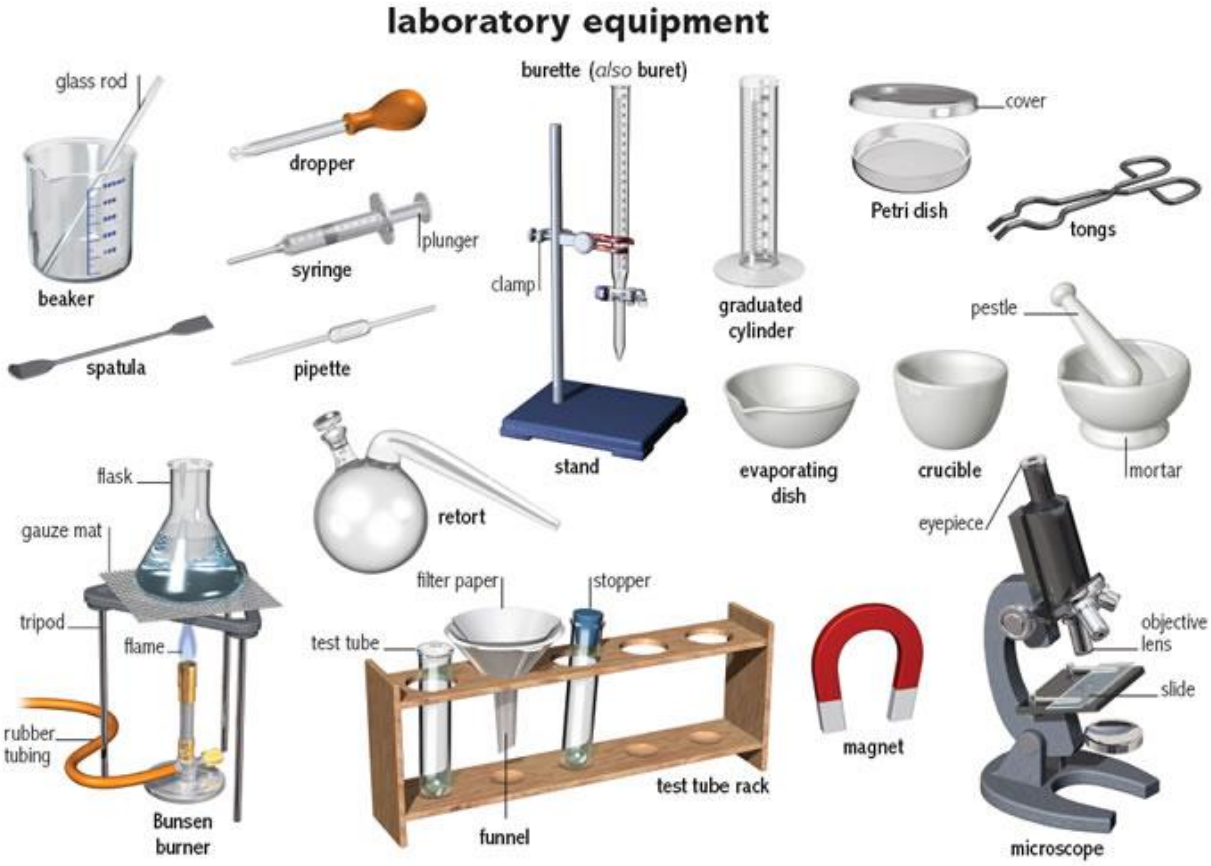
SCIENTIFIC ENGLISH

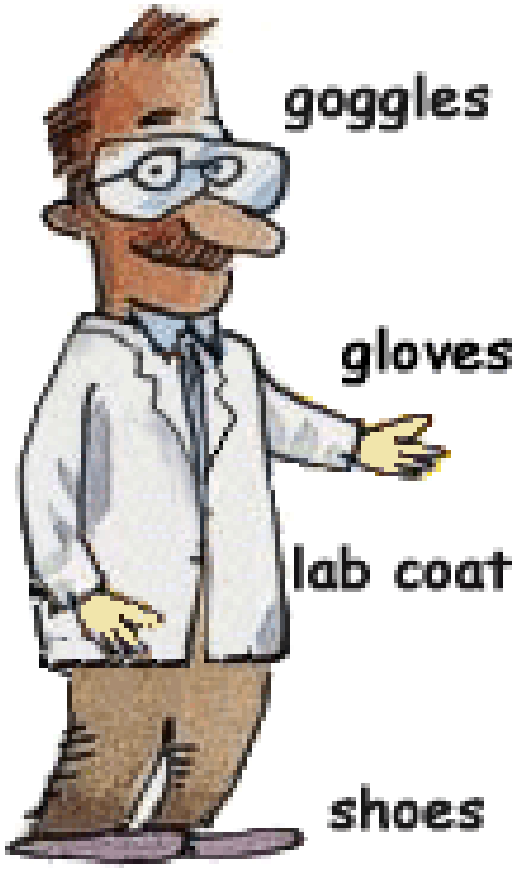
ZAGREB UNIVERSITY

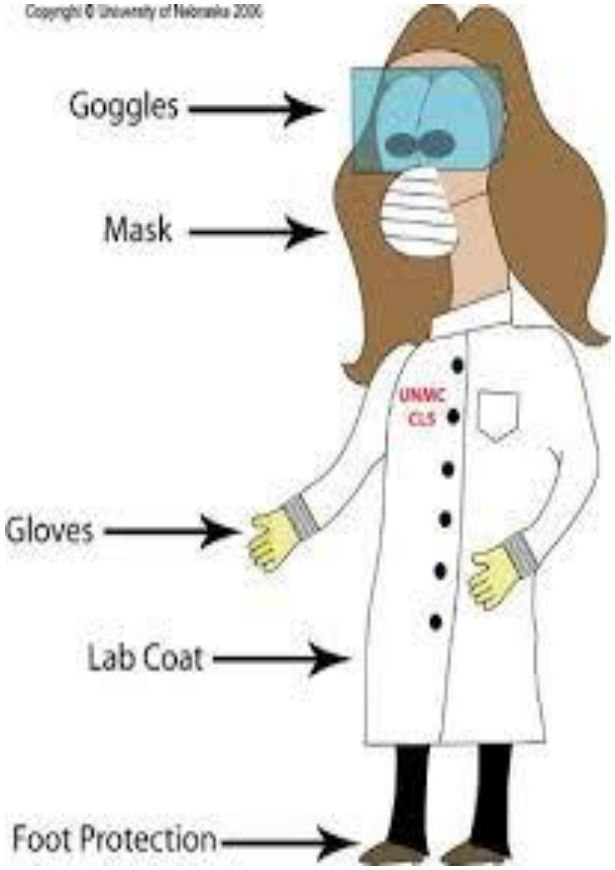
CHEMICAL ENGINEERING AND TECHNOLOGY

LAB EXPERIMENTS



Science Lab Safety Gear





Elephant Toothpaste

Elephant Toothpaste - Imperative

Elephant Toothpaste- Imperative

by Ana Škunca

List of required equipment:
glass bottle, glass cup, spoon

List of required chemicals:
hydrogen peroxide(; dry yeast; liquid dish washing soap; food coloring)

Procedure:

Add hydrogen peroxide into the bottle.
Add 8 drops of your favorite food coloring into the bottle.
Add liquid dish washing soap into the bottle and swish the bottle around a little bit to mix it.
In a separate small cup, combine the warm water and the yeast together and mix for about 30 seconds.
Pour the yeast water mixture into the bottle and watch the foaminess begin!

Result:

The reaction is creating foam that is coming out of a bottle.

Conclusion:
We add a catalyst to make hydrogen peroxide break down really quickly. Hydrogen peroxide breaks down into oxygen and water. The oxygen and water create bubbles in the soap and produce a toothpaste like foam.

Elephant Toothpaste - Past

- Elephant's Toothpaste Experiment (PAST ACTIVE)
- by Igor Lukanović
- **Instruments used in experiment:**
  measuring beaker, glass

  Materials used in experiment:
  water, liquid soap, hydrogen peroxide and potassium iodide

  Procedure:
  We dissolved potassium iodide in water, poured it into a measuring beaker and added liquid soap. We stirred it and added hydrogen peroxide while potassium iodide served as a catalyst for decomposition of hydrogen peroxide into oxygen and water.

