Special Issue

Smart Materials and Structures for Vehicle Applications

Message from the Guest Editor

This Special Issue deals with the development of adaptive systems and structures for use in vehicles, defined broadly as vehicles for ground or air transportation. Smart materials can greatly accelerate the development of multi-functional systems through the integration of actuators, sensors, and stiffness-tunable components to achieve structures that autonomously or semi-autonomously adapt to changing external conditions. This Special Issue seeks to attract original works in these areas that may focus on one or more aspects of novel smart materials, control strategies for adaptive structures, new actuators and sensors, advanced manufacturing approaches for smart structures, and innovative designs of components and systems, with the overall objective of developing adaptive structures that can contribute to the widespread transition from fossil-fuel-based transportation to EVs, air taxis, and other emerging applications in the areas of ground and air vehicles.

Guest Editor

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About the Journal

Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

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