Preface

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Biographical notes: Weihua Li, PhD, is a Professor and Director of the Engineering Manufacturing Research Strength at the University of Wollongong. He obtained his BEng (1992) and MEng (1995) from the University of Science and Technology of China and PhD from Nanyang Technological University, Singapore (2001). His research focuses on magnetorheological materials and their applications, rheology and intelligent mechatronics. He is serving as an associate editor of Smart Materials and Structures. He has published more than 180 journal and conference papers.

Seung-Bok Choi, PhD, is currently a Distinguished Inha Fellow Professor of Mechanical Engineering at Inha University, South Korea. He is a Fellow of the National Academy of Engineering of Korea and the Korea Academy of Science and Technology. He received his BSc from Inha University (1979) and MSc (1986) and PhD (1990) from Michigan State University, USA. He is serving as an associate editor of *Smart Materials and Structures* and *Journal of Intelligent Material Systems and Structures*. His research interests are control applications using smart materials. He has published more than 320 refereed international journal papers.

Norman M. Wereley, PhD, is the Minta Martin Professor and Chair of Aerospace Engineering at the University of Maryland. His research focuses on application of smart structures and materials to aerospace systems. He is Editor of *Journal of Intelligent Material Systems and Structures* and associate editor of *Smart Materials and Structures* and *AIAA Journal*. He was awarded the

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ASME Adaptive Structures and Material Systems Prize and the SPIE Smart Structures and Materials Lifetime Achievement Award. He is a Fellow of AIAA, ASME and IOP. He holds the BEng from McGill University and MS and PhD from Massachusetts Institute of Technology.

Smart materials exhibit highly functional and changeable properties. They have the ability to change shape, stiffness, position, damping, fluid flow rate and other characteristics in response to changes in applied temperature, electric field and magnetic field. These materials are commonly used to develop novel sensors and actuators. By incorporating their intrinsic sensing and actuating capabilities into structural elements of vehicles, smart materials have high potentials in automotive applications.

Automotive applications tend to require the high volume manufacture of devices at low cost with high performance and high reliability, even in harsh environments. To replace conventional systems or introduce new capabilities into automobiles, systems based on smart materials and structures technology need to add functionality, performance and adaptability without decreasing reliability, while marginally increasing cost and weight.

However, to advantageously exploit the capabilities of smart material-based sensors and actuators in vehicle technology requires multidisciplinary approaches to design and optimisation, where improved controllability, maintainability and extendibility are key goals. This special issue of the *International Journal of Vehicle Design* aims to address the above issues by focusing on the state-of-the-art research and development efforts on the new technologies based on smart materials and smart structures. The specific topics covered by this issue include the following:

- New designs and analyses of smart materials-based automotive components and/or systems for improving automotive performance.
- Advanced vehicle control and multidisciplinary modelling to support the design of novel smart materials-based automotive components and/or systems.
- Position/vibration/shock control of vehicles with smart materials-based components to improve driving comfort, handling stability and crashworthiness.

The Guest Editors would like to thank all the authors for their contributions. They are also grateful that the reviewers devoted their precious time to make this special issue successful. The Guest Editors would also like to thank the journal editors, including Prof. M. Dorgham, Prof. K. Deng and Dr. D. Cao, for their trust and guidance.