



J14 The Comprehensive Analysis of Counterfeit Currency

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Learning Overview: After attending this presentation, attendees will understand the need for a comprehensive examination of highly deceptive counterfeit currency and the timely dissemination of the findings to key stakeholders.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by advancing the understanding of chemical and instrumental analysis techniques as they pertain to the examination of counterfeit currency. This presentation will discuss analysis and comparison of materials found in counterfeit Federal Reserve Notes originating on three different continents.

Counterfeit United States currency is found throughout the world but is often of poor quality and is easily detected by cash handlers and banknote scanning equipment. However, highly deceptive counterfeit Federal Reserve Notes occasionally appear in circulation and provide an excellent opportunity to study the techniques used by criminal elements to reproduce currency components, such as paper, inks, and security features. Understanding the materials and methods employed by the counterfeiters allows the United States Secret Service (USSS) to investigate the relevant supplies, manufacturing, and distribution networks.

Depending on the sophistication level of the counterfeiting efforts, the notes may contain printing inks of the types found in genuine Federal Reserve Notes. The intaglio inks, metallic inks, and optically variable inks are of particular interest to USSS as they may provide information about the intended distribution routes of the counterfeit notes. For example, the presence of optically variable ink with a well-simulated color change indicates intent for person-to-person distribution, while the presence of magnetics indicates intent to deceive banknote scanners. Counterfeit notes may also contain custom paper incorporating counterfeit security fibers, security threads, and watermarks.

Access to a full suite of analytical instrumentation allows the USSS Counterfeit Forensic Section Document Analysts to conduct in-depth profiling of the materials found in counterfeit United States currency. For example, Fourier Transform Infrared (FTIR) spectroscopy may be utilized to analyze polymers of counterfeit security fibers, security threads, and security ribbons. X-Ray Fluorescence (XRF) spectrometry may provide valuable information about the elemental composition of the paper and ink while Microspectrophotometry (MSP) is essential for examination of the color gamut of counterfeit materials.

Examination of the individual counterfeit currency components provides information on the types and the consistency of the employed materials plus allows the USSS to build an overall picture of the counterfeiter's skills and potential motivations. Such information is then disseminated to the key stakeholders to be able to forensically link counterfeit notes and cases and to assist investigators in developing timely leads. It also helps the United States Currency Program members study the reliability and effectiveness of the current genuine security features.

Currency Analysis, Counterfeit Currency, Federal Reserve Note