Team First

Jessica Vo

ATLS 4151

10/02/2024

For the “Team First” assignment, I worked with my team to create a distinct visual of the “elephant toothpaste” experiment. The ingredients used for this experiment was: hydrogen peroxide, dish soap, food coloring, yeast, and warm water. At first, I tried to capture the movement of the experiment as it reacted, but the movement wasn’t as sudden as I thought it would be. I ended up capturing the end result of the experiment because I liked how it settled with the bubbles, and food coloring.

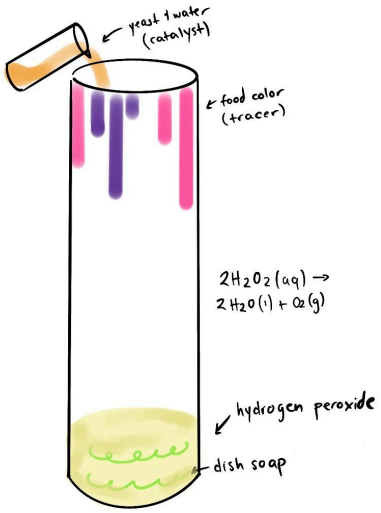


Image 1: Fluid Dynamics Visualization

Starting the experiment with the container, a taller, more narrow container is the ideal vessel for the reaction. Hydrogen peroxide slowly decomposes in water and oxygen, when a catalyst is added, it speeds up the process dramatically. The chemical equation that describes the decomposition of hydrogen peroxide into water and oxygen are shown as a key reaction in the experiment. Gas expansion when trapped in soap bubbles create a foamy eruption. As hydrogen peroxide releases, there is heat that surfaces with the reaction. Not only is the process only producing gas, but it is also releasing heat, resulting in a faster reaction. In fluid dynamics, the

expansion of foam goes through the path where there is least resistance. Pressure is caused and the release of gas creates the volume of foam shooting out of the container.

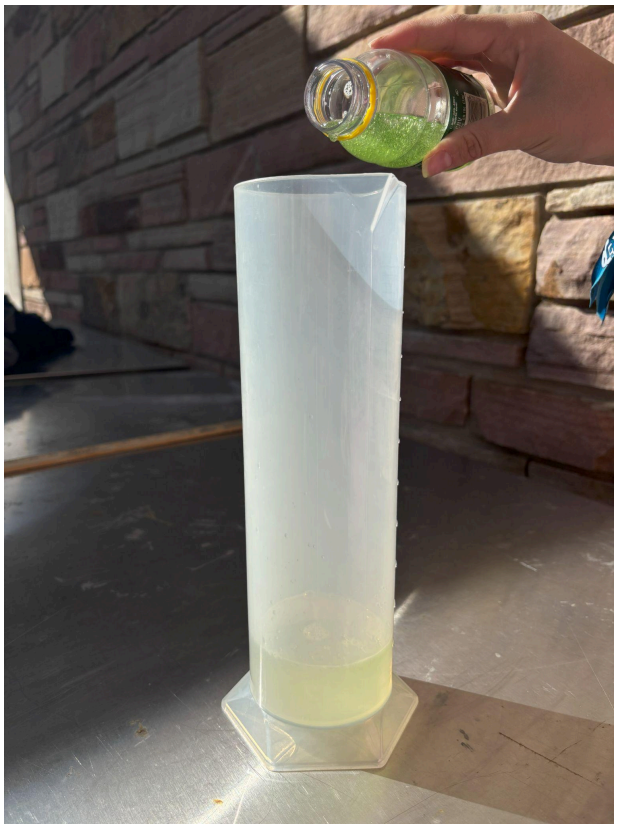

Image 2: Soap in hydrogen peroxide

Image 3: Result of reaction

As the soap is poured into the hydrogen peroxide, the oxygen forms bubbles and gets trapped in the soap which creates foam. After adding the catalyst and food coloring (tracer for visuals), the volume of foam shoots out and settles into a slow “folding” visual from gravity.

In the lighting used for the images, we used the outside lighting on the ITLL patio. There was an overcast which helped the lighting not really change too much, so the camera wouldn’t have to adapt to any light changes.

Image 4: Raw image

Image 5: Edited Image

Using the Fujifilm Xt-4, I wanted to capture a close up observation of the textures in the eruption. Aperture: 5.6, Shutter Speed: 1/160, ISO: 100. The distance of the subject from the camera is about 2”.