

1st Poznań Forensic Science Conference 2026

– presenting current trends and research opportunities in the fight against crime

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Abstract

This article outlines the key issues discussed on 12–13 March 2026, during the first Poznań Forensic Science Conference, organised by the Forensic Laboratory of the Provincial Police Headquarters in Poznań and the Faculty of Law and Administration at the Adam Mickiewicz University of in Poznań. The aim of the conference was to present the current research opportunities being pursued at specialized institutions, which may lead to the practical application of scientific potential in the detection process.

Keywords: forensic, biological research, genetic, anthroposcopic examinations, document examination, digital forensics

Introduction

As one of Poland's academic centres, between 1997 and 2013, Poznań hosted a series on the verification of the authenticity of public documents entitled 'Technical forensic examination of the authenticity of public documents'. As pointed out by Prof. Hubert KołECKI (1979, p. 11): 'One of the prerequisites for improving the working methods of

law enforcement agencies is the continuous development of forensic science and the fuller utilisation of its modern achievements. The primary task of forensic science is to provide law enforcement agencies and the justice system with modern methods and tools that may be useful in their day-to-day work'.

Recognising the need to introduce a new approach to presenting issues relating to forensic

science in the broadest sense within the national conference landscape, the Forensic Laboratory of the Provincial Police Headquarters in Poznań and the Faculty of Law and Administration at the Adam Mickiewicz University in Poznań have joined forces to organise the 1st Poznań Forensic Science Conference. The innovative format of the conference involved bringing together various disciplines of forensic science, with the aim of exchanging knowledge and best practice. The interdisciplinary programme covered topics relating to artificial intelligence, forensic genetics, forensic medicine, forensic anthropology and document examination. The organisers also took a particular interest in the historical and patriotic aspect relating to forensic science. Of particular significance, and attracting a great deal of interest, was the closed session devoted to the analysis of cases investigated by the police's 'X-Files' department, which was intended to provide an additional forum for the exchange of academic and expert knowledge, fostering greater integration and active participation among the attendees.

The conference was attended by over 300 people representing more than several dozen local government, academic and specialized institutions, as well as the uniformed services, public prosecutors' offices and courts. A total of 36 papers were presented during the two-day conference. The event was complemented by an exhibition area featuring eleven companies partnering with the conference. Detailed information on the topics of the papers, the organisers, speakers, scientific patrons, honorary patrons, media patrons and partners of the conference can be found via the following links:

- <https://poz-krym.web.amu.edu.pl/#organizatorzy>,
- <https://wielkopolska.policja.gov.pl/wlk/aktualnosci/274223,KWP-I-edycja-Poznanskiej-Konferencji-Kryminalistycznej.html>.



The attendees of the conference also had the opportunity to visit the newly built Forensic Laboratory of the Provincial Police Headquarters in Poznań, which proved very popular.

Day One (12 March 2026)

The following speakers addressed the audience at the conference's opening ceremony: Prof. Zbyszek Melosik – Vice-Rector for External Relations at Adam Mickiewicz University in Poznań, Prof. Tomasz Nieborak – Dean of the Faculty of Law and Administration at Adam Mickiewicz University in Poznań, Superint. Tomasz Olczyk – Provincial Police Commissioner in Poznań, Insp. Iwona Marciniak-Krawczyk – Director of the Central Forensic Laboratory of the Police, and Paweł Szalamacha – a member of the Management Board of the National Bank of Poland. Following the opening ceremony, the thematic sessions began.

The first panel, entitled 'Forensic Science in the History of Poznań', featured presentations by three speakers representing the University of the National Education Commission in Kraków, the Wielkopolska Museum of Independence and the Museum of the Martyrdom of the People of Wielkopolska Fort VII of the Wielkopolska Museum of Independence. The first of the papers provided an overview of the academic work of Feliks Górski ('Black Book', 1848) and the anthropometric and dactyloscopic studies of Ludwik Karol Teichmann, Leon Wachholz and Ludwik Hirszfeld, as well as those of Dr. Władysław Sobolewski, Prof. Zdzisław Jan Papierkowski and Prof. Paweł Horoszowski. The presentation also highlighted issues relating to the establishment of the State Police on 24 July 1919, the Forensic Laboratory at the Head Police Academy in Warsaw in 1926, and the State Police exhibition held during the General National Exhibition in Poznań in 1929, which featured, among other things, educational displays and selected exhibits from the Museum of Criminology.

