Editorial

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Biographical notes: Francesco Cappello is a Professor at the Dipartimento di Meccanica (DIMA) of the University of Palermo, of which he has been the Director. He has performed many research activities in collaboration with Michigan State, Belgrade and other Italian Universities, Graphitech Foundation, FIAT, ELASIS, FIAT-AVIO. He is author of over 100 scientific papers.

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Materials are a central issue in most design and manufacturing processes. No matter how well established a given material might be for an application, it will almost certainly be challenged at some stage by lighter, stronger, smarter or more cost-effective alternatives.

Material selection in the automotive industry varies significantly across the market segments. For mass production vehicles, the volume demands and cost constraints have proved to be a significant obstacle to the widespread introduction of alternatives to the traditional metals. However, the flexibility offered by niche and high performance markets has allowed designers the freedom to implement advanced materials, with reinforced matrix composites leading the way.

As the composites industry works hard to develop new materials and processes that are increasingly aligned with the requirements of automotive structures, a more fundamental issue that needs to be addressed is how designers will adapt to the opportunities that composites provide. The degrees of freedom in performance, styling and functional integration that composites offer are best exploited by implementing a wholly revised design approach. It is all very well inviting designers to 'think composite' but how ready and willing is the industry to rethink the way its goods are produced? What is the right balance between exploiting the benefits of composite design whilst retaining the time-secured advantages of metals? What about the uncertainties surrounding composites when it comes to wider issues such as repair infrastructures, recycling and whole life performance?

Editing a special edition of the *International Journal of Vehicle Design* devoted to the use of composite materials in the automotive sector is our attempt to raise some of the above questions. As the following papers illustrate, composites offer many opportunities for product improvement. However, it is also clear that there are a wide range of issues that need to be addressed if there are to be further significant breakthroughs in composite usage and that these issues should be confronted, not avoided.

Our final thought and big thanks goes to Inderscience Publishers for the opportunity to edit this special issue and to all the authors that have contributed their work to this project. We hope you find it interesting.