

SPEAKERS' CONTACT & PRESENTATION DETAIL FORM

Composite Technology Seminar & Expert Forum

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TITLE OF PRESENTATION (15 words or less)

Why the industry needs new knowledge to drive repair of fibre composite materials

PRESENTATION ABSTRACT (200 words or less)

Carbon fibre reinforced polymer composites (CFRP) are materials with high specific strength and stiffness that have important structural applications in the transport industry where achieving significant fuel saving and lower carbon emission are important objectives. CFRPs are made from continuous carbon fibres embedded in (with predetermined orientation) and reinforcing a weak polymer matrix. However, CFRP can also be damaged when in service, such as high velocity impact (i.e. bird-strike) or low velocity impact (e.g. tool drop), where the continuous fibres fragment at the damaged site. To repair the damaged parts, ideally this means restoring the mechanical properties of the structure to the original/pristine condition. In practice, this is not realistic. In addition, with advances in CFRP, e.g. hierarchical CFRPs, resin-embedded particles in CFRPs, embedded sensors in CFRP, the notion of continuity of reinforcement by the fibres *is called to question*. However this is not well understood and challenges to effective repair may be overcome by looking to new studies to gain deeper understanding of the nature of these advanced CFRP in the damaged states. This talk will highlight present understanding of discontinuous fibre reinforced composites, recent advances in CFRP and challenges to understanding the performance of damaged and repair of advanced CFRPs.

SPEAKER BRIEF BIOGRAPHY (120 words or less)

Associate Professor Kheng Lim Goh (FIMechE, CEng) is Director of Research at Newcastle Research and Innovation Institute Singapore. He has a long-standing interest in composite materials. His research aims to understand the physical properties of natural and synthetic composite materials and to use this understanding to engineer nanocomposite materials, as well as to repair damaged composite materials. He has authored over 70 papers in peer-reviewed journals and conferences. He has authored the book entitled 'Discontinuous-fibre reinforced composites' (Springer, 2017), and edited a book entitled 'Interfaces in particle and fibre reinforced composites' (Elsevier, 2019/2020). Since 2016, he has been invited to present (keynote and plenary) lectures at a number of materials-related international conferences, namely JEC, ICAMEM, ICEIM, ICNFM, CMMS, and IULTCS.