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Brunei International Conference on Engineering and Technology

*"Innovation in engineering and technology towards
enhancing quality of life and society"*

Editors

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Preface: Brunei International Conference on Engineering and Technology 2021

Brunei International Conference on Engineering and Technology (BICET) is the flagship international conference organised by the Faculty of Engineering, Universiti Teknologi Brunei since its inception in 2001. The 8th BICET which was initially planned for 9-11 November 2020 has been rescheduled due to the COVID-19 pandemic and was successfully held from the 8-10 November 2021. Over the past two decades, BICET served as a platform for academics, researchers, scientist, technologist, and engineers to interact and to present their research findings in an international forum. The theme of BICET 2021 is *Innovation in engineering and technology towards enhancing quality of life and society*.

BICET provides a forum for intra/inter-disciplinary exchange of current research findings in Engineering and Technology as well as fostering collaborative research in the areas of civil engineering, electrical and electronic engineering, mechanical engineering and petroleum and chemical engineering. Despite the pandemic, BICET 2021 received an overwhelming response of more than 200 papers, thus making it the highest record in this conference series. The conference was organised into four parallel tracks, composed of 20 sessions conducted over three days. We received papers from 30 countries including Australia, Bahrain, Bangladesh, Brunei Darussalam, Canada, China, Egypt, Ghana, Hong Kong, India, Indonesia, Iraq, Ireland, Japan, Kazakhstan, Malaysia, Nigeria, Peru, Philippines, Qatar, Russia, Saudi Arabia, South Africa, South Korea, Sri Lanka, Tanzania, UAE, United Kingdom, USA and Vietnam. We have renowned keynote speakers from different continents sharing with us their latest findings in their respective fields. These include Professor Dr. Ataur Rahman from Western Sydney University, Australia, Professor Dr. Jihong Wang from University of Warwick, United Kingdom, Professor Dr. Safian Sharif from Universiti Teknologi Malaysia, Malaysia and Professor Dr. Janardhan Reddy Koduru from Kwangwoon University, Seoul, South Korea.

This conference would not have been a reality without the dedication and support from our colleagues serving in the various committees namely Ceremony, Finance, HSE, ICT, Innovation & Protocol, Logistics, Media & Publicity, Photography, Publishing, Souvenirs & Certificates, Sponsorship and Technical. We are also thankful to Professor Dr. Dayang Hajah Zohrah binti Haji Sulaiman (Vice Chancellor of UTB) and the Conference Steering Committee for the support rendered in BICET 2021. We sincerely thank all the internal and external reviewers who have invested a significant time and effort in reviewing the papers to ensure quality for this conference proceedings.

Last but not least, we are grateful to our industry partners in sponsoring this conference namely Berakas Power Company, Brunei Shell Petroleum, Huawei Technologies and Petrokon Utama Sdn Bhd. Our sincere thanks are also due to our supporting partners namely Pertubuhan Ukur Jurutera & Arkitek (PUJA), The Institution of Mechanical Engineers UK (Brunei Group), Society of Petroleum Engineers USA (Brunei Section), Institution of Civil Engineers, UK and The Institution of Engineering and Technology UK in making BICET 2021 a great success.

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