Ghost Egg!

Applying Chemical Reactions and Fluorescence to make Ghostly Decorations

Ever wonder why so many Halloween decorations glow under a black light? Learn that and more in this activity where we make ghost eggs!

Chemical Reactions are when two substances react and change each other. This change happens on a molecular level, so it can be really hard to see. But they sometimes leave clues that a reaction happened.

When a chemical reaction happens, there may be a change of color, smell, shape or type of matter, and it may even produce heat or light!

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https://theleonardo.org/leo-at-home

Which of these are chemical reactions?

Lighting a Candle

Baking a Cake

A Nail Rusting

These are all examples of chemical reactions! Candles combine oxygen, wax, and a wick to produce fire and smoke. Baking uses heat to transform a bowl of wet ingredients into a fluffy cake. Rusting occurs when iron mixes with oxygen.

In this experiment, we'll create a chemical reaction to transform our normal egg become a glowing ghost egg!

Why do some items glow under black lights?

We call this **fluorescence**. Fluorescence occurs when light invisible to humans, like the ultraviolet (UV) light from a black light, hits certain materials that cause them to release light that humans can see.

We use fluorescence all the time! Fluorescent lamps use this property to give us light. Halloween, laser tag, and dance club decorations often use fluorescence to help make them stand out in low light. Scientists use properties of fluorescence to identify minerals, study fossils, and dye cells to better see them under a microscope. Fluorescence is all over the place!

Materials

- 2 Eggs
- 1 cup Vinegar
- 1 cup Tonic Water (with quinine)
- Cups or jars to soak the eggs
- Black Light

Directions

1. Find a cup or jar large enough to hold 2-3 eggs.
2. Place eggs in the cup.
3. Fill the cup with 1 cup of vinegar and 1 cup of tonic water. What do you see happen?
4. Let eggs sit in solution for 2-3 days or until shell disappears.
5. Once shell has dissolved, remove eggs from solution and look at them under a black light. What observations do you notice?

What's the Science? Did you see signs of a chemical reaction? Once dropped in the vinegar, bubbles should appear on the eggs! We created a chemical reaction! The vinegar dissolves the egg shell and creates these three products:

Ca2	**H_2O**	**CO_2**
Calcium ion	**Water**	**Carbon Dioxide**

Which one of these would be the gas? The carbon dioxide! Carbon Dioxide is also the gas we breathe out when we exhale. The bubbles let us know a chemical reaction is occurring! But be careful! Without a shell, the egg is left with only a delicate membrane to hold it together.

What's the Science? Part 2!

Why do the eggs glow under a black light? It's fluorescence!

Take a look at the vinegar and the tonic water under a black light. The tonic water should glow! Tonic water contains a harmless chemical called quinine that is fluorescent. Without the shell protecting the egg, the tonic water and quinine are free to flow into the egg. When shined with a black light, the quinine now in the egg will make it glow.

Think you can find any more signs of fluorescence? Grab a black light and see what fluorescent items you can find around your home!

Share with the Leo community!

Did you make a ghost egg? Have you found any other material that is fluorescent? Share your discoveries on social media with:

#leoathome and #museumathome