The next paper outlined the plans for the Museum of the Wielkopolska Uprising of 1918–1919, which is currently being established in Poznań. The following topics were discussed in a professional manner: the baptism of Prince Mieszko I in 996, Ostrów Lednicki, the Poznań Archcathedral Basilica, and the Primate's Basilica in Gniezno. The role of the aforementioned places and historical facts as the foundation of Polish statehood was emphasised. Later in the presentation, the speaker addressed issues relating to the Wielkopolska Uprising of 1806, a successful uprising by the Poles against the Prussian occupiers. Other issues discussed concerned Poland's regaining of independence on 11 November 1918 and, most importantly, one of the few fully successful uprisings in Polish history, namely the Wielkopolska Uprising of 1918–1919, which was an armed uprising by the Polish inhabitants of Wielkopolska against the German state.

The last paper presented provided an insight into the history of the prisoners of Fort VII, as recorded in surviving archives and on the walls of the prison cells. It is worth noting that, following the German occupation of Poznań in 1939, the first camp in the occupied Polish territories to be designated a 'concentration camp' – Konzentrationslager Posen – was established on the outskirts of the city. For this purpose, the Nazis adapted Fort VII, built in the 1870s, which became the largest German camp in Poznań for the extermination of the Polish elite within the Wartheland (Jurkiewicz, 2024). The imprisoned Poles inscribed various details on the bricks – names, surnames, dates of birth, sentences as well as drawings. As the speaker emphasised: 'In the spring of 1944, the Germans closed the camp at Fort VII. Before leaving the camp, special groups of female prisoners were forced to scrub and wash away the inscriptions from the walls'. Between 1 February 2025 and 31 January 2026, 1,405 inscriptions or traces of inscriptions left by prisoners between 1939 and 1944 were recorded. Since September 2025, investigative and research work has also been carried out there by

experts from the Forensic Laboratory of the Provincial Police Headquarters in Poznań. Detailed information on the above topics can be found via the following links:

- <https://radiopoznan.fm/informacje/pozostale/badania-napisow-pozostawionych-przez-wiezniow-fortu-vii-moga-pomoc-w-identyfikacji-kolejnych-ofiar>,
- <https://gloswielkopolski.pl/policyjni-kryminalistycy-odczytaja-napisy-wiezniow-fortu-vii-kazde-nazwisko-moze-przywrocic-pamiec-o-ofiarach/gh/c1p2-29212863/2>,
- <https://poznan.ipn.gov.pl/pl7/aktualnosci/180802,Archiwum-Pelne-Pamieci-Fort-VII-w-Poznaniu.html>.



The next panel, entitled 'Forensic Science and New Technologies', brought together fourteen speakers representing distinguished institutions: the Central Forensic Laboratory of the Police, the Polish Platform for Homeland Security, Jan Długosz University in Częstochowa, LS Airport Services S.A., the Wałbrzych Special Economic Zone 'Invest-Park', the Forensic Research Office of the Internal Security Agency, PKO Bank Polski, the Institute of Bioorganic Chemistry of the Polish Academy of Sciences, the Poznań Supercomputing and Networking Centre and the Central Bureau for Combating Cybercrime.

The papers presented at the conference covered new challenges for digital forensics, development trends relating to European research and scientific projects, the use of software to bypass security measures, the processing of multimodal data, cybersecurity in the aviation sector, challenges for computer forensics in combating crime, the detection of synthetic speech, current fraud trends in online banking, artificial intelligence systems, automated facial recognition systems and neural network architecture for the detection of weapons in CCTV footage and real-time analysis. The question of how the latest technology is outpacing current legislation was left for further discussion. A prime example was the reference to the use of artificial intelligence in the context of criminal, civil and administrative law. Individual, extremely valuable presentations addressed the issue of deepfakes, a technique enabling the replacement of faces, voice cloning, lip-syncing, and recreating a full-body image complete with movement and posture, in order to create false gestures that have no basis in reality, as well as AI machine learning. In addition, the topics presented included, among others, the EMMA – a system designed to support the monitoring and analysis of audio and audiovisual content from so-called open sources, speech recognition (transcription of utterances), speaker diarisation (sound segmentation, extraction of unique features such as pitch, tone or accent), searching for a person's utterances, and, ultimately, speaker identification. The topics of cybersecurity in air traffic and the

