California State University of Bakersfield, Department of Chemistry

Incredible Egg Geode

Standard:

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Introduction:

Don't fry or scramble your egg, turn it into a beautiful crystal egg geode! In this experiment we will create these incredible crystals and learn about the process of crystallization!

Materials:

- Paintbrush
- Glue
- Food coloring
- Alum powder (look in the spice section of your local grocers)
- Water
- Scissors
- Paper towels
- Bowl
- Beaker/glass
- Spoon
- Pushpin
- Egg

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments

Procedure:

1. You have an egg, now you need to get all the yolk and egg white out of it. WAIT! You can't just crack the egg like you're making breakfast. You need that egg in one piece. Use a pushpin to carefully poke a hole in each end of the egg.

2. Put your mouth on one end of the egg and blow the yolk out through the other hole. Blow the yolk into a bowl or garbage disposal, depending on whether you're hungry or not.

3. Now that you don't have an egg so much as an eggshell, carefully cut the shell in half, down the egg's length, with a pair of scissors. If there are any small pieces around the edges, go ahead and pull them off. They're of no use to you.

4. Continuing to exercise caution (who knew science was so fragile?), wipe out the inside of the egg with a paper towel. Get the interior surface of the egg as clean and dry as possible without cracking it.

5. Drop a small amount of glue into the egg and use a paintbrush to spread it around. Try to cover the entire interior surface, all the way up to the edges, of the egg with glue. Add more glue if needed.

6. Quickly, before the glue dries, cover it with alum powder. How much? Cover it all! Our experiment tester suggested the word “generously”… so use quite a bit.

7. So you covered the glue with alum powder, now what? Well, your options are to sit around until everything is completely dry or let it sit overnight. The first option gets really boring and you need your rest, so come back tomorrow and we'll pick the experiment up there.

8. Is it tomorrow yet? Yes? Then let's do this!

9. Bring two cups of water (that's 473 mL to everyone outside the U.S.) to the point where it is almost boiling. Pour the heated water into a beaker or glass and stir 30-40 drops of food coloring and 3/4 cup of alum powder into the heated water.

10. Let the colored alum solution cool for around thirty minutes.

11. Once the colored alum solution has cooled, place the egg, opening up, into the solution. Push the egg to the bottom of the beaker with a spoon and allow the eggs to sit in the solution for 12-15 hours. That's a long time, right? Good thing you practiced patience by waiting for the glue to dry earlier.

12. After the 12-15 hours have passed, check out your egg. It's grown crystals! Carefully remove the egg and place it on a paper towel or drying rack to finish the geode-creation process.

Data and Observations:
Record your observations in this space

What did you see? Anything you were not expecting? Describe it here.

Questions:

Why is it that the alum powder reacted the way it did?

Does the amount of alum powder have an effect on the experiment?

What role does sedimentation play in this reaction? Explain

References:

1. Stevespanglerscience.com
http://www.stevespanglerscience.com/experiment/incredible-egg-geode
(July 17, 2012).