

Dusting for Fingerprints

Want to investigate fingerprints in your home or classroom, just like a detective? Use chemistry! Here's how it works: The oil and sweat on our fingers contains slightly charged molecules. These molecules are attracted to other charged molecules on the surfaces we touch, leaving our fingerprints behind. In this experiment, the tiny particles found in cocoa powder or cornstarch cling to the charged fingerprint molecules—revealing prints where we couldn't see them before.

Materials needed:

- Lotion (this makes fingerprints easier to see)
- A mug (other hard objects like small mirrors or soda cans work as well)
- A small bowl
- Cocoa powder or cornstarch
- A small, soft paintbrush
- Clear tape (glossy works better than matte)
- Paper (white if using cocoa powder; dark if using cornstarch)



Step-by-step instructions:

1. Rub a small amount of lotion on your hands.
2. Choose a finger and carefully press it onto the mug.
3. Holding the mug over the small bowl, sprinkle cocoa powder or cornstarch on it, right where you placed your finger.
4. Using the paintbrush, gently brush the excess powder off the mug.
5. Place a piece of clear tape over the fingerprint and press down.
6. Lift the tape and place it on a piece of paper to examine the fingerprint.



Additional explorations:

- Try this same experiment on a few different surfaces. What surfaces work best? Why?
- This experiment may also work with ground-up mechanical pencil graphite. Place a few mechanical pencil refills in a plastic bag and seal it tightly. Roll over the bag with a rolling pin or marker then use the graphite powder to dust for fingerprints.
- Try this with your family or friends. Can you tell different fingerprints apart?



Discussion questions:

- What do you notice about the fingerprint? Can you see any patterns?
- Were you able to see the fingerprint when you first touched the mug? Could you see it after the powder was added? What about after removing the print with tape?
- Why does the powder stick to the fingerprint?
- Are there other powders you could try this with? Why do you think they might work?

Additional Resources:

- Full classroom style lesson
<https://omsi.edu/sites/default/files/NH-G23-LatentPrints.pdf>
- Spanish handout for classroom style lesson
<https://omsi.edu/sites/default/files/NH-G-LatentPrintsSpan.pdf>
- Details the story of Henry Faulds, Francis Galton, and Sir William Herschel and the conflicting claims of who was responsible for first using fingerprints as a means of identification.
http://www.bbc.co.uk/history/historic_figures/faulds_henry.shtml