Security Operations Centre (SOC) were also discussed. The discussion then turned to issues relating to cryptocurrencies, BLIK payments via ATMs and cash deposit machines, AI-generated fake pornography, and the unauthorised use of other persons' electronic signatures. The presentations also covered methods for detecting synthetic speech, based on authenticity testing within the carrier-file-signal framework, auditory analysis, linguistic analysis and detection using machine-based methods. The speakers also outlined the most common criminal activities aimed at fraud, relating to social engineering (text messages, emails and phone calls). The discussion also covered the 'alleged identities' used by criminals: 'a police officer', 'a prosecutor', 'a member of another profession enjoying a high level of public trust', 'a bank employee or technical support staff', 'a relative or friend who has caused an accident', 'a grandchild or other family member' or 'any person who inspires trust and presents a credible story'. The conference participants were introduced to the EU-funded DETECTOR project, which aims to combat manipulation involving media content generated by AI. The CYCLOPES project was presented as well which aims to establish a network of European law enforcement agencies bringing together practitioners involved in combating cybercrime. Another project presented, FORMOBILE, aims to develop solutions enabling the retrieval of previously inaccessible mobile data, the unlocking of mobile devices, and the analysis of data from mobile phones. AI-based facial recognition systems, which use biometric data to identify a person on the basis of a facial image, were also showcased.

Day Two (13 March 2026)

The second day of the conference started with a panel entitled 'Forensic Genetics, Forensic Medicine, Forensic Anthropology'. During the session, ten papers were presented, including by representatives of the Central Forensic Laboratory of the Police, the National Centre for Research and Development, the Department of Forensic Medicine at the Medical University of Lublin, the Faculty of Biology at the Adam Mickiewicz University in Poznań, the Department of Forensic Medicine at the Poznań University of Medical Sciences, the Institute of Human Genetics of the Polish Academy of Sciences in Poznań, and the GenMed Molecular Diagnostics Laboratory.

The topics discussed included an overview of how a DNA database works and its role in the investigative process. During the subsequent presentations, conference participants had the opportunity to hear about the use of AI in forensic genetics, which serves as a tool facilitating the interpretation of results and the automation of tests.

The presentations covered topics such as the microbiome and the use of insects to determine the time, place and cause of death, which may be utilised in investigations. The importance of using biological evidence in cases involving offences against sexual freedom and public decency was emphasised, with particular em-

phasis placed on its proper technical and procedural preservation. The topics covered included the analysis of biogeographical origin in forensic investigations and the possibility for identifying the region of origin of biological samples under examination. A new Kinfinder reagent kit has been presented, which utilises as many as 48 genetic markers and is used, among other things, to identify deceased persons. New investigative methods used in forensic genetics enhance the ability to detect and analyse biological traces. However, one should bear in mind their limitations, such as the quality and quantity of biological material. Research methods are only as effective as the properly preserved biological material. Each new technique should be thoroughly tested for sensitivity, specificity, reproducibility and susceptibility to error; it must therefore be validated. Privacy issues and the protection of genetic data may also prove problematic. At present, there is no legislation in Poland that governs the use of forensic genealogy. In criminal investigations, new genetic technologies can verify the credibility of witness statements and the accepted version of events, establish links between different crimes, enable the re-examination of unsolved cases and assist in the identification of individuals. However, they do not replace investigative work – they provide information that must be correctly interpreted and linked to the body of evidence as a whole.

One of the subsequent papers discussed the possibilities and limitations of anthropological research based on film and photographic records. The conference participants were provided with information on the static and dynamic characteristics of gait, such as the length of the entire lower and upper limbs and their individual segments, foot strike angles, deviations from the body's vertical axis, and stride width, including the gait path (ichnogram) as a graphical representation of human movement. Another key element of the presentation was the description of the hand, including the role of the flexor creases, taking into account developmental, acquired, congenital and age-related changes. These characteristics are particularly important in the process of identification of individuals in cases involving sexual offences.

During a closed-door panel discussion relating to the 'X-Files' department of the police, the participants heard about issues relating to the use of modern forensic methods, based on the prediction of phenotypic traits, as well as on the construction of family trees – so-called genetic genealogy. The discussion covered cases which, thanks to the use of various branches of forensic science – in particular fingerprint analysis and forensic genetics in the broadest sense – were solved after many years.

