



The Mystery of
Lyle and Louise

The Jagged Edge

Glass Fragment Identification



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Physical Evidence

Useful in :

- Establishing the extent of the crime scene.
- Connecting crime scene areas (abduction site, vehicle used to transport victim, dump site of victim's body).
- Placing a perpetrator at a scene.
- Connecting a suspect with a weapon or other crime scene evidence.
- Supporting (or invalidating) witness statements about details of the crime.

Locard's Exchange Principle

- "Every contact leaves a trace."
- When an individual acts with violence, they shed hairs, fibers and other trace evidence, and similar trace evidence transfers from the victim to them.
- Even when someone tries to clean up after a crime, trace evidence remains.
- On its own, trace evidence is often not enough to make a case.

Collection of Glass at Crime Scene

- Any person standing close to glass when it is broken can pick up fragments of the broken glass, particularly on clothing.
- Glass fragments can travel forward and backward from the direction of the breaking force.
- If a window was broken in a crime, clothing worn by the suspect should be collected and examined.

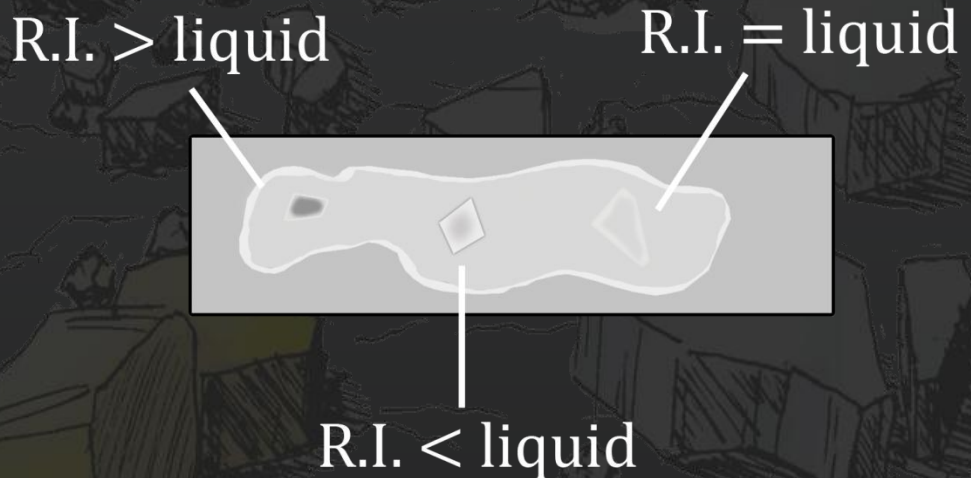
Measuring Refractive Index

- The Refractive Index (RI) of a substance is a measure of the speed at which light travels (v) through that medium.
- RI is defined as the ratio of the speed of light in a vacuum to the speed of light traveling through the medium being analyzed.
- RI is denoted with the unitless variable n .

Measuring Refractive Index

The **Becke line** is a bright halo near the border of a particle that is immersed in a liquid of a different refractive index.

When the two RI are the same (the match point) the Becke line disappears and minimum contrast between liquid and particle is observed.



Elemental Analysis

- The elemental analysis of the evidence glass is then compared to the known glass from a crime scene (such as a broken window).
- If no known glass exists, the evidence can be compared with other types of glass (headlamp, window, drinking glasses).
- It is also possible that the company that made the glass or even the geographical location where the glass was made can be determined from the composition.



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