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Chemical analysis of false identity documents: A new contribution to forensic intelligence ?

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### Abstract

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, and 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 master research study that aims 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 were used on sets of genuine and false plastic driving licenses to provide information on the chemical composition of documents (substrate, 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 have the potential to 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, eventually leading 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 chemically profiling documents in regard to the results obtained by comparing documents through visual and physical profiling methods only. The presentation discusses also the opportunity and relevance of implementing such profiling methods for real casework.

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

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