

Advanced Composites – Their Research and Applications

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ABSTRACT:

Recently, using advanced composite materials for different types of engineering products have become very popular, owing to their superior mechanical properties with possessing multi-functional abilities, such as self-healing and structural health monitoring. In almost all industrial sectors these materials would bring a lot of benefits to enhance the properties of structures that do not have if they are made by traditional metallic materials. With the integration of industry 4.0 concept, the materials has become possible for design and manufacturing across different countries and companies within a day. This lecture aims at providing a comprehensive review on the recent research trend by using of composite materials, in construction, aerospace, maritime, automotive and sport engineering industries, from their nano-to-macro scale, and opportunities for high level research in the future. The production method using automation and 3D printing will be introduced.

Brief Biography

Professor Lau received his Bachelor and Master degrees of Engineering in Aerospace Engineering from the Royal Melbourne Institute of Technology (RMIT University, Australia) in 1996 and 1997, respectively. Within that period, he also worked for General Aviation Maintenance Pty Ltd, Australia, as an Engineer Trainee, and for the Corporative Research Centre for Advanced Composite Structures (CRC-ACS) Australia, as a Research Assistant designing a repair scheme for composite performs. Afterward, he received his Doctor of Philosophy (PhD) from The Hong Kong Polytechnic University in 2001. Thereafter, he was appointed Assistant Professor in 2002 and promoted to Associate Professor and Professor in 2005 and 2010, respectively. In 2015, he was appointed as Alex Wong/Gigi Wong Professor in Product Design Engineering and Associate Dean (Industrial Relation) in the Faculty of Engineering, PolyU. Currently, he is Pro Vice-Chancellor (Research Performance and Development) of Swinburne University of Technology, Australia to look after its future research and ranking strategies. Professor Lau has received numerous research and teaching awards since 2002. In 2016, he was elected as Fellow of the European Academy of Science and Arts. To date only three academics in Australia have received this honour. His publications have received over 19,600 citations with h-index of 67. Since 2014, he has been elected as International Vice President of The Institution of Mechanical Engineers (IMechE) and appointed as Independent Non-executive Director of Kingsflair International (Holdings) Limited. Dr Lau was named Australian Research Theme Leader in “Composite Materials” in 2019.