Bubble Prints

This is a very simple activity that combines art, science, and math. The delicate bubble prints are a beautiful way of decorating card or paper for greeting cards or thank-you notes, and while you are about it do a little investigating. There are two different techniques to try here. Which one gives you the best results?

What you need

- Food coloring or acrylic (poster) paint
- A few shallow bowls
- Dish soap (washing-up liquid)
- Tablespoon
- Drinking straw
- Paper–strong absorbent paper or card works best
- Pipette (optional)

For the investigation:

- Transparent plastic document wallet
- Scissors

LET'S INVESTIGATE

Cut the top off the document wallet about halfway down, so that the pocket you have left is a bit shorter than a straw. Pour a little bubble mix into the wallet and use a straw to blow bubbles until they rise up into the wallet. Now examine the different shapes you can see.

1

Place a squirt of food coloring or paint into a bowl. Add a tablespoon of dish soap and a little water. Mix together well.



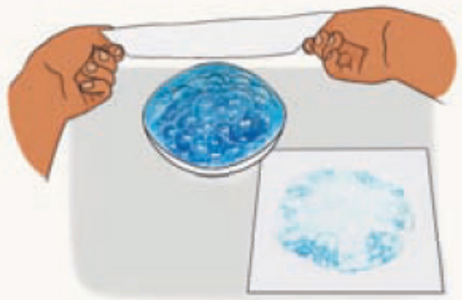
2

Use the straw to blow into the paint mix until you have a good mound of colored bubbles in lots of sizes.



3

Hold the paper flat over the bubbles, gently touch the paper on the bubbles, and lift it straight off again. Examine your print. Keep experimenting with the amount of paint, water, and bubble mix to get the clearest prints. You can build up layers of different colors using different bowls for each color. Look carefully at the shapes of the bubble prints you have captured. Are they round?

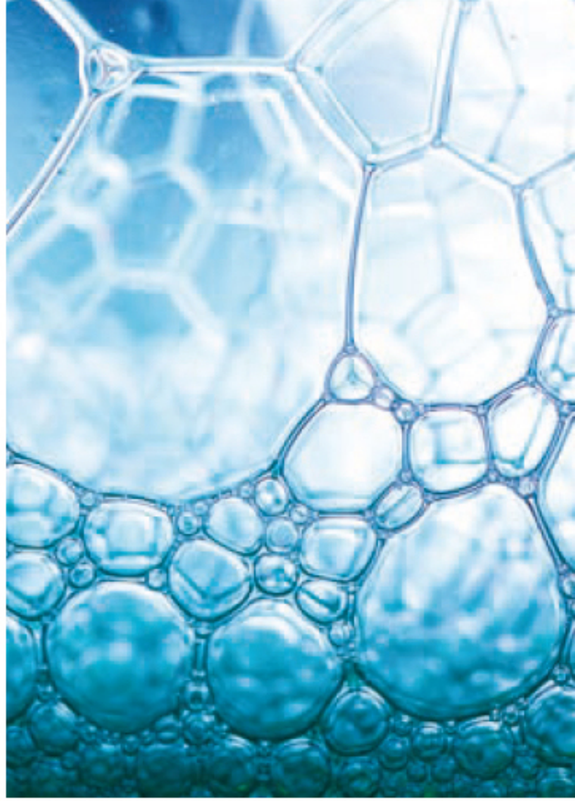


Variation

Another technique is to start with just bubble mix in a clean bowl. Blow a good mound of bubbles and use the pipette to drop a little food coloring or paint on top. Use different colors in different places. The color will collect around the edges of the bubbles. Lay a sheet of paper on top and lift it up to reveal your multicolored print. Keep experimenting to get the best prints.



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Inside the science

When two bubbles meet, they join so that they share the wall between them. If the bubbles are the same size, the wall will be flat. Smaller bubbles are at higher pressure than larger ones, so a small bubble will bulge into a bigger one. Where three bubbles join, the angle between the walls will always be 120 degrees. This is the angle inside a regular hexagon. Look at the bubble prints or the bubbles sandwiched in the plastic wallet, and you will see that some of the bubbles form a pattern a bit like a beehive, with hexagon-shaped faces. It is a very efficient shape.

Bubbles Inside Bubbles

If you touch a bubble, it will pop—true? False! You can push things right inside bubbles and they won't burst. This is what you're going to do in this activity: It takes a bit of skill and patience but has amazing results.

What you need

- Smooth surface, such as a kitchen counter top or a plastic tray
- Bubble mix (see page 18)
- Pipette bubble wand (see page 16)
- Drinking straw

1

Clean your smooth surface with some of your bubble mix; make sure there are no dips, bumps, grease spots, or crumbs. Now spread a circle of bubble mix on the surface with your fingers.



2

Use the pipette bubble wand to blow a large half bubble (hemisphere) onto the wet circle.



3

Dip the straw into the bubble mix–you could use the pipette again but the straw may work better. Carefully push the straw through the first bubble (if the straw is wet with bubble mix, the first bubble shouldn't burst), and slowly blow another bubble. Watch what happens to the first bubble as you blow.



4

Repeat the process, pushing your straw through the two bubbles before you blow the next. Keep going!



Inside the science

Anything dry is a bubble's arch enemy! Imagine two friends holding your hands and pulling you in opposite directions. You will stay still. If one lets go, you'll be pulled straight into the other friend. Water molecules in bubbles are being pulled from both sides. When the bubble lands on a dry surface, there are no water molecules pulling from the dry side so the edge of the bubble is pulled away from the surface toward the center and it bursts. The bubble doesn't pop on the wet counter top or with the wet pipette because the molecules still have "friends" on both sides!

LET'S INVESTIGATE

How many bubbles within bubbles can you make? What happens to the outside bubble each time you add another bubble? Try wetting a long nail or needle with bubble mix and pushing it right through the bubble. Can you do the same with your finger?

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