TOOLS AND TECHNIQUES- VSC and ESDA(used in GEQD)

Video Spectral Comparator (VSC)

The Video Spectral Comparator (VSC) is a UV-Vis-IR imaging spectral device designed for forensic examination and authentication of questioned documents. It was developed by Foster and Freeman. A basic VSC unit consists of a high-sensitivity camera, different light sources, a software/viewing interface, and a positioning stage. The built-in multiple spectrum sources can reveal hidden characteristics that can't be visible to human eyes. Law enforcement and legal experts use VSC to check if documents like passports, IDs, or contracts are real or fake.

Basic Working Mechanism of VSC

- Perception of Colors: When the human eye sees different colors, it is actually perceiving different wavelengths of light.
- Electromagnetic Spectrum: VSC operates not just in the visible spectrum but also in the Infrared (IR) and Ultraviolet (UV) regions, which are not visible to humans.
- Light Interaction: When light interacts with the document, different inks and materials respond uniquely.
- Image Capture: A high-resolution camera captures these interactions.
- Real-Time Analysis: The captured image is displayed on a monitor, allowing for immediate examination.

Electrostatic Document Analyzer (ESDA), by Foster and Freeman

ESDA is for detecting indented writing on questioned documents. This technique is capable of visualizing indentations on a piece of paper created by the act of writing on an overlying paper (such as commonly occurs when writing on a notepad).

ESDA works by applying an electrostatic charge to a document containing suspected indented writing. The indented writing is visualized through the application of charge sensitive toner. Indented writing (i.e., disturbed fibers) created from previously written documents on overlying pages can then be seen. In some cases, this method can be applied to develop fingerprints on documents.