

Name \_\_\_\_\_ Date \_\_\_\_\_

### Forensic Science Lab: Locard's Principle of Exchange

**Background:** A fundamental principle of investigation for every crime scene comes from *Edmond Locard*, a forensic investigator in the early 1900s. It was Locard's belief that when a criminal came in contact with an object or person, a cross-transfer of evidence occurred. Locard strongly believed that every criminal is connected to a crime by trace evidence carried from the crime scene.

In this lab, you will examine an article of "clothing" recovered from the apartment of a suspect in the rape & murder of a 32-year old woman whose body was found by investigators in a park 5 blocks from the suspect's home. Witnesses observed the victim escorting the suspect into her home after attending a baseball game approximately 3 hours before her body was discovered. The victim lived alone & was often seen by neighbors walking her dog in the early mornings & late afternoons.

When investigators performed the search on the suspect's apartment that yielded the suspicious article of clothing, it was observed to be clean, pet-free, & smelled faintly of cigarette smoke. Further investigation revealed that the suspect worked as a mechanic at a local auto-repair shop.

#### Procedure

- 1) Each group will receive a cloth representing an article of clothing recovered by investigators from the suspect's apartment that he allegedly wore the night of the murder.
- 2) The numbered items on the cloth represent debris that must be examined microscopically. Collect these debris items from the cloth article by lifting it with transparent tape -lightly touch the tape to the cloth & apply it to a clean microscope slide. A single slide should be made for each debris type found on the cloth.
- 3) Examine each slide under the microscope.
- 4) In the table below, attempt to identify each of the numbered debris items collected from the cloth after examining it under the microscope.
- 5) Use the pictures at the end of the lab illustrating the appearance of common materials under the microscope to help you identify each debris type.

Debris Recovered from Clothing Article
(1)
(2)
(3)

- 6) Identify 5 additional features associated with the cloth article such as stains, rips, etc.
- 7) For each of these features, propose a possible explanation as to how they may link the suspect to the crime.

a) Feature 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

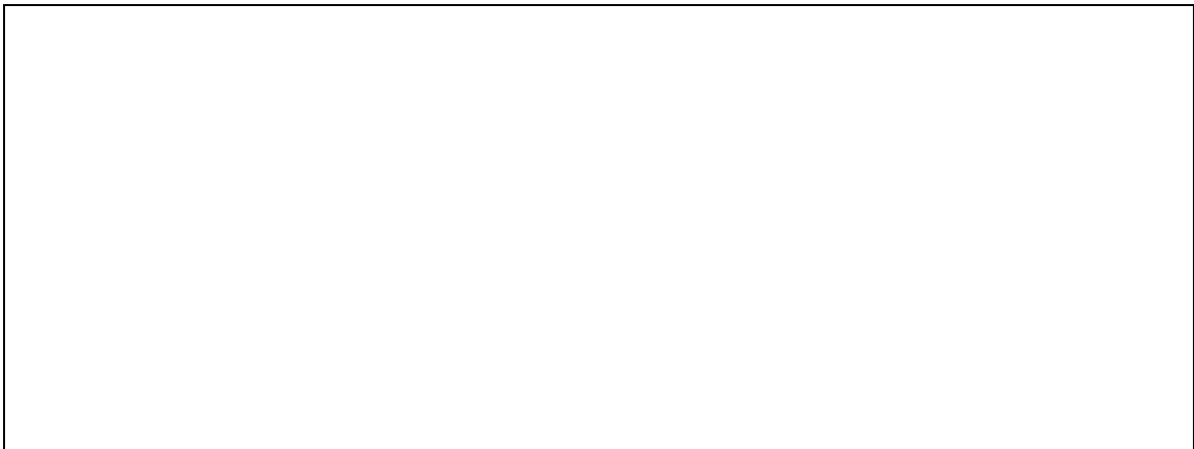
b) Feature 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

c) Feature 3: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

d) Feature 4: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

e) Feature 5: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 8) In the diagram below, representing the suspect's clothing, indicate the approximate location of each of the physical characteristics & debris materials



**Discussion Questions**

1) Identify THREE pieces of evidence obtained from the cloth that may be consistent with the murder of this victim as described in the introduction of this lab. For each item listed, explain HOW Locard's exchange principle links the suspect to the crime:

a) \_\_\_\_\_  
\_\_\_\_\_

b) \_\_\_\_\_  
\_\_\_\_\_

c) \_\_\_\_\_  
\_\_\_\_\_

2) Identify THREE pieces of evidence obtained from the cloth that may be unrelated to the murder of this victim as described in the introduction of this lab. For each item listed, explain HOW Locard's exchange principle links the cloth article to the suspect:

a) \_\_\_\_\_  
\_\_\_\_\_

b) \_\_\_\_\_  
\_\_\_\_\_

c) \_\_\_\_\_  
\_\_\_\_\_

3) Based on this cloth alone, can it be concluded beyond a reasonable doubt that the suspect was directly responsible for the murder of the victim?

