

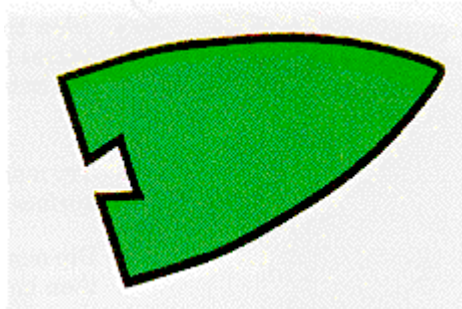
Surface tension-driven boat

Equipment:

Piece of aluminium foil, scissors, large dish filled with water, drop of dishwashing/laundry detergent or soap solution.

Procedure:

1. Fill a large dish with water.
2. Get a piece of cooking foil, and smooth it. Press the foil against some flat surface to ensure that the surface is flat.
3. Cut a small boat-shape out of the foil.
4. The back of the boat has a channel cut into it with a small cavity at the end of it.



5. Smooth the boat again, in order to eliminate all the wrinkles created by cutting.
6. Place the boat gently on the surface of water, nose pointing towards a reasonably large area of free water surface.
7. Dip a match in detergent or soap solution, and gently drop a small drop of the soap on the boat, so that it touches the cavity.
8. Watch what happens to the boat when the soap is added.

Explanation:

As the soap molecules disrupt and weaken the surface tension behind the boat, the boat is pulled forward by the stronger surface tension ahead of it. As soon as the entire water surface is covered with a layer of soap molecules, the motion stops.

When you place soap solution in contact with water, soap molecules try to spread over the surface of the water. At first, since they are confined in the cavity of the boat with only one way out, they jet from the rear end of the boat.