Molecular Solubility: The Crayon Lab

Objectives

- Determine which solvent is most effective at removing (dissolving) the solute (crayon) using background knowledge in physical properties such as chemical structures and intermolecular forces.
- Explain the effectiveness of the solvent in relation to the physical properties of the solute (crayon).

Procedure:

1. Safety goggles must be worn at all times.
2. Draw and darkly color in 5, quarter-sized rectangles on your note card using a dark-colored crayon (purple and blue work best). Each rectangle should be as consistent as possible (same size, darkness, color…). Label each rectangle with the solvent that will be tested on it. The solvents that will be tested are: water, ethanol, acetone, hexane, and turpentine.
3. When instructed by the teacher, you will move between the lab stations. Each station will contain a container of solvent. Be sure to match the solvent at the station with the corresponding rectangle on your card.
4. Rub the soaked cotton swab back and forth through the center of the appropriate rectangle *at least* ten times. This should be held constant between solvents. Keep the pressure on the swab constant as well. *Each solvent test should be as consistent as possible.*
5. Observe how effectively the solvent removes the solute (crayon) and record your observations in the data table below. Consider in your observations if the solvent actually removed the solute (crayon), if it smudged the crayon, or if it didn't work at all.
6. Repeat steps 3 - 5 for each solvent.
7. When you are done testing all of the solvents, rank them from most effective (1) to least effective (5) in the table on your worksheet. Then, answer the post-lab questions.