  Results and conclusion:
  Oxygen gas and liquid soap produced a large amount of foam. Our beaker got warm which indicated that our reaction was exothermic. An exothermic reaction was a chemical reaction that released heat.

Elephant Toothpaste Present

- **Elephant's Toothpaste (PRESENT SIMPLE)**
- by Matej Kadić
- **Instruments:** measuring beaker,glass
- **Materials:** water,liquid soap,hydrogen peroxide and potassium iodide
- **Procedure:** We dissolve potassium iodide in water,pour it into a measuring beaker and add liquid soap. We stirr it and add hydrogen peroxide while potassium iodide serves as a catalyst for decomposition of hydrogen peroxide into oxygen and water.
- **Result and conclusion:** Oxygen gas and liquid soap produce a large amount of foam. Our beaker gets warm which indicates that our reaction is exothermic. An exothermic reaction is a chemical reaction that releases heat.

Elephant Toothpaste Passive

- **Elephant's Toothpaste Experiment-Past passive**
- by Ivan Pucko
- **Instruments used in experiment**: measuring beaker, glass
- **Materials used in experiment**: water, liquid soap, hydrogen peroxide and potassium iodide
- **Procedure**: Potassium iodide was dissolved in water and poured into a measuring beaker. Next, some liquid soap was added. Solution was stirred and hydrogen peroxide was added. As a catalyst for decomposition of hydrogen peroxide into oxygen and water, potassium iodide was used.
- **Results and conclusion**: A large amount of foam was produced by oxygen gas and liquid soap .Our beaker got warm which indicates that our reaction was exothermic. In an exothermic reaction, heat was released.

A Drinking Candle

- **A DRINKING CANDLE – Past Passive**
- **Instruments used in experiment** :
  a shallow bowl
  a lighter
  a glass

  Materials used in experiment:
  water
  a small candle
  a food colouring

  Procedure(Past Passive) :
  1. The water was poured into the saucer or a bowl up to around 1cm deep. The water was made easily visible by adding a couple of drops of food colouring.
  2. The tea light or a small candle was placed in the centre of the bowl, the wick was being made sure not to get wet.
  3. The lighter or a match was used to light up the candle.
  4. The glass was turned upside down and was placed over the candle.

  Result:
  When the oxygen runs out, the candle stops burning, and water enters the glass.

A Drinking Candle - Imperative

- **By Ina Mohorić**

- **Instruments used in experiment** :
  Shallow bowl
  Lighter or match
  Glass

  Materials used in experiment:
  Water
  Small candle
  Food colouring

  Procedure:
  1. Pour water into the saucer or bowl to around 1cm deep. Adding a couple of drops of food colouring will make the water easier to see.
  2. Place the tea light or small candle in the centre of the bowl, making sure that the wick doesn't get wet.
  3. Use the lighter or match to light the candle.
  4. Turn the glass upside down and place it over the candle.

  Result:
  When the oxygen runs out, the candle stops burning, and water enters the glass.

A Drinking Candle - Past

- By Ana Juričić
- **Instruments used in experiment** : a shallow bowl
  a lighter
  a glass

  Materials used in experiment: a water
  a small candle
  a food coloring

  Procedure(Past):
  1 I poured the water into the saucer or a bowl up to around 1cm deep. I added a couple of drops of food coloring to make water easily visible.
  2. I placed tea light or a small candle in the centre of the bowl, while making sure that the wick does not get wet.
  3. I used the lighter or a match to light up the candle.
  4. I turned the glass upside down and placed it over the candle.

  Result:
  When the oxygen runs out, the candle stops burning, and water enters the glass.

