

## ADVANCED COMPOSITES FOR TRANSPORT APPLICATIONS

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In the search for lightweight, strong, and durable materials, composites have proven themselves in a variety of applications. Nowadays, macro-, micro-, or nano-composites are available and they can be simply viewed as any combination of a common matrix with a reinforcing solid phase in these special scale ranges. The selection of filler type and matrix materials is a function of what the finished composite part will be used for in terms of performance and cost. Materials to be used in extreme conditions need to be made of high performance matrices and advanced fillers. In general, high performance macro-, micro- and nano-composites have been obtained by combining advanced thermoplastic and thermosetting matrices with carbon fibers, carbon nanotubes, graphene or other filler materials. Use of high performance composites in the aerospace industry is dramatically increasing in the last decades.. By replacing traditional materials with composites, lighter aerospace products with similar or higher performance characteristics can be obtained. This results also in the reduction of running costs and environmental impact. The effect of this new technology on processing, design and fabrication of composite aeroplane will be presented and discussed.