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Elastic Pectoral Fin Actuators for Biomimetic Underwater Vehicle

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Summary: This paper describes the developments of new pectoral fins made of elastic materials with the functions of flexibility and multifunctionality for biomimetic underwater vehicles to use as not only a propulsive device, but also other applications such as grippers, avoiding damages to environment by rigid fins. We developed two types of elastic pectoral fins, an actively controlled pneumatic fin and a passively controlled flexible fin in this study. We carried out the verification tests for generating the propulsive forces and FEM analyses of the behaviors of two elastic pectoral fins.

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