

NATIONAL CHEMISTRY WEEK

Experiment – Invisible ink

Materials:

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|----------------|----------------------|
| 1) Black paper | (1 per student) |
| 2) Detergent | (~ 4 ml per student) |
| 3) Q-tips | (1 per student) |
| 4) Black light | (1 for each class) |

Goal of the experiment: To understand why we can see the message/sketch only with the black light in dark, but not in light.

Brief overview: We have the students draw pictures on their papers and then we turn the lights off and go around shining the black light on the papers, so that they can see what it looks like. We would then discuss what in the laundry detergent allows this to work.

Start here.

Demonstrator: Hello, class! Have you ever pondered if you could write a secret message like ones in spy movies, or how Harry potter used spell to read Marauders Map?

Wait for responses

Demonstrator: Well, that's exactly what we are going to do! Today we are going to perform an exciting experiment with invisible ink.

Do you know what an invisible ink is?

wait for response

Demonstrator: Invisible ink is a substance that you can write with, but the writing disappears until you reveal it using a special method. It's like magic!

What do you think we could use to make invisible ink?

wait for response

Demonstrator: Great ideas! There are several ways. But today we would be using laundry detergent, black paper and a special light. Let's get on with it!

*hand out the papers (one sheet each student), Q-tips (oner per student), and laundry detergent (~4 ml per student in small paper cups).

We will understand in the process why we are using these ingredients. Start drawing or writing something on the paper you have, dipping your Q-tip in the detergent.

check if everyone is onboard, help if needed

Demonstrator: Are you all done writing/drawing?

Let us take a moment to hypothesize what could be happening in the experiment of reading an invisible message. What can be the science behind this magic? Do you have any idea?

wait for responses

Demonstrator: I appreciate your hypotheses. Many of you are thinking in the right track (say this only if some of them do). What happens is that this laundry detergent contains Phosphors which are called optical brighteners. These are chemicals that absorb invisible ultraviolet light from the black light and then emit colors which we can see. So the light we are using is indeed a bit special that way.

Do you get the science behind our experiment now?

wait for responses, address their queries

Demonstrator: Great questions! Let's see now if we can reveal the invisible message. Shine the light, go for it!

(wait for them to shine the light)

Can you see your messages?

wait for responses

Demonstrator: Great job everyone! Isn't science fun?

engage with them in reading their messages/appreciating their drawings

Demonstrator: Would you like to use invisible ink somewhere else?

wait for responses

These are really fun and innovative ways!

Thank you for being such a wonderful class!
