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Carbon nanotube enhanced aerospace composite materials : a ...
MIT researchers have devised a way to manufacture autoclave-formulated aerospace-grade advanced carbon fiber composites without utilizing applied pressure from an autoclave. Cross-sections of the composites show that a nanoporous film with morphology-controlled nanoscale capillaries provides the needed pressure at the interfaces in layered polymeric architectures.

Carbon Nanotube Film Produces Aerospace-Grade Composites ...
The use of floating catalyst chemical vapor deposition to make carbon nanotube (CNT) materials for aerospace structures overcomes the need for dispersants, and allows for products that consist mostly of nanotubes.

Aerospace Applications of Carbon Nanotube Materials
Carbon nanotubes (CNT) exhibit an excellent range of multiphysics properties both in terms of electrical conductivity and mechanical stiffness, with current density around of 109 A/cm2and Young's modulus between 1.0 TPa and 1.4 TPa.

Design of a hybrid carbon fibre/carbon nanotube composite ...
MIT engineers have developed a method using carbon nanotube film to produce aerospace-grade composites without vast ovens and autoclaves. The technique may help to speed up the manufacturing of airplanes and other large, high-performance composite structures, such as blades for wind turbines.

Aerospace-grade composites made without ovens or autoclaves
The segregated CNT/PP composite containing only 3.5 wt% CNT exhibits an average EMI shielding effectiveness (EMI SE) of 32 dB, which shows 130% and 30% improvements in comparison to 14 dB for the CNT/PP composite prepared by conventionally injection molding and 25 dB for the CNT/PP composite prepared by compression molding.

Injection molding of segregated carbon nanotube ...
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Carbon Nanotube Enhanced Aerospace Composite Materials: A ...
Now researchers at the University of Surrey's Advanced Technology Institute (ATI), the University of Bristol's Advanced Composite Centre for Innovation and Science (ACCIS), and aerospace company Bombardier have collaborated on the development of a carbon nanotube–enabled material set to replace the polymer sizing.

Carbon Nanotubes Make Aerospace Composites Conductive
The HNT/C (0.9 vol% of the fiber composite) with 11.9 vol% carbon enhanced the flexural strength and storage modulus by 18% and 23%, respectively, and decreased the porosity from 4.4% to 0.9%.

Carbon fiber epoxy-matrix composites with hydrothermal ...
The favorable conductive properties of carbon nanotubes (CNTs) offer opportunities for constructing CNT-based nanocomposites with improved thermal conduction for a range of potential applications. Such lightweight composite materials are expected to have thermal properties that depend on their CNT volume fraction and operating temperature.

Development and Thermal Properties of Carbon Nanotube ...
CNT-enhanced composite tanks lighten rescue workers' loads Graphene nanotube-enhanced composite tanks reduce weight in firefighters' compressed air tanks by up to 75%, and show potential for hydrogen storage.

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