In the final open panel entitled 'Document Examination', presentations by representatives of the National Bank of Poland, the Prof. Jan Sehn Institute of Forensic Research in Kraków, Polska Wytwórnia Papierów Wartościowych S.A. (PWPW S.A.), the Wielkopolska Provincial Office and the Forensic Laboratory of the Border Guard Headquarters, addressed issues relating to Polish currency and public documents.

The papers presented at the conference dealt with the relationship between the quality of banknotes and the perception of their authenticity, taking into account the protection of banknotes against counterfeiting, knowledge of the security features of genuine banknotes, and the presence of damage and soiling that may hinder the assessment of their authenticity. A paper was also presented on the multifaceted examination of documents, i.e. by determining the method of their production or analysing the paper on the basis of optical, microscopic, spectroscopic and electrostatic tests, including the use of the FFT (Fast Fourier Transform) method.

One of the presentations also discussed the innovative, technically advanced solutions developed by specialists at PWPW S.A., which were illustrated using the example of a new studio card. Others concerned the risks associated with the verification and use in administrative proceedings of historical and contemporary registry office records issued in the Soviet Union and in the states that emerged following the break-up of the Soviet Union. Administrative errors in documents of this kind were also discussed.

Exhibition presentation (12-13 March 2026)

During the conference, the lobby of the Collegium Iuridicum Novum at the Adam Mickiewicz University in Poznań housed an exhibition covering the extensive range of publications from the Central Forensic Laboratory of the Police, the offerings of the Wałbrzych Special Economic Zone 'Invest-Park' and PKO Bank Polski, as well as the specialist research and technical equipment presented by Technolutions, Precoptic, Transactor Security, Idemia, Imogena, DKS and the National Bank of Poland.

The presentation of the capabilities of the research and laboratory equipment enabled the participants to familiarise themselves with the latest technological solutions supporting forensic analysis across a range of forensic science disciplines. This provided an opportunity to exchange knowledge and experience, seek technical advice, discuss the applications of the presented systems, which could be used, among other things, in police forensic laboratories, and, most importantly, to demonstrate the close correlation between science, practice and technology.

The equipment presented included:

- a *Hirox UV/IR* digital microscope, enabling high-resolution analysis
- and documentation of traces, microstructures and documents;
- a *LeedsDiscovery-Z* comparative microscope, used in ballistics investigations and for the comparison of mechanoscopic traces, fibres and documents;
- an (ALS) *Leeds LSV2* imaging system using alternative light sources for the rapid detection and documentation of hard-to-see and large-area traces, including biological traces, explosives, markings on documents and surface alterations;

- a *Renishaw Virsa* Raman spectrometer, designed for non-destructive material analysis and the identification of chemical substances, including drugs, explosives, microtraces and documents;
- a *VSC 9000 Foster & Freeman* digital system for the comprehensive analysis of documents across various light spectrum ranges;
- a *Crime-Lite ML PRO 2 Foster&Freeman* laboratory-grade forensic inspection illuminator with automatic scanning under various lighting conditions;
- a *Crime-lite AUTO Foster&Freeman* portable forensic UV-VIS-IR illuminator;
- a *Crime-Lite X Foster&Freeman* multi-range portable LED forensic illuminator;
- a *VSC NOMAX2 Foster&Freeman* portable document verification device;
- a *Projectina Spectra Flex* advanced video comparator for verifying the authenticity of documents and securities;
- a *Projectina Spectra Check* portable document examination system;
- a *Zinexts MagPurix 12 N.E.O.* automated system for isolating nucleic acids from complex forensic samples;
- an *MTOP Mobile Idemia* mobile biometric sensor which, when connected to a mobile phone, enables full fingerprint scanning, for example, directly at the scene of an incident.

Conclusions

The Forensic Laboratory of the Provincial Police Headquarters in Poznań – a co-organiser of the event – believes that the presentations given at the 1st Poznań Forensic Science Conference will serve as a platform for deepening knowledge and advancing scientific research in the field of forensic science. Combining the potential of science and practice will help ensure the continuation of the conference, which will become a permanent part of the discourse on forensic science, both in Poland and abroad.

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Phot. 1. Participants at the 1st Poznań Forensic Science Conference (photographs courtesy of the Provincial Police Headquarters in Poznań)