



Engineering Sciences Section – 2004

C10 Western Precious Metal Ingots — The Good, the Bad, and the Ugly

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After attending this presentation, attendees will understand the scope of knowledge necessary in the identification of fake precious metal ingots.

This presentation will impact the forensic community and/or humanity by demonstrating breakthrough technology for determining real versus fake historical or modern precious metal ingots.

Historical precious metal ingots have changed hands for millions of dollars between bankers, institutions and collectors. Elaborate fakes have entered the market place, causing significant unrest. Experts have generally been unable to identify fakes until now. Using the gold ingots from the 1857 wreck of the SS Central America as a baseline, studies for the past five years have generated new methodology for determining real historical ingots from fakes.

Scanning Electron Microscopy with Energy Dispersant X-Ray Spectrometry backscatter scans show original textural features of the metallurgical product that can be compared to modern metallurgical pours. Laser Ablation-Inductively Coupled Plasma Mass Spectrometry analyzing major and trace element chemistry is used to compare original historical ingots with questioned pieces. A thorough understanding of the historical record associated with the companies that poured these ingots is necessary to further interpret the data.

Using this new methodology, several ingots have been determined to be fake, including one important ingot in the Smithsonian Collection.

Precious Metal, Gold and Silver, Fraud