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ThermoSMART® SCIENCE

SA Stickers

(Sun Activated Photochromic Stickers)

SA Sticker Facts

SA Stickers are coated with photochromic dyes. Photochromic means color changes in response to light. The SA Stickers respond to ultraviolet light.

SA Sticker Challenges

1. Does indoor lighting contain ultraviolet light?
2. Does sunlight contain ultraviolet light?

Materials

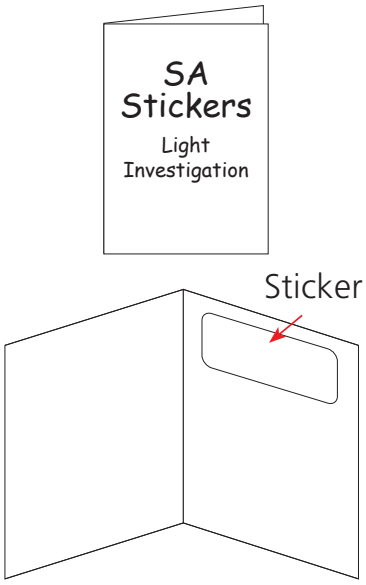
1 white index card 6 in. x 8 in. (15 cm x 20 cm)
1 Janice VanCleave SA Sticker

Make a SA Sticker Protective Foldable

1. To protect the SA Sticker from being exposed to light before you are ready to investigate, fold the index card in half placing the short sides together.
2. Print a title on the front of the folded card as shown.
3. Open the card and place a SA Sticker inside on the right side of the fold.

Note: Observation can be recorded in this foldable.

4. Close the foldable to protect the sticker from any light source.



Investigation #1
Testing Indoor Lights for UV Light

1. Open the foldable indoors, away from any sunlight so that the sticker is only exposed to indoor lighting.
2. Observe the SA Sticker for 3-5 seconds and note any color change in the sticker.

Expected Results
The SA Sticker makes no color change when exposed to indoor lights. This is because these lights do not emit enough UV light to affect a change in the sticker.

Investigation #2
Testing Sunlight for UV Light

1. Close the foldable and take it outdoors, then open the foldable to allow sunlight to shine directly on the sticker.
2. Observe and note any color change in the SA sticker when exposed to sunlight.
3. With the foldable open, take it indoors. Observe and note any change in color of the sticker when removed from sunlight exposure.

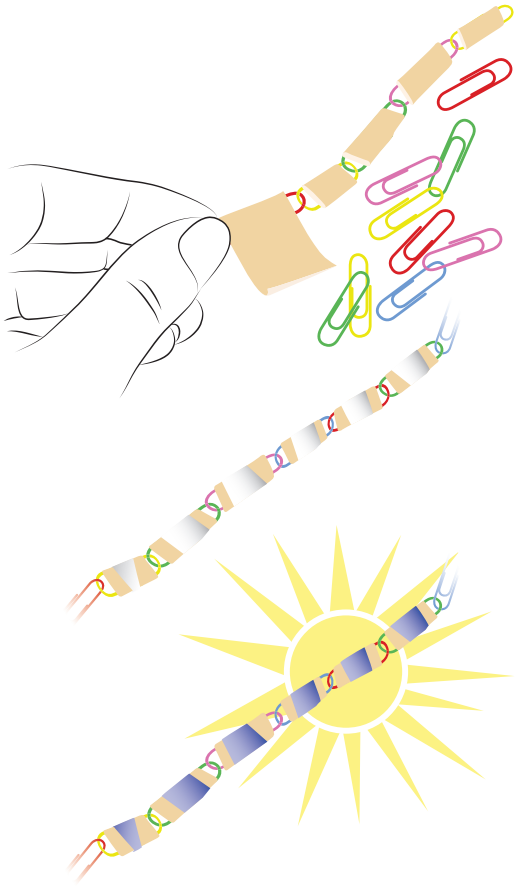
Expected Results
The SA Sticker quickly changes color when exposed to sunlight. Once removed from sunlight exposure, the SA Sticker loses its color. The rate the color disappears varies with the photochromic dye used on the SA Stickers.

What Scientists Do

Like any scientist, you investigate to find answers to science problems. Now, like a scientist, in your own words, record in your foldable, what you did, what happened and why.

SA Sticker Science/Art Activity

Fashion a UV Detecting Necklace



Materials

25 large colored paper clips
scissors
1 inch (2.5 cm) wide masking tape
2 Janice VanCleave SA Stickers

What to Do

1. Link the paper clips together making a chain long enough to fit over your head. Alternate the colors of the paper clips.
2. Cut a strip of masking tape about 1 inch (2.5 cm) long and wrap it around the center of one of the paper clips on the chain.
3. Repeat step 2 until all of the paper clips are covered with masking tape.
4. Tear strips from the SA Stickers and stick them on the masking tape covering the paper clips.
5. Wear your necklace outdoors on a sunny day

Expected Results
The pieces of SA Sticker on the necklace change color in the sunlight. The color depends on the SA Sticker used.

Did You Know

Sunlight contains visible light and UV light. Of the two, UV light has more energy. When exposed to UV light, the SA molecules change shape.

The new shape of the SA molecules absorb and reflect visible light, which is a spectrum of colors: red, orange, yellow, green, blue, indigo, and violet.

The reflected light is the color of the sticker when exposed to UV light.

Once removed from sunlight the SA dye molecules return to their original shape. This molecular shape is transparent to visible light, meaning visible light passes through the molecules as it does through glass in a window.

You will find more Janice VanCleave Sticker investigations and Science/Art Activities HERE:
www.scienceprojectideasforkids.com/2013/free-science-lessons/