infections in Sexually Abused Women in Uyo Metropolis, Akwa Ibom State , Nigeria

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ABSTRACT

The increase in population, changes in age of maturity, separation from families, lack of resources and use of hard drugs in the world, has increased the number of sexually abused women in various societies. This problem of sexual abuse on women has both financial and health implications on individuals and the health care systems. A study of 200 women and children sexually abused who attended the University of Uyo Teaching Hospital from January 2009 to August 2009 was carried out. The ages of the women were from 18 to 45 years and the children were aged 5 to 17 years. All of them showed clinical symptoms and laboratory diagnosed infections ranging from abdominal pains, fever, bacterial, viral, fungal to protozoal infections. Sexually transmitted diseases of this nature represents a major public health problem, and are among the commonest causes of illnesses, even death in the world and have far-reaching health, social and economic consequences. 10% of cases studied presented with fever, 10% had abdominal pains, 20% were diagnosed of bacterial infection, 20% at a follow-up investigation had HIV infection, 15% had other viral infections, 15% had fungal infection and10% had protozoal infection. It was observed that sexually abused women and children who came down with HIV and bacterial infections were more than those who were diagnosed of other infection.

Key words: Associated infections, Sexual abuse, Children, Women.

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Current Trends in Drug Design

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ABSTACT
Natural products (NP) are referred as 'lead' in drug design. Drug design from NP and NP derived compounds suffered severe limitation due to lack of computing power and docking programmes that could test potential models. Lead search from NP takes a long time and is capital intensive. Microorganism's resistance to antibiotics have been a major challenge and renders drug ineffective as genetic mutation occur in strains which have earlier been susceptible to the known drugs .A shift from the earlier approach is the rationalization of drug design accompanied with the improved knowledge of human and pathogen biochemistry and pathophysiology. This current trend in drug design called rational drug design involves a comprehensive study of the biochemical pathways, identification of key elements (usually protein) called target and designing small molecule to modify these proteins. Information technology via molecular modelling known as computer-aided drug design (CADD) (chemoinformatics) is also utilized. The current methods used in drug design thus generates a large array of compounds within seconds which are further screened via high throughput screening(HTS) to select the ones with optimal solubility and binding affinity. The drug design time is thus reduced considerably.
Keywords: Rational, computer-aided drug design, target.

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Ethnic Usage of Mistletoes in Parts of Akwa Ibom State, Nigeria

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ABSTRACT
An investigation of ethnic usage of mistletoes was carried out in 22 Local Government Areas of Akwa Ibom State. A total of 32 respondents were used. They included herbalists, Traditional Birth Attendants (TBAs), farmers, businessmen and teachers. The investigation revealed that in all cases, mistletoe leaves were used in herbal preparations, while the fruits were not used. These herbal preparations were useful in the cure of hypertension, malaria and internal heat. They were also used for treating boils and burns, in the treatment of chest pain and as a cure for epilepsy in children. A total of 6 mistletoe species were identified as commonly used in the formulation of these herbal cures. They include; *Agelanthus bruneus* (Engl.) Tiegh; *Globimetula cupulata*(DC.) Van Tiegh.; *Phragmanthera incana* (Schum) Balle; *Phragmanthera sp.; P. talbotiorum* (Schum.) Balle*; Tapinanthus globiferus* (A. Rich.) Van Tiegh. Details of their medicinal uses, mode of preparation and administration as well as the different ailments they cure are documented. A further investigation into the efficacy of these claims is recommended.

Keywords: Ethnic, usage, mistletoes.

