Editorial

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Biographical notes: Ahmed Elmarakbi obtained his PhD in Mechanical Engineering from the University of Toronto, Canada in 2004. After a couple of successful postdoctoral fellowships in Canada and Japan, he moved to the UoS, UK in 2007, where he is, currently, a Professor of Automotive Engineering. His research interests are focused on advanced composite materials for automotive. He has 120+ peer-reviewed research papers, and 60+ invited talks and presentations. Most recently, he has published a new book entitled *Advanced Composite Materials for Automotive Applications: Structural Integrity and Crashworthiness*, Wiley, UK. He has 15 years of experience managing national and international projects worldwide.

International Journal of Automotive Composites (*IJAutoC*) is a new journal based on creative ideas and intensive collaboration of international groups of academics and industries working in the fields of advanced composite materials and their applications in automotive industry.

The automotive industry faces many challenges, including increased global competition, the need for higher-performance vehicles, reduction in costs, and tighter environmental and safety requirements. The materials used in automotive engineering play key roles in overcoming these challenges. However, the development of materials and processes to facilitate the use of composites in high volume automotive applications is also still a big challenge. Thermoplastics and thermosets composites are being heavily considered by many automotive companies. Nowadays, there is a clear direction within car industries to replace metals parts by polymer composites in order to improve fuel consumption and produce lighter vehicles. The main advantages composites offer the automotive applications are in cost reduction, weight reduction, recyclability and excellent crash performance compared with traditional steels.

The automotive industry is widely viewed as being the industry in which the greatest volume of advanced composite materials will be used in the future to produce light vehicles. Nowadays, several advanced materials are widely used in automotive industry; however, vehicle safety is usually compromised owing to lightweighting. Owing to the trade-off between light vehicles and safety standards, new directions need to be adopted to overcome safety issues. Several attempts have been made to strengthen vehicle structure to enhance crashworthiness, however, safety issues remain the main obstacle to producing lighter and greener cars. Therefore, the need to discover a new direction for greener and safer vehicles is urgent. Recently, novel advanced composites, including

graphene, have attracted both academic and industrial interest because it can produce a dramatic improvement in properties at low filler content.

Composites in the automotive industry is an old endeavour spanning several decades, however having *IJAutoC* as a focused source, and a repository of valuable information, to support it is new and is urgently needed. *IJAutoC* provides comprehensive explanation of how advanced composites (FRPs, reinforced thermoplastics, carbon-based composites, graphene composites, and many others) are designed, processed and utilised in automotive vehicles. It includes technical explanation of advanced composites in vehicle design/analysis and covers all phases of composites design, analysis, modelling, testing, manufacturing and failure analysis. It also sheds light on the performance of existing composites and future developments in automotive materials technology. The term, 'automotive', includes passenger cars, sport utility vehicles, vans, trucks, buses and recreational vehicles.

The objectives of *IJAutoC* are to establish a channel of communication to disseminate knowledge between academics/researchers and industry practitioners. Because of the multi-scale nature of composite materials and their wide automotive applications, the journal will provide a forum for cross-scale investigations into the materials' preparation and processing, structure, properties, performance and applications. *IJAutoC* will help engineers and applied scientists engaged in composite materials within automotive vehicles to contribute to the field and to disseminate technical information. *IJAutoC* covers vital topics on automotive composites and definitely would be attractive to the entire scientific community. *IJAutoC* will be valuable for those previously worked with composites and for those who are considering using them in the future in automotive applications. The journal is proposed to give readers an appreciation of composite materials and their characterisations. It will also provide the reader with the state of the art in the failure analysis of composite materials and their implications in automotive industry. It will provide many technical advantages on current and future uses of composites and development and specific characterisations of composites and their energy absorption capabilities for crash safety.

IJAutoC addresses a strategic area of research and will cover an important area of engineered materials that is currently crucial for the automotive sector. This new journal provides an important forum for discussion of the latest advances in composites technology as applied within automotive engineering. *IJAutoC* will evolve to become the international hub for progress, novelty, innovation, and cutting-edge applied R&D for the automotive community.

Finally, *IJAutoC* is a peer reviewed journal devoted to the publication of recent and significant research in the field of automotive composites. *IJAutoC* publishes original research papers, review articles, technical reports, case studies, book reviews and technical notes from a wide variety of sources dealing with all aspects of the science and technology of automotive composites. Contribution may be by submission or invitation, and suggestions for special issues and publications are welcome. Articles in the first issue of *IJAutoC* are selected after several rounds of meticulous review process. On behalf of all the editorial board members, I would like to thank all researchers in the field of automotive composites who accepted our invitation to submit their scholarly work for the inaugural issue of *IJAutoC*.