



Curiosity Guide #602

Bubble Science

Accompanies Curious Crew, Season 6, Episode 2 (#602)

Design and Build a Bubble Wand

STEM Challenge

Description

What wand will work well and wonderfully? Wow!

Materials

- Styrofoam cup
- Screen
- Pipe cleaners
- Wire
- Straws
- Plastic tubes
- Acetate sheets
- Popsicle sticks
- Tape
- Hot glue
- K'Nex pieces
- Containers of different sizes
- Bubble solution
- Paper towels

Procedure

- 1) Use the available materials to design and build a bubble wand.
- 2) What size bubbles do you want the bubble wand to produce?
- 3) What shape will the wand be?
- 4) What kind of handle will the prototype wand include?

- 5) Build your Bubble Wand prototype.
- 6) How many bubbles will your wand blow at once? Can your wand make double bubbles? Can your wand form clusters of bubbles?
- 7) Test the prototype and redesign as necessary.

My Results

Explanation

The bubble solution will stick to the surfaces of the wand, even if the wand is a cube shape with linear faces. However, no matter what the shape of the wand is, the wand will release a bubble into a sphere. This is because bubbles take up the least amount of surface area around the trapped volume of air. The spherical shape has less space than the square, triangle, or rectangle, so the bubble will always form a sphere.

Did you know? Motorized bubble wands can be a lot of fun! Let's think about how motorized wands are designed. First, there is usually a ring of circular openings that can rotate through a bubble solution and get covered by a soapy film. At the same time, air is blown through the rotating openings. The soap solution is hit with air particles, stretches away from the wand, and surrounds the puff of air as the bubbles seal. That soap-and-water sandwich can then float through the air. And the best part is that you can blow a lot of bubbles at once!

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