Bionic microrobot mimics the 'water strider' and walks on water (w/ Video)

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Scientists are reporting development of a new aquatic microrobot that mimics the amazing water-walking abilities of the water strider — the long-legged insect that scoots across the surface of ponds, lakes and other waterways. The bionic microrobot incorporates improvements over previous devices of this kind that position it as a prime candidate for military spy missions, water pollution monitoring, and other applications, the scientists say. Their study appears in the journal, *ACS Applied Materials & Interfaces*.

"Walking on the water surface is a dream of humans, but it is exactly the way of life for some aquatic insects," Qinmin Pan and colleagues note, citing water striders, mosquitoes, and water spiders. This is due largely to their highly water-repellent (superhydrophobic) legs. Other scientists have made tiny aquatic devices based on the water strider with the hope

of developing bionic robots that can monitor water supplies, conduct military spy missions when equipped with a camera, and perform other tasks. But until now, no one has found a way to make water-walking robots that are practical, agile, and inexpensive.

The scientists describe progress on a new robot, with a body about the size of a quarter; ten water-repellent, wire legs; and two movable, oar-like legs — propelled by two miniature motors. "Because the weight of the microrobot is equal to that of about 390 water striders, one might expect that it will sink quickly when placed on the water surface," the report noted. However, it stands effortlessly on water surfaces and also walks and turns freely.

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