

Fiber Analysis

Fibers are considered a form of trace evidence that can be transferred from the clothing of a suspect to the clothing of a victim during the commission of a crime. Fibers can also transfer from a fabric source such as a carpet, bed, or furniture at a crime scene. These transfers can either be direct (primary) or indirect (secondary). A primary transfer occurs when a fiber is transferred from a fabric directly onto a victim's clothing, whereas a secondary transfer occurs when already transferred fibers on the clothing of a suspect transfer to the clothing of a victim. An understanding of the mechanics of primary and secondary transfer is important when reconstructing the events of a crime. Fibers are usually class evidence, rarely can it be tracked to one individual or source.

Fibers are analyzed 3 main ways:

1. **Microscopic analysis** – this is what we did in the lab. Scientists look for certain characteristics to identify fibers. For example, diameter, size, texture, color, shape of the cross section (many man-made fibers are made to have trilobal ends). They can also look at thread counts and for any fading or irregularities in the fabric or fiber.
2. **Flame Analysis** – Scientists can identify fibers based on their reactions in a flame. Things to notice: Rate of burn, color of flame of burning object, odor produced, does it burn or melt when approaching the flame, does it stop burning when removed from the flame, what residue is left behind. Scientists mostly test fabrics for flammability for safety purposes etc. This is not the best test for us because we would burn our evidence!
3. **Spectrophotometry** – This is the best test for fibers. This requires the use of a machine to measure the absorption or the transmission of light through your sample. The machine can use UV light, IR light or Visible light at different wavelengths to analyze the sample. The machine sends the data to a computer and the results are shown in a spectra. Photo = "light" and Meter = "to measure"