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Evaluation of Antidiarrhoeal and Anti-ulcer Activities of Different Fractions of *Asparagus pubescens* Root Extracts in Rats

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ABSTRACT
The effects of ethanol, ethylacetate, chloroform and n-hexane fractions of *Asparagus pubescens* root extract on experimentally-induced ulceration and diarrhoea were investigated in rats. The different fractions (500mg/kg) significantly ($P < 0.05$ - 0.001) reduced the ulcer indices induced by indomethacin, ethanol, reserpine and hypothermic restraint stress. Results show that the fractions inhibited ethanol-induced ulceration (66.88 – 88.89%) comparably with cimetidine (82.22%), while the fractions exhibited higher effects in reserpine-induced ulceration. Furthermore, the fractions inhibited the intestinal transit time (intestinal propulsive movement), castor oil-induced diarrhoea, as well as intestinal fluid accumulation with ethanol fraction showing the highest activity while the least was the chloroform fraction. These results indicate that the fractions possess anti-ulcer and anti-diarrhoeal activities though non- specific, but might in part be mediated through lipo-oxygenase inhibition, histamine antagonism, antisecretory effects as well as the effects of the secondary metabolites of the plants.
Keywords: *Asparagus pubescens,* Antiulcer, Antidiarrhoeal.

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Cases of Recurrent Vulvovaginal Candidiasis in Women in Uyo Metropolis

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ABSTRACT
Candidiasis is the most common systemic mycosis and the most common agent is Candida albicans. Being a common commensal of the gastrointestinal tract and the mouth in healthy individuals it is often overlooked, but in recent times, the complications and clinical manifestations of the fungus in patients with

compromised defenses are enormous. We collected a total of group (18-60 years) based on the medical history of vaginal discharge and itching; these samples were collected from two different laboratories between July 2008 and August 2009. Among patients with positive cases, 31% were recurrent positive cases. Observed also was the cases of 69% resistant to most commonly used antifungal agents.

Keywords: Vulvovaginal Candidiasis，Candida albicans.

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Ovarian Strumal Carcinoid Tumour Associated with Primary Infertility

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ABSTRACT

Strumal carcinoid tumours of the ovary are specialized teratomas characterized by an intimate admixture of thyroid tissue and carcinoid. Although these rare tumours are often assymptomatic, they have been associated with hirsutism or virilism, severe constipation, pressure symptoms and hyperthyroidism in some cases. We report a case of right strumal carcinoid of the ovary in a 28 year old nullipara with a history of primary infertility, who spontaneously became pregnant, after excision of the tumour.

Key words: Ovary, Strumal carcinoid, Infertility, Tumour

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Teachers' Perception of Computer Software Application for Teaching Different Subject Groupings in Secondary School

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ABSTRACT

In this era of information and Communication Technology (ICT), the role of the teacher as a dynamic instructor has taken on new dimensions. The teacher is no longer restricted to activities within the four walls of the classroom as his scope of work has been enlarged through ICT. Teachers' perception of computer software application (CAS) needs to be positively enhanced for effective integration of ICT in teaching and learning. This paper examined teacher's perception of computer software application for teaching different subject through stratified sampling technique. A structured questionnaire was used to

collect data. Mean statistics and ANOVA were used to analyze data. Generally, responses revealed a low perceptual level of CAS among the teachers while there was no significant difference in teachers' perception based on their subject groupings indicating low perception as a common problem among teachers. The study recommends specific course in Design and Application of Software packages, Internet Resources, Research & Electronic referencing and PowerPoint Presentation for all teachers on training. Professional teachers should receive equal exposure through in-service training.
Key Words: (ICT) Information Communication Technology; (CAS) Computer application software; Perception; Teachers of different subject groupings; Integration of ICT in teachers' training programme.

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Status of Multimedia Awareness and Utilization among Science Teacher Educators in Some Universities in South Eastern Nigeria

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ABSTRACT

This study investigated the status of multimedia awareness and utilization among science teacher educators in some universities in South Eastern Nigeria. A descriptive survey research design was adopted for the study. A total of 300 science teacher educators from 9 universities in South Eastern Nigeria formed the sample for the study. This was selected using stratified random sampling technique across gender and area of specialization. The instrument for data collection was tagged multimedia awareness and utilization questionnaire developed by the researchers and validated by 2 experts in educational technology and 1 expert from computer science both from University of Uyo and 2 experts from measurement and evaluation from University of Nigeria, Nsukka. 5 research questions guided the study. Data collected were analysed using frequencies and percentages; while the two hypotheses were tested with chi-square. The findings of the study showed that majority of science teacher educators are not aware of the instructional media not to talk of utilizing them. Based on the findings, it was recommended that science teacher educators be brought into awareness of multimedia by their institutions of learning and be properly trained on its utilization to enhance the teaching-learning process for maximal intellectual and skill benefits.
Key words: status, multimedia, awareness, utilization, potentialities, creative knowledge, interactive.

