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Starting jet formation through eversion of flexible plates CHEOL-GYUN JUNG, DAEGYOUM KIM, KAIST — A starting jet found in nature, such as flow through heart valves or jet propulsion of aquatic animals, is generated by the interaction of pressurized fluid with deformable membranes. The starting jet can also be formed by the interaction with everted flexible structure. For example, the nematocysts of the *Cnidarian*, the fastest stinging organelles that penetrate the skin of a prey or a predator, inject toxin through a structure that is everted by flow from a high-pressure chamber. Most studies on the everted structure have been limited to its structural properties or focused on the manufacturing of medical devices or soft robots, but the interaction with compressed fluid still remains unclear. Here, inspired by the discharge mechanism of the nematocysts, we investigate experimentally the formation of a starting jet flow through eversion process using a simplified model that represents an everted structure. The ends of two everted flexible plates with a large aspect ratio are clamped at both sides of a rectangular channel, and the other ends of them are in contact with each other in the middle of the channel to model the everted structure. With this configuration, we study the eversion dynamics of the flexible plates and the formation of jet flow at the exit of the channel.

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