

III  IYNT 2015



International Young Naturalists' Tournament

6. Disappearing ink

Serbian team

Regional Center For Talented Youth

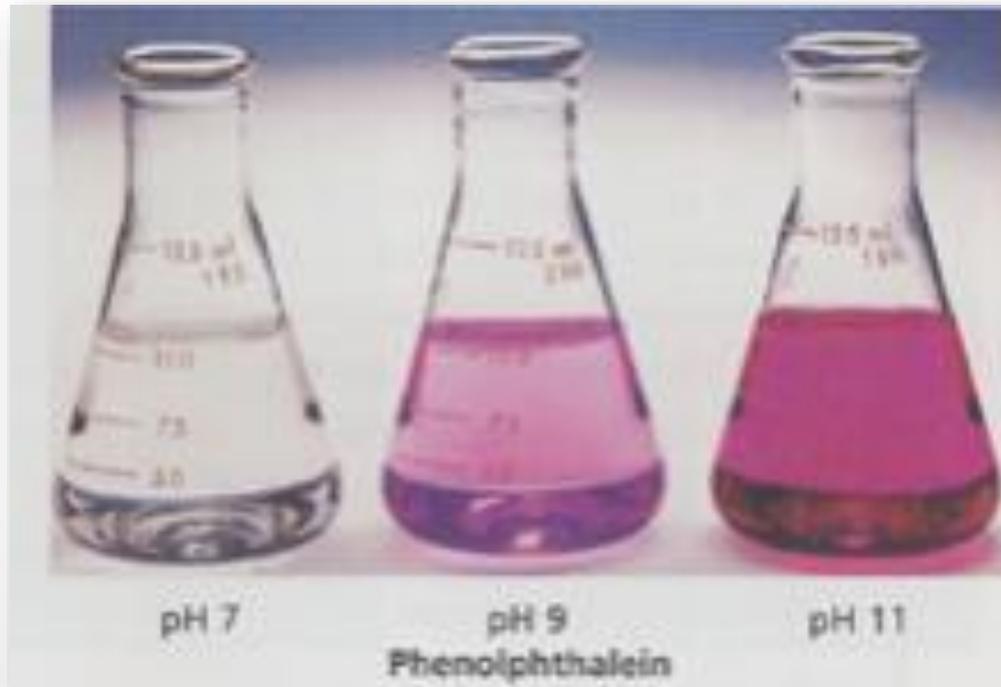
6. Disappearing ink

Suggest a chemical formulation for the ink that would disappear after used to write a text. What parameters determine the time when the text becomes invisible? Is it possible to process the paper in such a manner that the text appears again?



Disappearing Ink Chemistry

- acid-base indicator (pH indicator)
- phenolphthalein



Experimental part

No - it's science!

It's magic! It's a mystery!

Disappearing
ink



Experimental part I

Chemicals:

1. 0,10 g phenolphthalein
2. 10 ml ethanol
3. 90 ml water
4. 20 drops of NaOH



Video of the process

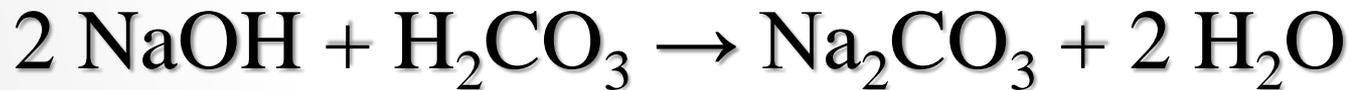


How Disappearing Ink Works

Carbon dioxide in the air reacts with water to form carbonic acid:



The neutralization reaction is sodium hydroxide + carbonic acid → sodium carbonate + water:

