

Editorial

I. Notes from the Editor

The West Indian Journal of Engineering (WIJE) is an international journal which publishes research in the engineering sciences, with relevance to the Caribbean. First published in 1967, WIJE is now its 42nd volume (No.1) as at July 2019. WIJE is published twice yearly by the Faculty of Engineering, at The University of the West Indies (UWI), and the Council of Caribbean Engineering Organisations of Trinidad and Tobago. WIJE Online is a static repository of approximately 800 peer-reviewed articles. Meanwhile, the website has limited functionality.

With the support from the UWI - Campus Research and Publication Fund, WIJE had initiated a web project on “expanding the online interface of The West Indian Journal of Engineering to foster engineering research and publication in the Caribbean”. One main objective of this project (Ref. CRP.10.MAR.16.45 2016) are to redesign the online interface that allows improved access to content and readership of the Journal.

The Journal Editorial Sub-Committee has been working over the past years on this project, and is now moving to the pilot testing phase. It is expected that the testing be completed in line with the publishing of next January 2020 issue of the journal (i.e., Vol.42, No.2). For facilitating the pilot test, it is planned to have a dual system with both the current operations and new pilot mode running in parallel for the 2020 issue. Please check it out!

This issue also includes two announcements. These are, firstly, a “Call for Papers” for *The International Conference on Emerging Trends in Engineering and Technology (IConETech-2020)* that is to be hosted at the Faculty of Engineering, The University of the West Indies on 13th-15th March, 2020. For information, contact Professor B.V. Chowdary, IConETech-2020 Chair: c/o Faculty of Engineering, UWI, Email: IConETech-2020@sta.uwi.edu. The second announcement is a “Call for Contributions” in terms of chapters, cases and articles for a book entitled: “*Sustainable Supply Chain Design and Operations for Small Island Nations*” to be published in 2020. For enquiries, contact the Editors, 1) Professor K.F. Pun (Email: KitFai.Pun@uwi.edu.edu), and/or 2) Professor Prasanta K. Dey (Email: p.k.dey@aston.ac.uk).

II. About This Issue

This Volume 42 Number 1 includes eight (8) research/technical articles. The relevance and usefulness of respective articles are summarised below.

R.P. Clarke, “Computation of Risk Coefficients (C_{RS} , C_{RI}) for Obtaining Risk-Targeted Earthquake Hazard Values for Several Caribbean Territories”, determined the risk coefficients for several Caribbean territories by an alternative approach. Obtaining the uniform risk coefficients by the conventional approach

would be costly and time-consuming in the Caribbean. The calculated risk coefficients for the Caribbean are in the ranges of 1.03 to 1.11, and 1.02 to 1.19 for C_{RS} and C_{RI} , respectively. With these coefficients, engineers could safely and consistently use the latest building codes for the structural design of Caribbean structures.

In the article, “Sustaining Asset Integrity in the Trinidad and Tobago’s Energy Sector: An Assessment”, **H. Ramrattan**, **T. Markeset**, and **C. S. Syan** investigated the critical success factors required for a sustainable implementation of an Asset Integrity Management System (AIMS). An analysis was done of global governmental regulations shaped by major accidents, and local safety regulations and the gap between AIMS research and practice. In order to sustain the integrity of assets in Trinidad and Tobago’s Energy Sector, the findings of the National Facility Integrity Audit conducted in 2016 were also analysed. The focus is to signify the importance of a robust AIMS, and to ensure that it would be integrated into the existing business management system.

M.O.H. Amuda et al., “Refractory Properties of Alumina/Silica Blend”, explored the properties of a blend of alumina/silica using X-ray fluorescence complemented with X-ray diffraction (XRD). It was found that the indigenous clay is essentially siliceous alumina-silicate containing about 51% silica and 40% alumina with high content of alkali oxide but low ferrous oxide content. XRD analysis of the synthetic alumina/silica blend showed that the firing temperature and time only had significant effect on the phase transformation at temperature of 1,000 °C and time of 5 hours. The synthetic alumina/silica blend exhibits approximate the refractory properties of standard alumina-silicate for refractory purposes.

