Fiber Analysis Activity

You will be given several samples of fabrics and you will need to make observations of each as you try to determine what kind of material each is.

Pre-Lab

1. What is the first step when examining fabric or fiber evidence?

2. What is an event/activity that can result in fiber evidence being left at the crime scene?

3. How valuable is fiber evidence in solving a crime?

4. What do you think is the most common fiber?

Procedure:

Part I. Microscopic examination of the fibers

Complete the following steps with each of the fiber samples

1. Describe the fiber sample including (organize this into a table)
   a. pattern on it (if present)
   b. color
   c. size
   d. condition of edges
   e. texture (smooth, rough, etc)
   f. stretch – gently pull along each axis and also along the diagonal

2. Using a stereomicroscope, examine the weave pattern of the fiber sample. Sketch the pattern and identify the type (plain, twill, knit, etc)

3. Cut a piece of the sample and attach in your notebook.

Part II. Determination of chemical composition – burn test

Make sure you are following proper safety techniques at all times!

4. Using the forceps, firmly grip one corner of the fiber sample.

5. Gently ease one edge into the open flame. Avoid putting the forceps into the flame as heated metal can cause burns.

6. Move the sample into the flame and quickly out of it. If the fabric is flaming blow it out.

7. Observe (and record in a table):
   a. While in the flame does the fabric melt readily, smolder or extinguish itself?
   b. When removed from the flame what happens to the fabric?
   c. Does the fabric form a melted bead or does it leave ash?
   d. Does the burnt fabric produce a distinct odor or smoke color? If so, what is it?

Analysis

1. Using the burn test data provided, identify each of the fiber samples.

2. Based on your identity of the fibers from the burn test, is there a relationship between the type of material/fiber and
   a. the weave pattern?
   b. the texture?   ***Explain each of your answers***
   c. the stretch?
   d. the condition of the edges?