

Solving another mystery of an amazing water walker

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Scientists have found a new explanation for the water strider's "miraculous" ability to lead onto a liquid surface without sinking. Credit: Ho-Young Kim, Seoul National University, Korea

Walking on water may seem like a miracle to humans, but it is a ho-hum for the water strider and scientists who already solved the mystery of that amazing ability. Now researchers in Korea are reporting a long-sought explanation for the water strider's baffling ability to leap onto a liquid surface without sinking. The study is scheduled for the Dec. 18 issue of ACS' *Langmuir*.

In the new study, Ho-Young Kim and Duck-Gyu Lee note that scientists already have discovered the hydrophobic, or water-repellent, structure of the water strider's legs and how they allowed the creatures to scoot along

ponds and placid lakes. However, their ability to jump onto or “bounce” off liquid surfaces remained a lingering scientific mystery.

Kim and Lee solved it by dropping a highly water-repellent sphere onto the surface of water at different speeds, carefully tracking its motion with high-speed cameras. They found that the ball must be traveling within a narrow velocity range in order to bounce off the water’s surface. The sphere may sink if it goes too fast and won’t bounce back if too slow.

“The highly improved ability of heavy hydrophobic solids to keep afloat on water even after impacting upon water with a high velocity appears to explain partially why water striders have superhydrophobic legs,” say the authors. “Application of our study can be extended to developing semi-aquatic robots that mimic such insects having the surprising mobility on water.”

Source: American Chemical Society

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