



Questioned Documents Section – 2004

J7 Ultraviolet Microspectral Characteristics of Gel Inks

Paul Martin, PhD, CRAIC Technologies, 2400 North Lincoln Avenue, Altadena, CA 91001*

After attending this presentation, attendees will learn the UV spectral characteristics of gel inks. In addition, the attendee will also learn a simple and novel method for preparation of inks for transmission microspectroscopy.

This presentation will impact the forensic community and/or humanity by discussion information on the major UV characteristics of gel inks. A new method for sample preparation of inks for transmission microspectroscopy.

The examination of writing inks has been an integral part of Questioned Document Examination since its inception. The types of inks and writing instruments of concern have progressed from pencil and nib pen to ballpoint and porous point pens. The most recent development in both ink and writing instruments has been the Gel Pen. This instrument is a marriage of the ball pen with polymeric gel ink containing both dyes and pigments as colorant and water based gel.

The standard examination protocol for writing inks consists of both physical and chemical procedures. The physical procedures, such as microscopy, near infrared reflectance and luminescence, and the use of various filters, are still applicable to gel inks. The chemical procedures, such as spot tests and chromatography, are not entirely applicable to the examination of gel inks due to the inks intrinsic lack of solubility and the nature of the colorant used.

This work shows a novel and simple method for sample preparation for transmission microspectroscopy. It also discusses some of the advantages of performing microspectral analysis in the transmission mode. I examined 7 different black gel inks in the ultraviolet spectral region. Additionally, 2 blue gel inks of the same manufacture with several of the black inks were also examined. Results of these examinations indicate the ability to differentiate, to varying degrees, the black gel inks, and consistency between those inks of common manufacture (blue and black). The major features are described for use by other examiners in their casework.

Microspectroscopy, Gel Ink, Ultraviolet