ALL THAT GLITTERS IS GOLD!

Compared to the conventional types of trace evidence, such as fibers, glass, hairs, and paint, glitter might be thought of as an uncommon sort of trace evidence. However, this form of trace evidence has a greater chance of being discovered than in the past due to the material's prevalence in clothes, cosmetics, and art and craft items. Glitter has been observed in a variety of incidents, including homicide, kidnapping, assault, and unlawful use of a vehicle. Although glitter cannot be used to identify a specific person, it can link a suspect to a victim, a scene, or the victim's position in a vehicle accident.

Metal is vacuum deposited onto a thin polymer film and coated with a specific color. Polyester, polyvinylchloride, and polypropylene are some of the various polymer kinds that have been recorded. The shape of glitter has been somewhat controlled by factors like cost and waste. Additionally, glitter can vary in size and thickness, as well as a variety of hues. Another distinguishing characteristic of glitter is variation in the layering order. Glitter is a kind of trace evidence that has the potential to be extremely discriminating because of a combination of class characteristics.

Where to locate glitter?

Individual glitter particles can be easily found with a flashlight in low light because they reflect light like small mirrors when separated from one another. The glue present on Post-It Notes is strong enough to remove individual glitter flecks from the majority of surfaces, but it is also weak enough such that the particles can be picked off without damage and without transfer of adhesive. Additionally, the notes come in helpful for recording all the pertinent evidentiary paperwork (case number, place of discovery, date or time, technician's initials, etc.).

How is glitter an ideal contact trace?

1. Nearly invisible: Most of the time, the suspect does not realize that he is carrying glitter on himself because it is not very obvious as in the case of blood.
2. High probability of transfer and retention: Glitter particles are more likely to transfer since they are small and lightweight in nature.
3. Highly individualistic: There are different categories in which glitter particles can be classified which will keep strengthening its evidentiary value. Those are size, shape, thickness, specific gravity, morphology, number and thickness of layers, chemistry of each layer and so on.
4. Easily characterized: A single glitter particle is generally enough, although more particles would account for a concrete evidence.
5. Computerised database capability: data from actual case samples can be entered into the system to make a database of all the parameters of glitter.
6. Can sustain in different environments: After several years, glitter particles detected in auto carpeting could be compared; the same was true of glitter particles
discovered in the hair of a dead person who was exposed to the metals/elements for weeks.

**Variation and characterization of glitter:**

1. **Color:** Some companies offer as many as 44 different colors but we cannot find 44 colors upon examining individual particles. Moreover, many products do not contain any dyes or pigments at all. However, it would be preferable to have an objective, machine-determined measurement of colour to remove subjectivity and allow colour measurements to be placed into a searchable database. Using glitter as associative evidence in a kidnapping/sexual assault case, a QD1 1000 Microspectrophotometer (Craic Technologies, Altadena, CA, USA) was utilised to compare colours.

2. **Morphology:** While the majority of glitter particles appear the same on each surface, some do not. Some might have a surface with additional color, while others might have an aluminized layer with plastic layers on top. Higher magnifications (700x or greater) allow for the observation of these distinctive morphologies, and ATR infrared microscopy can be used to compare the chemistries of the two surfaces. The examiner must make sure that any apparent surface morphology is not caused by contamination or vehicle traces on the particle's surface.

3. **Shape:** Examining glitter particles found on tape lifts under reflected light with a stereo binocular microscope or a video microscope set to a modest magnification makes it simple to discern their shape. Hexagonal particles are the most common followed by square and rectangular ones. It is rare to find a product that mixes different shapes. Their associative value would be high if a mixture of these particles identified in evidence items is linked to a suspect and also to the victim.

4. **Cross Section:** Glitter can be cross-sectioned manually using a stereo binocular microscope or automatically using an embedding medium and a microtome. To cross-section by hand, just adhere the glitter foil to some adhesive tape or the sticky side of a Post-it note, and use a stereo knife to cut at a 90-degree angle microscope. A new blade for a razor or scalpel and some absorbent material substance (to prevent cut marks on your microscope's stage) may be used. The angle of the cut must be reduced if the goal of the cross-sectioning is to obtain a clean layer of material for FTIR examination.

5. **Infrared Spectra:** The Attenuated Total Reflectance (ATR) diamond objective combined with FTIR results in excellent, searchable spectra. Another benefit is that no sample preparation is necessary other than ensuring the glitter particle's surface is clean. Remember that each glitter particle has two faces. It's possible that the polymeric material on one side differs from that on the other. On one side, certain glitter particles have a distinct covering.

6. **Raman Microspectroscopy:** This would be the best method for identifying the various polymer layers in glitter particles.
REFERENCES: