



Questioned Documents Section – 2008

J11 Application of Raman Spectroscopy to the Analysis of Questioned Documents

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The objective of this presentation is to familiarize the forensic community with surface enhanced Raman spectroscopy and its application to questioned document analysis.

This presentation will impact the forensic science community by exposing it to raman spectroscopy, its techniques, and applications.

After viewing the presentation, attendees will understand general principles of surface enhanced Raman spectroscopy and its use in questioned document examination.

Surface enhanced Raman spectroscopy is a technique rarely applied to the questions of forensic science. That is rather unfortunate as SERS can be effectively used to evaluate minute samples and is capable of greatly improving Raman signal. This presentation focuses on the application of SERS to the analysis of dyes found in common ballpoint ink formulations. Normal Raman and SERS spectra of ten dyes, including Methyl violet, Sudan black B, and Victoria blue B, were collected. Normal Raman spectra were collected using Raman microscope with 785 nm laser and FT-Raman spectrometer with 1064 nm laser. SERS spectra were obtained using silver colloid and the 785 nm laser. SERS results showed excellent peak intensity and signal to noise ratio. Dyes were easily differentiated and the spectra could be used to determine dye composition of ink.

Raman, Ink Analysis, SERS