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Editorial

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With the advances in smart materials and structures, integrated sensors and actuators, and AI technologies, the smart aircraft is becoming a new generation emergent and disruptive aeronautical technology. Inspired from the long-term investigation of avian flight in nature, smart aircraft can change and optimize their shapes to adapt to various flight conditions and mission profiles. In order to further promote the international collaborations in smart aircraft community, the International Symposium on Smart Aircraft 2019 was held in Xi'an Jiaotong University during the 25–27 October, 2019. The special issue of the Smart Aircraft are the collections of the selected 12 papers from the Symposium which focused on the smart aircraft design, smart material and structures, and AI-enabled flight control.

In this special issue, there is a morphing wings review from the aims and challenges to the current open issues of a technology. There is also a survey on the conceptual design of hypersonic aircraft powered by RBCC Engine. The optimization, design, and testing for morphing leading edge were discussed. Some papers focus on the vibration, impact responses, and also the monitoring system of the composite structures. The aerodynamic performance for different smart aircraft were investigated, including the aerodynamic performance of a small-scale tilt rotor, the ventral gap of a paper airplane, and also the glider flow separation control by Microsecond Dielectric Barrier Discharge. The flight control of smart aircraft is another important topic and two papers were selected. One is about the BP Neural Network-Kalman Filter Fusion Method for UAV Target Tracking and the other is the Model Predictive Controller Design of a Quad Tiltrotor UAV.

We take this opportunity to thank the writers and the reviewers of these papers. We thank them for their support and giving of their time in writing their papers. We also thank Professor John Chew, the Editor-in-Chief of Journal of Mechanical Engineering Science (Proc. IMechE Part C) for giving us the opportunity to produce this special issue and the editorial support staff, Martin McDonald, Ms Katie Gibson, and Ms Kiran Gupta for their continuing assistance throughout the assembly of these papers and compilation of this special issue.

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