

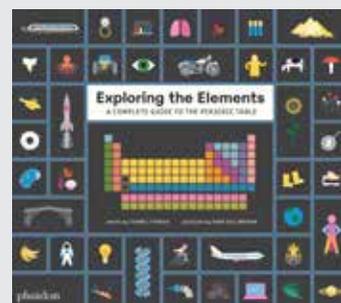
KITCHEN CHEMISTRY WITH ISABEL THOMAS

(A SCIENCE-ART ACTIVITY FOR CHILDREN AGES 8-14)

Chemicals aren't just things you find in labs and pharmacies. The ink in your pens, the soap next to the sink, and even the juices in a cabbage are all chemicals too! This means you don't need a complicated kit to start exploring chemistry at home! Isabel Thomas, author of Exploring the Elements, shares her favorite kitchen STEAM activity combining chemistry and art.



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For more information about EXPLORING THE ELEMENTS, visit phaidon.com/elementsUS

→ **ISABEL SAYS:** "What's in your art kit? Pencils? Paper? Cabbage?! It's no joke—with a little kitchen chemistry know-how, you can turn red cabbage and other foods into brilliantly bright, color-changing paint!"

1 COLLECT THESE THINGS

- juice of 1 lemon
- ¼ of a red cabbage
- egg cup of vinegar
- white of 1 egg
- 1 teaspoon baking soda
- 3 tablespoons water
- 5 egg-cup sized containers
- white paper
- paintbrush
- adult helper

2 GET CREATIVE WITH CHEMISTRY!

Put a few chunks of **red cabbage** in a bowl and get an **adult** to help you pour over a cup of **boiling hot water**. Let it cool completely.

You'll notice that the water is now purple. Remove the cabbage.

Use the purple water to paint an entire **sheet of white paper**.

While it dries, prepare your containers, adding the **lemon juice**, **vinegar**, **egg white**, and **baking soda** (mixed with 3 tablespoons of water) into each one. This is your palette of paints. They don't look very colorful... yet!

Once your purple paper has dried, dip your **paintbrush** into one paint at a time and paint on top of the purple paper. What happens?



WOW!

The chemicals that make a cabbage red are called anthocyanins (say: *an-thuh-sigh-a-nin*). They're found in other colorful fruits, vegetables, and flowers too—but they're not always purple! Their color can change.

When anthocyanins mix with acids, such as fruit juice, or vinegar, they turn red, or pink. When they mix with alkalis, such as egg white or baking soda, they turn green, blue, or turquoise!

Can you use the color-changing paint to find out which ingredients are acidic, and which are alkaline? Experiment with different ingredients from your kitchen—but don't taste or eat your art!



Photograph your colorful kitchen chemistry creations and share them at @phaidonsnaps #ExploringTheElements