Poinsettia pH Paper

Holiday Chemistry Project

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Many plants contain pigments that are responsive to changes in acidity. An example is the poinsettia plant, which has colored 'flowers' (really specialized leaves called bracts). Although poinsettias are perennials in warmer climates, most people are likely to see them used as a decorative houseplant over the winter holidays. You can extract the red pigment from deeply colored poinsettias and use it to make your own pH paper strips to test whether a liquid is an acid or a base.

Poinsettia

Emily Roesly, www.morguefile.com

Materials

- poinsettia 'flowers'
- beaker or cup
- hot plate or boiling water
- scissors or a blender
- filter paper or coffee filters
- 0.1 M HCl
- vinegar (dilute acetic acid)
- baking soda solution (2 g / 200 mL water)
- 0.1 M NaOH

Procedure

1. Cut flower petals into strips or chop them in a blender. Place the cut pieces into a beaker or cup.
2. Add just enough water to cover the plant material. Simmer until the color is removed from the plant. (Personally, I would just microwave the chopped bracts with a little water for about a minute and allow the mixture to steep, like a tea.)
3. Filter the liquid into another container, such as a petri dish. Discard the plant matter.
4. Saturate clean filter paper with the poinsettia solution. Allow the filter paper to dry. You can cut the colored paper with scissors to make pH test strips.
5. Use a dropper or toothpick to apply a little liquid to a test strip. The color range for acids and bases will depend on the particular plant. If you like, you can construct a chart of pH and colors using liquids with a known pH so that you can then test unknowns. Examples of acids include hydrochloric acid (HCl), vinegar, and lemon juice. Examples of bases include sodium or potassium hydroxide (NaOH or KOH) and baking soda solution.
6. Another way to use your pH paper is as a color-change paper. You can draw on pH paper using a toothpick or cotton swab that has been dipped in an acid or base.

Art pH au Poinsettia