

# Foreword

Welcome to the fourth issue of 2025 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 15 articles: one review article; and the rest are regular articles. The authors of these articles come from different countries namely Bangladesh, Colombia, India, Indonesia, Malaysia, Nigeria, Philippines and Vietnam.

The regular article entitled “MXene as A Microstructural Modifier in Solar Thermal Absorber: A Review” explores the latest microstructural modifications of solar thermal absorbers using MXene as a microstructural modifier, along with their effects on thermal conductivity, strength, photothermal conversion, and corrosion resistance. The research aims to identify the core challenges in solar thermal systems (STSs) and to create opportunities for their integration, processing, and manufacturing. MXene has shown promising results in enhancing the thermal and corrosion properties of solar thermal energy systems, reinforced nanofluids, phase change materials, coatings, carbon nanotubes, and nanocapsules. Additionally, MXene used as the backing for metallic absorbers and in coatings has demonstrated significant improvements in the thermal and corrosion performance of STSs. Further details of this study can be found on page 1707.

Muhammad Fathuddin Noor and his teammates from Universitas Brawijaya have studied how pyrolysis temperature affects the composition of bio-oil derived from *Cerbera odollam* as a raw material. Pyrolysis was conducted in a fixed-bed reactor at temperatures of 350, 450, and 550°C. The higher the pyrolysis temperature, the more gas products are produced, and the less char product is formed. Conversely, lower pyrolysis temperatures result in greater char production and fewer gas products. The optimal temperature for producing bio-oil from the pyrolysis of *C. odollam* is 550°C, as this yields the most chemical components analysed using GC-MS to identify the compounds present. The pyrolysis of *C. odollam* biomass shows distinct product distributions at different temperatures. Further detailed information can be found on page 1765.

A selected article titled “A Novel Multifaceted Approach to the Detection and Analysis of Formalin’s Effect on Enhancing the Shelf Life of Apples” examined the impact of formalin on the shelf life of apples. Three different concentrations of formalin (20, 30, and 40%)

were applied to apples, which were analysed using three methods: (1) spectrophotometry, (2) a formalin test kit developed by the Bangladesh Council of Scientific and Industrial Research, and (3) a MS1100 gas sensor functioning as an E-nose. The results indicated that formalin emissions reverted to their natural or pure form after approximately 30 hours. Formalin does not extend the shelf life of apples and, in fact, appears to make them look less fresh. Full details of this study are available on page 1829.

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 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.

**Editor-in-Chief**

Luqman Chuah Abdullah