

ISTITUTO COMPRENSIVO TRENTO 5

Scuola secondaria di primo grado "G. Bresadola"

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INVISIBLE INK

Project by

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Classe 1E



Open Day Scienze – 30 novembre 2018

Materials

1. Lemon juice → citric acid ($C_6H_8O_7$)
2. A piece of white paper
3. Cotton bud
4. Protective gloves
5. Heat source (hairdryer, or iron, or hot radiator)

Procedure

- a. Squeeze the lemon in a cup to obtain citric acid.
- b. Dip a cotton bud in it to write a message on the white paper. Do not use too much.
- c. Let dry 5 minutes without moving the paper (otherwise the message will smudge)
- d. Put the paper close to a heat source until the message reappears.
(length of time depends on the heat source)

Control variable

Put another piece of paper with the hidden message in the freezer to see whether cold destroys the molecular structure of citric acid.

Results

The molecular structure of citric acid is destroyed by heat and brown-coloured compounds appear on the paper.

Conclusion

Citric acid can be used as "invisible ink."

Poster

Purpose
We show how citric acid can be used as invisible ink.

Question
Does citric acid react to a heat producer?

Hypothesis
I think that acid reacts to heat source

INVISIBLE INK

Materials

- LEMON JUICE → CITRIC ACID ($C_6H_8O_7$)
- A PIECE OF WHITE PAPER
- COTTON BUD
- PROTECTIVE GLOVES
- HEAT SOURCE (HAIR DRYER, IRON, OR HOT RADIATOR)

Procedure

- SQUEEZE THE LEMON IN A CUP TO OBTAIN CITRIC ACID
- DIP A COTTON BUD IN IT TO WRITE A MESSAGE ON THE WHITE PAPER. DO NOT USE TOO MUCH WATER.
- LET DRY 5 MINUTE MOVING WITHOUT THE PAPER (OTHER WISE THE MESSAGE WILL SMUDGE)
- PUT THE PAPER CLOSE TO A HEAT SOURCE UNTIL THE MESSAGE REAPPEARS (LENGTH OF TIME DEPENDS ON THE HEAT SOURCE).

Results
THE MOLECULAR STRUCTURE OF CITRIC ACID IS DESTROYED BY HEAT AND BROWN COLOURED COMPONENTS APPEAR ON THE PAPER.

Conclusion
CITRIC ACID CAN BE USED AS "INVISIBLE INK."

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