



J20 A Physical-Chemical Study of Crossed Line Intersection

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The objectives of this presentation are to answer the many questions regarding whether or not: (1) non-visible ink migration can be used for ink dating; (2) fading of luminescence can be used to determine the production time gap (Dt) between two intersecting lines; and, (3) there is the possibility of identifying luminescent compounds by utilizing various chemical methods.

This presentation will impact the forensic science community by providing a proposed methodology that will enable forensic experts and investigators around the world to conduct examinations at globally accepted standards.

The INTERPOL Counterfeit Currency and Security Documents Branch (CCSD) is responsible for establishing programs that provide forensic support, operational assistance, and technical databases to assist the 190 member countries of INTERPOL regarding counterfeit currency, security documents, and addressing border security issues by improving the integrity of travel and security documents.

The CCSD frequently encourages the incorporation of science into its police work and recognizes the importance of science in the development of technology and investigations. The Physical-Chemical Study of Crossed Line Intersection project began in 2010 at the initiative of the CCSD and in partnership with the International Academy for Handwriting and Documents (AIEED). This project provides a proposed methodology that will enable forensic experts and investigators worldwide to conduct examinations at globally accepted standards. Gaining a better understanding of the sequencing of line-crossings will help forensic document examiners to identify falsified documents, which will assist criminal investigations and combat and prevent future crimes.

For this project, inks were chosen in which migration of ink components has already been observed as well as such inks with unknown behavior. Non-intersecting lines can also be considered for migration studies, if they are positioned close to each other and if luminescence appears in this area. In some cases, invisible migration can be measured/observed outside of intersections.

Shared with participants at the regular INTERPOL meetings on Physical-Chemical Study of Crossed Line Intersection, the “proof of concept,” which was established following a year-long forensic analysis of the protocol conducted by laboratories in 13 countries, is to now be tested in the field with the goal of training forensic document examiners to assist in fraud or forgery investigations. This project will foster the development of new research in this domain and expertise to facilitate knowledge-sharing between international laboratories.

This study has been presented to nearly 120 forensic document examiners from 54 INTERPOL member countries who have been regularly attending working group meetings at the INTERPOL Secretariat General.

Migration, Luminescence, Ink Dating