

Visual Delights III: Interactive Trailing Vortices



Objective: Demonstrate Trailing Vortices behind air bubbles

What: **A.** Tube contains dyed rheoscopic fluid (RF) and an air bubble, which can be moved by slightly tilting the tube. RF is water plus pearl-like crystals that are highly sensitive to local shear, allowing for the flow field around the bubble to be visualized. The tube is held horizontally in a groove in foam.

B. Two sided thin enclosure contains dyed RF and air bubbles. The green side has a central partition with an opening.

How: **A.** Pick up the tube and shake it. Place it back in its groove and wait a few seconds until eddies are settled. Gently push down one end of the tube to tilt and move the bubble to the other side. Trailing vortices are now visible. **Challenge: Do this without creating any trailing vortices!** (Hint: control the pushing by placing a thumb on each end of the tube.)

B. Pick up the enclosure and shake it. On the green side, turn it upside down. Tap if needed to get the bubbles going and observe the trailing vortices. On the pink side, shake again to break the large bubble into smaller ones. Turn the enclosure upside down and observe the trailing vortices.