

Robotic clam digs in mudflats

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To design a lightweight anchor that can dig itself in to hold small underwater submersibles, Anette (Peko) Hosoi of MIT borrowed techniques from one of nature's best diggers -- the razor clam.

"The best anchoring technology out there is an order or magnitude worse than the clam - most are two or three orders worse," says Hosoi, whose group is presenting this work next week at the 62nd Annual Meeting of the American Physical Society's (APS) Division of [Fluid Dynamics](#) will take place from November 22-24 at the Minneapolis Convention Center.

Using relatively simple anatomy, the bivalve burrows into the bottom of its native mudflats at a rate of a centimeter per second. Hosoi's studies of the physics behind this remarkable ability have revealed that the digging is accomplished in two motions - a push upwards with its foot, which mixes the [grains](#) of solid into the liquid above, and a synchronized push down.

By borrowing this principle, Hosoi and graduate student Amos Winter have created a simple robot that is now being tested out in the [salt water](#) mudflats off of Cape Cod. It digs just as fast as the living clam and is "small, lightweight, and does not use a lot of energy," says Hosoi.

The robot is operated electronically via a tether and is made to open and close via pressured air from a scuba tank.

[More information:](#) The presentation, "The design, testing, and performance of RoboClam, a robot inspired by the burrowing

mechanisms of Atlantic razor clam (*Ensis directus*)" by Amos Winter et al of MIT is at 11:35 a.m. on Sunday, November 22, 2009. Abstract: meetings.aps.org/Meeting/DFD09/Event/110965

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