

Foreword

Welcome to the third issue of 2024 for the *Pertanika Journal of Science and Technology (PJST)*!

PJST is an open-access journal for studies in Science and Technology published by Universiti Putra Malaysia Press. It is independently owned and managed by the university for the benefit of the world-wide science community.

This issue contains 25 articles; four review articles and the rest are regular articles. The authors of these articles come from different countries namely Afghanistan, Indonesia, Iraq, Japan, Kingdom of Saudi Arabia, Malaysia, Nigeria, Palestine, Philippines and United Arab Emirates.

A regular article titled “Development of Small-Scale Integrated Hydroponics—Animal Waste Bioreactor (AWB) for Romaine Lettuce (*Lactuca sativa* L. var. longifolia) Production” written by Elman Cantero Torres and co-researchers from Philippines. In their research, three integrated hydroponics-AWB systems, with varying concentrations of CMT at 1,000 ppm, 1,200 ppm, and 1,400 ppm total dissolved solids (maintained within an upper and lower bound of 50 ppm), were constructed, tested, and compared to conventional hydroponics that used a nutrient solution maintained at 1,000 ppm TDS. The test result suggests that the ideal concentration of CMT in the system is 1,000 ppm. Within the optimum manure tea concentration, the small-scale integrated hydroponics-AWB produced romaine lettuce with growth parameters comparable to conventional hydroponics. In addition, increasing the CMT concentration to 1,400 ppm negatively impacts the plant growth parameters of romaine lettuce. Detailed information on this study can be found on page 1003.

Xinzhi Liu et al. from Universiti Putra Malaysia and Universiti Malaysia Perlis evaluated the enhanced semiconducting characteristics of Gallium Nitride (GaN) high-electron-mobility transistors (HEMT) over conventional silicon power devices by analyzing spontaneous and piezoelectric polarizations of wurtzite GaN crystalline structure and the formation of two-dimensional electron gas (2DEG). The lateral device structure of enhancement-mode GaN HEMT and normally switched-on depletion mode GaN HEMT are compared. A device-under-test (DUT) equivalent model incorporating parasitic components is proposed, adopting the EPC2204 Level 3 SPICE model. The model is simulated in a novel Double Pulse Test (DPT) topology with clamping and snubber subcircuits using LTSPICE software. The performance of GaN HEMT is compared to a MOSFET with similar parameters, and the impact of parasitic inductances and stray capacitances is evaluated through switching analysis. The findings underscore the potential of E-GaN HEMTs to enhance the efficiency of DC-DC converters, particularly for photovoltaic energy delivery. Further details of the article are available on page 1243.

Another article that we wish to highlight is “Identifying Communities with Modularity Metric Using Louvain and Leiden Algorithms” by Siti Haryanti Hairol Anuar, Zuraida Abal Abas, Norhazwani Md Yunos, Mohd Fariduddin Mukhtar, Tedy Setiadi and Abdul Samad Shibghatullah. Their research focuses on two community detection algorithms, the Louvain and Leiden methods, which are based on agglomerative techniques using modularity. Both Louvain and Leiden have an optimal value of the result, but there is an improvement from Leiden. The Leiden method was found to perform better in terms of execution time and the modularity metric. Detailed information on this study is presented on page 1285.

We anticipate that you will find the evidence presented in this issue to be intriguing, thought-provoking and useful in reaching new milestones in your own research. Please recommend the journal to your colleagues and students to make this endeavour meaningful.

All the papers published in this edition underwent Pertanika’s stringent peer-review process involving a minimum of two reviewers comprising internal as well as external referees. This was to ensure that the quality of the papers justified the high ranking of the journal, which is renowned as a heavily-cited journal not only by authors and researchers in Malaysia but by those in other countries around the world as well.

We would also like to express our gratitude to all the contributors, namely the authors, reviewers, Editor-in-Chief and Editorial Board Members of PJST, who have made this issue possible.

PJST is currently accepting manuscripts for upcoming issues based on original qualitative or quantitative research that opens new areas of inquiry and investigation.

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