

Key note speech

Technical session (22B-III)

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Carbon nanotubes for next generation aircraft materials

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A perfect crystalline carbon nanotube (CNT) is one of the lightest, strongest and stiffest materials known from the last two decades. However, they are yet to be thoroughly exploited for any potential aerospace product. The current paper demonstrates some of the significant benefits for using CNT filled materials for developing the next generation hybrid micro/nano-composites for aircrafts. CNTs were used to expedite processing (microwave curing) and reduce energy consumption for Carbon Fibre Reinforced Epoxy (CFRE) composites. CNTs induced strain sensing and structural health monitoring capability to CFRE composites as demonstrated in this work. It was also shown that CNTs significantly increased the fracture damage tolerance of CFRE composites that are currently being used for Boeing 787 and Airbus' A350-XWB, where the latter aircraft is yet to be launched.

Keywords: Carbon nanotube (CNT), composite, Carbon Fibre Reinforced Epoxy (CFRE)

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