

Abstract Submitted
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Snail-Inspired Biomimetic Devices BRIAN CHAN, THERESA GUO, ANETTE HOSOI, Massachusetts Institute of Technology — Robosnail 1 is a machine we have designed that uses a waving foot to propel itself over a viscous fluid in the lubrication limit. We present new theoretical and numerical work, including full 3D modeling of finite-width snails, and a design for snails which can move faster than their own waving velocity. We also have experimentally validated the 3D theory using several different versions of Robosnail 1. Robosnail 2 is a machine we have designed that uses in-plane waves of compression to propel itself on a thin layer of finite yield-stress fluid. The latest iteration is able to climb walls and move upside-down on a layer of Carbopol, a gel-like water-based polymer solution. We present basic theory and experimental results.

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