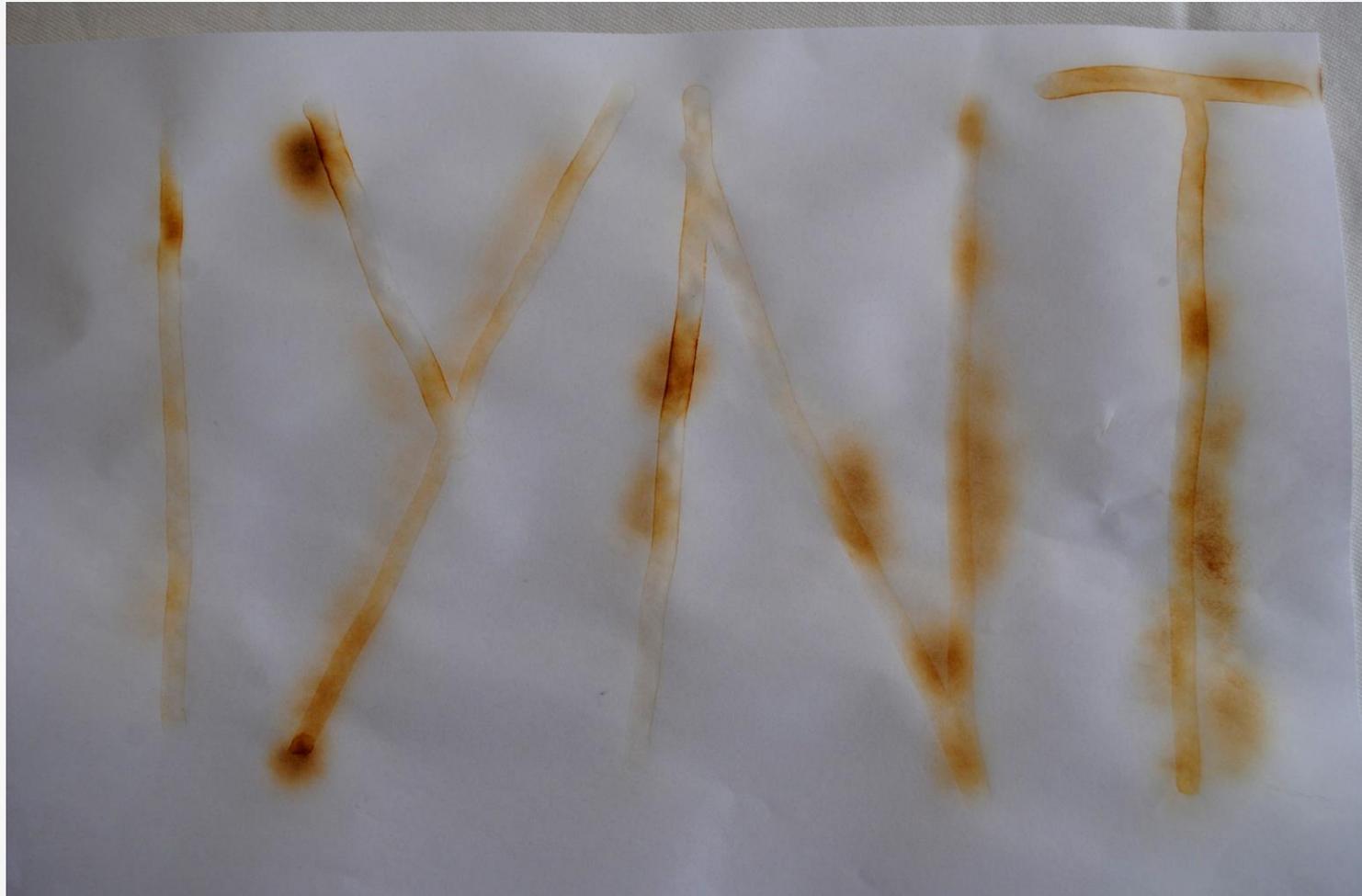


Materials

1. Cotton bud
2. White paper
3. Lemon juice
4. Small bowl
5. Iron or a candle



Lemon Juice Invisible Ink



• Dip a cotton ball in the candle.
Add a few drops to the juice
write a message on the white paper

SECRET

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Materials

1. Milk
2. Paper
3. Iron
4. Cotton swab



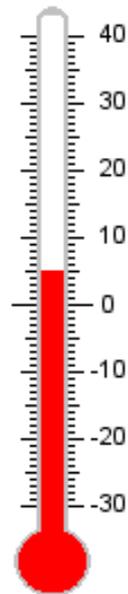
Milky way Invisible Ink



Also when milk dries on the paper and
Put a little milk in a bowl
use an eraser on the paper message

Parameters

- Carbon-dioxide concentration
- Base concentration
- Air temperature



Conclusion

- phenolphthalein
- lemon juice
- milk
- it is possible to appear again

**THANK YOU FOR YOUR
ATTENTION!!**



Materials

1. Baking Soda
2. Paper
3. Water
4. Cup
5. Cotton bud
6. Blueberry Juice



Baking Soda Invisible Ink



Dip a toothpick into the mixture and use it to write your secret message on a piece of paper.