LESSON 116 LAB

How Absorbing Spectroscopy

Name _____

Date _____ Period _____

Purpose

Rm sqc ST+qclqgrgtc n_ncp rm cvnjmpc u fgaf jgefr qmspacq c k gr ST p_bg_rgml _lb u fgaf qs`qr_lacq `jmai ST p_bg_rgml,

Materials

- Rfpcc q k _jj ngcacq &pmsefjw 0æ 0' md ST+qclqgrgtc n_ncp gl _l cltcjmnc
- Rfpcc bgddcpclr cltcjmncq rm npmrcar n_ncp _drcp jgefr cvnmqspc,
- bgpcar qs ljgefr &lmr rfpmsef _ uglbmu'
- n_ncpajgn
- water in a shallow dish for rinsing
- timer

Part 1: Tests with UV-Sensitive Paper

Procedure

1. Obtain an envelope that contains 3 pieces of UV-sensitive paper. (UV-sensitive paper has a coating on it that changes color under ultraviolet radiation.)
2. Keep the UV-sensitive paper in the original envelope so that it is not exposed to light until the moment you are ready to use it.
3. You will expose each piece of paper to light for a different span of time and then place each in a new envelope to prevent further light exposure. Label the three envelopes: (Note: You may need to increase the exposure times on a cloudy day.)
   - **Envelope 1:** 2 minutes sunlight
   - **Envelope 2:** 4 minutes sunlight
   - **Envelope 3:** 4 minutes room light
4. 2-Minute Sunlight Exposure:
   - **a.** Put a paperclip on top of one piece of UV-sensitive paper, and place the paper in direct sunlight outside.
   - **b**. Use a timer to expose the UV-sensitive paper with the clip to direct sunlight for 2 minutes
   - **c**. After 2 minutes, place the exposed UV-sensitive paper into Envelope 1 without the clip.
5. 4-Minute Sunlight Exposure:
   - **a.** Repeat the steps above for a second piece of UV-sensitive paper, this time keeping the paper with the clip in direct sunlight for 4 minutes.
   - **b**. After 4 minutes, place the exposed UV-sensitive paper into Envelope 2 without the clip.
6. 4-Minute Room Light Exposure:
   - **a.** For this step, your teacher should block exposure to sunlight in the room by closing blinds or shades.
   - **b**. At your table, repeat the experiment with the UV-sensitive paper and clip, this timeexposing it only to the overhead light in the room.
   - **c**. After 4 minutes, place the exposed UV sensitive paper into Envelope 3 without the clip.

Part 2: Design Your Own Experiment with UV Radiation

For part 2, you will design your own experiment using the UV-sensitive paper to study substances that might protect against UV radiation. Your teacher will provide you with a list of materials you can use for your experiment.

For example, you could study the amount of UV radiation that is transmitted by sunscreens with different SPF numbers, different sunscreen brands, lotions, face makeup, lip balm, baby oil, sheer clothing, sunglasses (with and without UV protection), or plastic. If you decide to test sunscreens or lotions, consider placing the UV-sensitive paper inside a small sandwich bag and smearing the lotion on the outside of the bag. You can also try to smear it directly on the paper.

Safety Instructions

⚠ Wear safety goggles at all times.

In the lab, the household products should be treated as any other lab supply. Do not apply to skin, and keep out of eyes.

You must obtain permission from your teacher before conducting any procedures you write.

1. Begin by writing a question that your group wants to explore. What is the purpose of your experiment?

2. What variables will you control? List at least five variables.

3. Write a detailed materials list of what you will need to conduct your experiment.

4. On separate sheet of paper, write a step-by-step procedure of how you will conduct the experiment. Include a diagram of the set up that shows how you will conduct the experiment and a table to collect your data.

5. Get your teacher's approval on your procedure before conducting your experiment. Once approved, carry out your experimental procedure and record your observations and data in your table.

Analysis

1. What did you observe in your experiment

2. What did you conclude? Provide a succinct statement of the evidence that supports this conclusion.