G. Isaac and **U. Persad**, “Investigating the Haircare Product Manufacturing Industry in Trinidad and Tobago”, examined consumer attitudes toward locally manufactured haircare products manufactured and explored the challenges faced by local haircare manufacturers in Trinidad and Tobago. An online questionnaire including a measurement scale for ethnocentrism was used. It was found that local consumers are non-ethnocentric as it pertains to purchasing locally made hair care products i.e. they purchase more foreign products than locally made ones. Among the major challenges are the lack of legislature in place to deal with the manufacturing of haircare products and the inability to increase market share.

In the fifth article, “CubeSat Communication Sub-system Design for Coastal Marine Monitoring Applications CubeSat Communication Sub-system Design for Coastal Marine Monitoring Applications”, **R.V. Adams**, **D. Villarroel-Lamb**, and **F. Muddeen**, presented a design for a CubeSat communication subsystem for a store-and-forward remote monitoring application. An

underwater Acoustic Doppler Current Profiler (ADCP) would be operating at a remote coastal location to transfer data to a central hub for processing. With the aid of AGI simulation tool, different frequency bands for transmission were selected to perform antenna design and perform link budgets for the different altitudes. The paper also discusses CubeSat design considerations and other terrestrial and non-terrestrial transmission alternatives to CubeSat.

S. Bajnatha, and U. Persad, “Evaluating New Product Development Processes in the Food and Beverage Manufacturing Sector of Trinidad and Tobago”, explored a six-stage new product development (NPD) process, comprising market assessment, idea screening, prototyping, development, testing, and industrialisation. Current models and practices for the NPD process were evaluated, drawing upon the business operations within the food and beverage manufacturing sector. Empirical data were acquired from 23 companies in Trinidad and Tobago. It was found that most companies lacked formal sensory programmes. They focused heavily on the industrialisation stage and did not uniformly adhere to the other stages of the process. Moreover, an integrated sensory framework was proposed to quantify the sensory characteristics at each key stage of the product development process.

Y.O. Abiodun et al., “Mineralogical Properties of Kaolin and Metakaolin from Selected Areas in Nigeria and Its Application to Concrete Production”, investigated mineralogical properties of kaolin and metakaolin as a geopolymer. Thermal treatment was applied on same mass of kaolin samples selected at varying temperature and time duration. The thermal, chemical, differential thermal (DTA), X-ray Diffraction Spectroscopy (XRD) and Fourier Transform Infrared Spectroscopy (FTIR) characterisations of raw kaolin samples were carried out. Results showed that the yield increased as the calcination temperature increased. For compressive strength, the highest strength was obtained at 15% Metakaolin replacement and 0.4 water-cement ratio, and Metakaolin concrete gained strength rapidly.

In the eighth article, “Design and Development of a Cardiovascular Monitoring System”, **S.C. Nwaneri** and **P.I. Ogbuji**, discussed the need for continuous and regular monitoring of vital signs for patients suffering from cardiovascular diseases. The development of a low cost, non-invasive cardiovascular monitoring system was proposed. The system design includes modulation and demodulation sections that record signals from the measurand and transmit them to the doctor. The device was tested on ten (10) subjects. Periodic heart beat was observed, and comparison was made between the device and a standard blood pressure. The Wilcoxon-signed rank test results showed that there was no statistically significant difference between the pulse rates observed in both devices. The device was also tested on healthy patients with Standard Electrocardiograph (ECG)

waveform, and was shown to be effective for real-time monitoring of the cardiovascular system.

On behalf of the Editorial Office, we gratefully acknowledge all authors who have made this special issue possible with their research work. We greatly appreciate the voluntary contributions and unfailing support that our reviewers give to the Journal.

Our reviewer panel is composed of academia, scientists, and practising engineers and professionals from industry and other organisations as listed below:

- **Dr. Abrahams Mwasha**, The University of the West Indies (UWI), Trinidad & Tobago (T&T)
- **Dr. Amir Aminifar**, École Polytechnique Fédérale de Lausanne, Switzerland
- **Professor Boppana V. Chowdary**, UWI, T&T
- **Dr. Chris Maharaj**, UWI, T&T
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- **Professor Jack Baker**, Stanford University, USA
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- **Dr. Ts. Morris Abraham G. Ezra**, Universiti Tunku Abdul Rahman, Selangor. Malaysia

The views expressed in articles are those of the authors to whom they are credited. This does not necessarily reflect the opinions or policy of the Journal.

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