

J13 An Analysis of Polymers in False Identity Documents: A New Contribution to Forensic Intelligence

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After attending this presentation, attendees will better understand the analysis of polymers in plastic identity documents for intelligence purposes, a field that has not yet been widely explored.

This presentation will impact the forensic science community by presenting a relevant combination of forensic chemistry to document analysis in a new manner. This presentation will also introduce the use of forensic chemistry as a forensic intelligence provider as opposed to it being a primary tool for the court.

The use of a polymeric substrate in the manufacture of travel and identification documents is becoming more and more widespread and popular across the world. Polymers have various characteristics that facilitate the use of many security elements and techniques; however, this does not make these documents forgery- or counterfeit-proof. They are still altered by various criminals and even terrorists to mask their identity and carry out their activities.

The presentation introduces the method and results of a research study with the goal to evaluate the relevance and contribution of polymer analysis in a forensic intelligence framework. Combined with visual examination and description of the documents, non-destructive to destructive analysis methods (such as Fourier transform infrared spectroscopy) were used on sets of genuine and false plastic driving licenses to provide information on the chemical composition of documents (support, printings, imitated security elements). A qualitative High-Performance Liquid Chromatography combined with a quadrupole Time-Of-Flight analyzer (HPLC-qTOF) method was also developed to analyze the additives present in the plastic substrates, hence obtaining a chemical profile of the cards studied.

The results of such forensic analysis methods provide insights and intelligence on the various *modus operandi* used by criminals to forge documents. It provides as well the ability to link false documents seized at different places and times, which eventually leads to identify criminal networks. It enables also to review and increase detection methods of false documents, and even to guide the design of future documents and their control.

This presentation will assess the contribution of documents chemical profiling by discussing the development of the analytical method in regard to the preliminary results obtained, the comparison with documents visual and physical profiling, whether it is possible and relevant to implement such method in reality, and more.

Analysis of polymers are used here with identity documents but may prove to be as much of interest for counterfeit money-related cases in countries that have plastic currency as well, such as Australia, New Zealand, and Canada.

Polymers, ID Documents, Profiling