Special Issue

Active Flow Control: Recent Advances in Fundamentals and Applications

Message from the Guest Editors

Active flow control (AFC) utilizes local active perturbations to induce global flow-field changes that result in net performance improvement. For decades, it has been a vibrant research area with potential applications in a wide variety of problems of academic and industrial interest. Recent developments in actuation technologies and computational/experimental methods, along with the re-booming of machine learning techniques, have made it possible for AFC to be more efficient, robust, and intelligent. Therefore, we propose this Special Issue to showcase and discuss new advances in AFC, both in fundamentals and in applications. The topics of interest include but are not limited to:

- Design and development of novel actuators for AFC;
- Theoretical/computational/experimental studies on AFC;
- New control strategies on AFC;
- Machine-learning-guided AFC;
- New AFC applications.

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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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