

Special Issue on **Dynamical Behavior Investigation and Adaptive Adjustment Design of Bionic Insects**

CALL FOR PAPERS

The bionics engineering of insect is a hot and important issue to be paid attention to by scientists and engineers for a long time. The diversity of biological flying ability and skills mainly comes from the variety of their wings and the subtle and complex motor control pattern in flight. The flight of insects showed that the power required by the bionics flapping aircraft at low speed flying is much smaller than the fixed wing aircraft, and the bionics flapping aircraft has excellent vertical take-off and landing capability. But it is very difficult to really implement the complex movement patterns, or the high frequency flapping wing movement like the insects such as dragonfly and wasp. Although the investigation of aerodynamics, flight mechanics, and its implementation mechanism for the flapping wing flight vehicle has currently made the preliminary theoretical and experimental results, these studies still have a certain gap for the requirements of the bionic flapping wing flight vehicle. In order to realize the flapping wing flight, besides continuing to further deeply study the flapping wing flight mechanism by the way of theory and experiment, the problems such as biomimetic material and multiscale structure, unsteady aerodynamics, high-performance power systems and energy, high efficient flapping wing drive mechanism, and the communication and control system during the design and manufacture of the bionic flapping wing flight vehicle are still a challenge around the world. All of these scientific questions always attract a number of biologists, physicists, and other scientific workers to try to figure out the secret.

The aim of this special issue is to investigate the internal relationships between the geometry, profile, topology features, and structure of the insect wing and nimble flight by the experiment, numerical simulation, and ornithopter prototype. This issue will widely promote the development and application of biological mechanics (theoretical modeling, simulation, and experimental method), solid mechanics, aerodynamics, materials science, mechanical engineering, and control engineering and may drive the innovative interdisciplinary development. One of the most important significances is to help design a more viable ornithopter with the micro bionic flapping wing type and micro mechanical device related to the miniature aircraft. Original research contributions as well as review articles are welcome. Original contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences are sought.

Potential topics include but are not limited to the following:

- ▶ Experimental measurement and characterization
- ▶ Biomimetic material and multiscale structure
- ▶ numerical simulation
- ▶ Biomechanics including movement, locomotion, and fluidics
- ▶ Flexible regulation and control design of biomaterials and structure
- ▶ Ornithopter with the micro bionic flapping wing type
- ▶ Bionics engineering of insect

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/abb/aadd/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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