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ADAPTABLE AND MORPHABLE STRUCTURES FROM BIOLOGY TO ENGINEERING

TRACK NO. 900 (STRUCTURAL MECHANICS, DYNAMICS AND ENGINEERING)

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ABSTRACT

Biological organisms have solved the problem of controlling size and form and of adapting shape to function with clever designs achieved through evolution and natural selection. Structural forms inspired by biological organisms are also adaptable, plastic, and morphable, and they offer inspiration for innovative deployable structures. Spectacular demonstrations of these principles abund in the recent scientific literature. We quote here just a few examples as an illustration [1-3], coming from the research teams of the orgnizers, and inspired by the motility of a unicelular organism.

The goal of this mini-symposium is to review the state of the art on the problem of predicting, designing, actuating and controlling the shape of deformable elastic objects, and to identify promising avenues for future research, by gathering scientists covering a broad range of expertise and tools including biology, robotics, structural mechanics, biomedical engineering, computational geometry, architecture and industrial design.

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