

Abstracts

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The Importance of Line Width Measurements in Discriminating Between Pencil Types (Chris Anderson, Sigurbjorg Gudlaugsdottir, and Julian Leslie)

Various graphical and statistical analyses were undertaken to investigate whether, in a specimen of pencil writing, it was possible to determine if the writing instrument was a mechanical pencil or a wood-cased pencil. A further consideration was whether it was possible to determine the diameter and/or softness of the lead for mechanical pencils. Ten writers provided samples using each pencil type, together with 4 levels of softness. The maximum width for a character was the measurement of interest. It was found that for particular soft leads it was possible to distinguish diameters of mechanical pencil leads. Distinguishing between mechanical and wood pencils depended on the softness and the diameter of lead. Small diameter soft leads in mechanical pencils were easily distinguished from wood pencils. In the remaining cases, differentiation between mechanical and wood-cased pencils was not readily established.

Indentation Examination Enhancement (Jane A. Lewis)

This research was conducted to test whether adding moisture directly to cascade developer beads would improve Electrostatic Detection Apparatus (ESDA) results. The ESDA was used to detect latent indented impressions on 100 sheets of paper containing indentations. Fifty sheets were processed according to the ESDA manual instructions. Fifty sheets were processed with an additional step. The cascade developer beads were misted with a plant mist sprayer before being dispensed on the document. Results showed improved visualized indentations with the misting method of developing electrostatic images with ESDA.

The Significant Contributions of David J. Purtell to the Field of Forensic Document Examination (Maureen Casey Owens)

David J. Purtell was invited to attend his first meeting of the American Society of Questioned Document Examiners in 1959, and was voted into Regular membership in 1961. He was one of the first government document examiners to hold membership in the Society. His document examination career dates from 1947 through 1985, and encompasses a myriad of contributions to the profession of forensic document examination and to the advancement and goals of its professional organizations.

Examination of Gel Pen Ink by Microspectrometry (Paul Martin and Albert H. Lyter, III)

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-ink 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. This paper looks at the feasibility of using a Craic Technologies Questioned Document System II (QDS II) microspectrometer as an analysis tool for the differentiation of gel-pen inks. Using several sample preparation methodologies over the full spectral range from ultraviolet to infrared, 7 different black gel inks were examined with the QDS II. Additionally, 2 blue gel inks (with common manufacture as 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 preferred sample preparation methodology was also identified and elucidated.

**COMMENTARY: Why Forensic Document Examiners' Training Must Be for a Minimum of 24 Months
(Joseph L. Parker)**

**Examination of Gel Pen Inks Using Physical and Thin Layer Chromatographic Examination
(O. P. Jasuja, A. K. Singla, M. K. Mand, and Albert H. Lyter, III)**

The use of thin layer chromatography (TLC) in the examination of writing materials is well documented and a proven technique. As technology continues to develop new and better methods of manufacture, those methods will permeate society and give rise to different products. This has occurred within the field of writing materials, as both instruments and inks have changed over time from nib pens to ball pens and from natural inks of iron to inks of pigment suspensions in water-based polymer gels. This most recent development, gel pens, combines ball pens with pigmented polymer gel ink. The gel pen presents a challenge to the forensic examiner, which is addressed initially with this study, including both traditional physical examinations, chemical spot tests, and TLC. A total of 98 different samples of gel pens were examined and yielded examination results that provided for discrete discrimination of over 35% of the gel pens.

**BOOK REVIEW: Review of *Laws of Men and Laws of Nature – The History of Scientific Expert Testimony in England and America*
(Linton A. Mohammed)**

**Linking Inkjet Printing to a Common Digital Source Document
Charles E. H. Berger, Jan A. de Koeijer, Wendy Glas, and Henk T. Madhuizen**

Minimal differences in a digital source document will drastically change the error diffusion dot pattern of an inkjet print. This study explains and demonstrates this effect and shows how this particular property of the error diffusion screening method can be used to link inkjet-printed documents to a common digital source. The results of the study were applied in a case.

**UV Scanner
(Raymond Orta M.)**

Examination of documents under ultraviolet radiation has become an important aid in determining possible modifications, substitutions, and/or alterations to documents. Forensic analysis of documents often involves creating illustrations of findings. It has not been uncommon to use ultraviolet film for this purpose. Ultraviolet film requires careful handling, special illumination, and occasional trial and error to obtain a good result. In addition, use of ultraviolet film is time consuming and expensive. In late 2000, experiments were undertaken to change a flatbed scanner into an ultraviolet (UV) scanner. The light tubes in several flatbed scanners were replaced, first with a short-range UV tube, then a long-range UV tube. Ultimately, excellent focused images resulted using 1 particular scanner. The UV scanner operates conventionally, although it acts on the radiation, intensity, and frequency band of the tube installed.