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The Effect of Gender and School Location on Students' Achievement in Mathematics

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ABSTRACT
The study was on the effect of gender and school location on students' achievement in Mathematics. 200 SS III students in Uyo and Nsit Ubium Local Government Areas of Akwa Ibom State took part in the study. The purpose of this study was to find out if there existed any significant difference between students from urban and rural schools in their achievement in mathematics. Possible gender effect were also surveyed. Two research questions were posed to guide the investigation. The survey design was adopted for the study. The instrument used for data collection was the Mathematics Achievement Test (MAT) and the students' t-test was used for data analysis. Findings indicate that there is a significant difference between urban and rural students' achievement in mathematics, whether male or female. It was recommended that teacher of mathematics should try their best to awaken the interest of students in mathematics in the rural areas.
Key words: School location, gender, mathematics achievement.

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Open Source Software System for Nigerian University Libraries: Veritas University Experience

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ABSTRACT
The adoption of the Open Source Software (OSS) has generally influenced the software environment in many progressive ways. Exploitation of the system can help stabilize the new development in ICT applications in libraries. And usher in a collaborative enterprise among university libraries in Nigeria. This paper outlines past efforts, especially the introduction of TINLIB by the National Universities Commission (NUC), the implementation of Open Biblio, an OSS initiative, which could point to a possible line of cooperation. It also traces the evolution of OSS, discusses its implementation at Veritas University Library and draws attention to its advantages, such as minimal capital outlay, flexibility, adaptability and the

pooling of resources for programming, maintenance, and updating. OSS could be use as quality assurance mechanism while helping to establish benchmarks and standards.

Keywords: Library Software, Open Source Software (OSS), Open Biblio, Nigerian University Libraries, TINLIB, Veritas University Libraries, quality assurance.

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Internet Utilization and Frustration: Graduate Students'Experience in South-South Zone, Nigeria

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ABSTRACT

The study investigates the severity of graduate students' frustration in their information search on the internet. It examines the individual factors that contribute to the frustration experienced by graduate student internet user in South-South geopolitical Zone of Nigeria. A total of 20,110 graduate students drawn from national universities of Uyo, Port Harcourt and Calabar formed the population of the study while 300 subjects sampled among PhD students were used for the investigation. A 7-item user frustration checklist was used to elicit responses from respondents. Findings of this study revealed that among the internal factors, graduate students' lack of skill ranked the highest in frustration; followed by night browsing scare; eye-strain, long download-time and online search hazel. On the external factors, absence of training, inadequacy of staff as well as frequent power outage caused the greatest frustration. The paper recommends prioritising practical based compulsory courses in utilisation of internet for graduate students, provision of adequate infrastructure, and capacity building to ensure optimal information access.

Key words: User Frustration, Collaboration, Internet Utilization, Collegial Interaction, Staff Demeanour , SERVQUAL Scheme.

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Gender Index on the Use of Improvised Video Compact Disc Medium and Students' Performance in Good Citizenship Education

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ABSTRACT

This study examined the difference between the performance of male and female JS 2 social studies students taught using improvised video compact disc medium and those taught without improvised VCD. Descriptive survey design was used for the study. The social studies improvised VCD utilization strategies questionnaire and the social studies students' performance test were administered on 31 teachers and 500 students respectively. Data collected were analysed using a 2x2 factorial analysis of variance (ANOVA). The result showed that there was a significant difference in performance between the two groups in favour of those taught with improvised VCD medium. It was therefore recommended that social studies teachers should select and use instructional materials that would not place any gender at a disadvantaged position since VCD is meant to provide equal learning opportunities without sex bias.

Key words: VCD (Video Compact Dics), IVCDMUSA (Improvised Video Compact Disc Medium Utilization Strategies Questionnaire), MCA (Multiple Classification Analsysis), ITE (Information Technology Education).

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