

**11th. World Congress on Computational Mechanics (WCCM XI)**  
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**Minisymposium Proposal**

Title:

**Shape and topology optimization in fluids and structures**

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This minisymposium is to provide a forum for discussing state-of-the-art computational methods and recent results for shape and topology optimization problems related to fluid fields and fluid/structure.

Optimizations of cavity shapes and structure shapes in fluid flows are important issues in the designs of various structures treated in automotive engineering, aeronautical engineering, civil engineering, etc. Optimization analysis usually undergoes repetition of solving the physical field starting from the initially assumed state to the optimum state. Therefore, especially in fluid problems and fluid-related multiphysics problems, computation time required for shape optimization becomes quite large. Thus, developing fast computation methods of fluid flows and those with structure interactions, and efficient algorithm of shape optimization of the field and structures including their topologies is important

In this minisymposium, papers are solicited in the topics: numerical simulations for various fluid flow problems related to optimizing the shapes of cavities and structures in the flow fields, and numerical techniques for shape/topology sensitivity and optimization analysis, such as direct differentiation method and adjoint method.