\_\_\_\_\_

4) If your answer to question 3 was "no", identify TWO other forms of evidence that would be required in order to definitively link the suspect to this crime?

\_\_\_\_\_

\_\_\_\_\_

- 5) In addition to the debris recovered from the suspect's clothing, identify TWO other materials that may be transferred between individuals during a crime.

---

---

- 6) List THREE possible items that could be exchanged between yourself & this classroom that could potential identify as a student in room 200 during period 5.

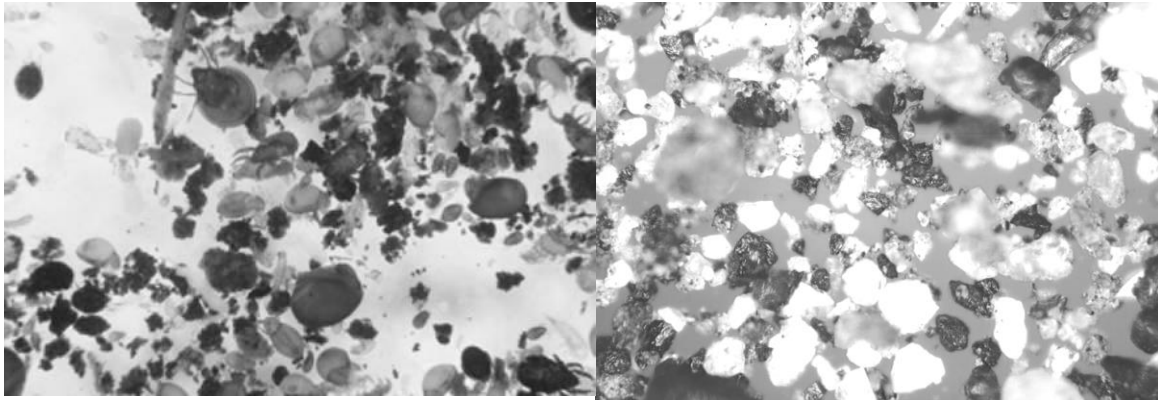
---

---

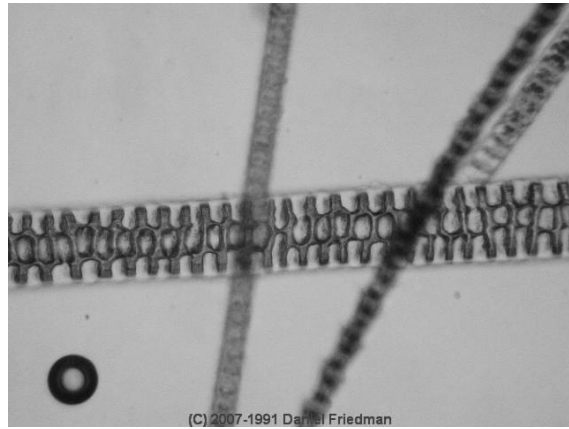
---

Reference: Common Materials as Seen Under the Microscope

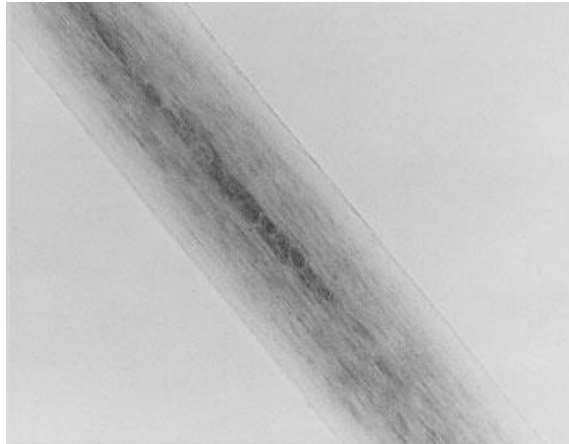
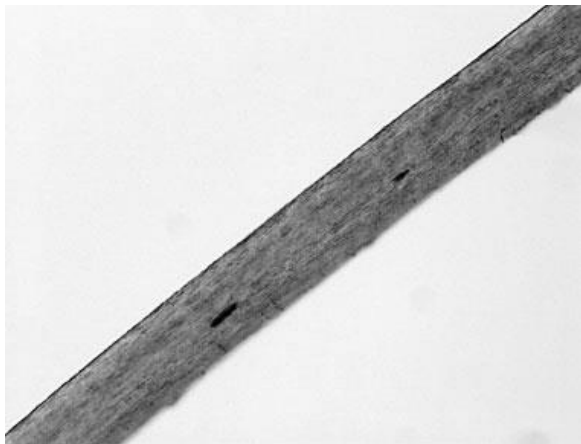
Soils:



Animal Hair:



Human Hair:



**Women's Makeup:**