A Drinking Candle - Present

- **A DRINKING CANDLE**
- **By Ivona Lacko**
- **Instruments used in experiment** : a shallow bowl
  a lighter
  a glass

  Materials used in experiment: water
  a small candle
  food colouring
- **Procedure(Present)**:
  1. I pour the water into the saucer or a bowl up to around 1cm deep. I am adding a couple of drops of food colouring that will make the water easily visible.
  2. I place the tea light or a small candle in the center of the bowl while making sure that the wick does not get wet.
  3. I use the lighter or a match to light the candle.
  4. I turn the glass upside down and placing it over the candle.

  Result:
  When the oxygen runs out, the candle stops burning, and water enters the glass.

Crystallization of NaCl - Imperative

- by Ana Kelava
- **Use the following instruments**: glass, toothpick, wool threat, piece of cardboard.
- **Use two chemicals**: sodium chloride and water.
- **Procedure**: Prepare crystals of salt from supersaturated solution. Dissolve salt in the water and mix it rapidly until formation of precipitate of supersaturated solution of salt. At one point notice that the solubility of NaCl negligibly changes with temperature change and the result is dissolution of 39 grams of NaCl in 100 grams of water. After the salt dissolves in water tie up the floss by the woolen thread and plunge it into a beaker with a solution. Then cover it with a piece of cardboard and put in a warm place. On the second day notice a bigger amount of sediment in the beaker and a small number of tiny crystals on the thread. On the fourth day notice bigger crystals of salt on the woolen thread and on the wall of beaker.
- **Result**: Notice that the result is the reduction of volume oft he solution, increase oft he amount of deposits and crystallization of large crystals on the woolen thread, wall of beaker and the cardboard.
- **Conclusion**: Super saturation oft he solution is the reason why crystals occur on the woolen thread.

Crystalization of Sodium Chloride

- by Josipa Križanović
- SIMPLE PAST PASSIVE
- **Instruments that were used**: Glass, toothpick, wool thread, piece of cardboard
- **Chemicals that was used**: Natrium chloride, H2O
- **PROCEDURE**: In this experiment beautiful crystals of salt were made from supersaturated solution. Supersaturated solution of salt was wanted by us, so the salt was disolved in the water and mixed rapidly until the forming of a precipitate was noticed. At one point, the solubility of NaCl was changed negligible by the temperature change. Because of that, 39 grams of NaCl was disolved in 100 grams of water. After the salt was disolved in water, the floss was tied up by the woolen thread and plunged into a beaker with a solution. Then it was covered with a piece of cardboard and put in a warm place by us. The second day bigger amount of sediment in the beaker and small number of tiny little crystals on the thread were seen. The fourth day bigger crystals of salt on the woolen thread and on the wall of the beaker were noticed.
- **RESULT**: The volume of the solution was reduced, the amount of deposits was increased and large crystals were crystallized on the woolen thread, wall of beaker and the cardboard.
- **CONCLUSION**: Crystals were made on the woolen thread as a result of supersaturated solution.

Crystallization of Sodium Chloride

- by Ivona Rajić
- **Crystallization of Sodium Chloride - Present tense**
- **INSTRUMENTS**: glass, toothpick, wool thread and piece of cardboard
- **CHEMICALS**: sodium chloride and water.
- **PROCEDURE**: In this experiment we want to get beautiful crystals of salt from supersaturated solution. If we want to make supersaturated solution of salt we have to dissolve it in the water and mix it rapidly until we notice a precipitate is forming. At one point the solubility of NaCl negligibly changes with temperature change and that results is dissolution of 39 grams of NaCl in 100 grams of water. After the salt dissolves in water, the floss is tied up by the woolen thread and is plunged into a beaker with a solution. Then we cover it with a piece of cardboard and put in a warm place. On the second day we see bigger amount of sediment in the beaker and small number of tiny crystals on the thread. On the fourth day we notice bigger crystals of salt on the woolen thread and on the wall of the beaker.
- **RESULT:** It is the reduction of volume of the solution. The amount of deposits increases and large crystals crystallize on the woolen thread, wall of beaker and the cardboard.
- **CONCLUSION**: Super saturation of the solution is the reason why crystals occurred on the woolen thread.

Lab Assistant Badge

Lab Pro Badge

Chemical Weapons

Antidotes Badge

CV Master Badge