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THE ROLE OF CRIMINALLY SIGNIFICANT INFORMATION OBTAINED FROM MICROOBJECTS THROUGH MODERN TECHNOLOGIES IN THE EVIDENCE PROCESS

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ABSTRACT

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THE GENERAL CHARACTERISTICS OF THE STUDY

The relevance of the topic and its degree of development. In modern times, the proving process in the fight against crime consists of the discovery, study and evaluation of research objects as material evidence in terms of the legitimacy, impartiality and justification of the accusation. It is clear from this that the collection, verification and evaluation of the factual information necessary to reveal the objective truth about the criminal facts in the criminal proceedings depends on the result of the procedural activity carried out by the prosecuting authorities with the participation of other subjects of the process.

The process of proof is almost the main core of criminal procedural activity. Determining the objective truth about the facts of the crime is ensured only by means of proof.

Since it is impossible to completely destroy evidentiary information at the scene, solving the crime is possible not only with accessible and visible objects, but also with the help of microparticles, microprints and microobjects left by the participants of the event regardless of their will.

The relevance of the study of microobjects among forensically important information carriers in forensic expertise is increasing day by day.

There is a need for comprehensive, systematic and systematic analysis of problems related to the investigation of the criminal case, the application of modern methodologies, the application of modern methods, the investigation of material objects, which are difficult and impossible without special tools and equipment due to their small size and mass.

However, despite the fact that scientists have paid enough attention to the problems of using microobjects, this problem remains largely unsolved both theoretically and in the practice of investigation and expertise. Forensic literature on microobjects is mostly devoted to the development of expert research methods. A comprehensive study of the technology of their application as evidence in criminal proceedings has not yet been carried out. Many

questions remain open about the preliminary research of microobjects, their participation as material evidence, and the use of the results of all types of research, not just one expert. In crimes against the person, sexual integrity of the person, against sexual freedom and taking into account the technical and practical shortcomings encountered during road traffic incidents, attention is being paid to the investigation of the subject of microobjects research.

In the investigation of separate criminal cases, it is particularly important to implement all the cases and stages of work with microobjects in an appropriate manner and practical use with reference to methodical recommendations.

In order to meet the current level of working with micro-objects and the truth in criminal cases, conducting new researches with modern methods and devices and drawing up the obtained results in accordance with the procedural rules are urgent issues. The problem of studying micro-objects is not new to forensics. The emergence of the idea of using micro-objects to solve crimes in the 11th and 19th centuries is connected with the names of Hans Gross and Conan Doyle. In 1918, the German forensic chemist G. Popp noted the importance of their research based on the study of the morphological, chemical and physical properties of particles and pollution in his study "Microscopy in the process of criminal investigation". In his research, he cited two cases from 1904 and 1908 regarding the use of micro-objects in the investigation of crimes. All this suggests that the problem of using microparticles in criminal proceedings has a long history. In 1923, the German criminologist K. Gieseke described the methods of studying micro-objects in the clothes of suspected persons in order to determine their profession.

This topic was published in 1940 in the Soviet Union in one volume edited by N.V. Terziyev. Here, a lot of space is devoted to the study of particles. The Yugoslav criminologist Vlado Vitis studied this problem in more detail in 1971. Microprints are material

traces that cannot be seen with the naked eye, and their presence in certain places can only be assumed[1] .

E.R. Rossinskaya, V.Y. Koldin, Y.G. Korukhov, R.S. Belkin, M.B. Vander, G.L. Granovsky, V.S. Mitrichev, V.E. Kapitonov, T.F. Odinochkina, N.F. Krylov and other scientists are extensively covered in their works.

V. D. Arsenyev, A. R. Belkin, P. A. Lupinskaya, V. Y. Dorokhov, S. A. Shayfer and other scientists investigated the procedural stages in the process of proving microobjects in their works.

The application of modern devices for the investigation of micro-objects at the scene and in the laboratory, processing in accordance with the rules arising from the requirements of the standard, by American and European scientists such as Max Hook, Jay A. Siegel, James Robertson, Claude Rocks, Brian Cuddy, Debra Carr, Michelle Graves and others. extensive and detailed research is given in his works.

V. N. Kosaraev, A. I. Natura, T. N. Shamonova, I. V. Makagon and A. V. Kochubey studied the criminalistic and procedural aspects of the use of micro-objects in their works.

Microobjects were studied from different aspects in the works of the above-mentioned scientists. Taking into account measures to combat crime, procedural legislation, the development of modern science and the technical capabilities of technologies, we observe that there are scientific and practical problems related to the complex study of the use of micro-objects during the evidence process in criminal prosecution.

Until now, the issues of using micro-objects in criminal-procedural evidence, the technical-criminological, scientific-methodical and criminal-procedural problems that may arise in this context, have not been investigated and solved at the academic level in Azerbaijan.

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[1] Владо В. О микроследах в криминалистической обработке / В.Владо. – Белград: - 1972. – с. 3.

The object and subject of research. Legal relations between procedural subjects in the opening and investigation of criminal cases and investigative and expert experience in the use of micro-objects, as well as methodological assistance issues, provide opportunities for obtaining operational-search and criminalistically important information.

Using information on micro-objects during the criminal prosecution process in crimes against the person, sexual integrity and sexual freedom of the person, as well as in criminal cases related to traffic accidents and other similar cases, in the search activity, as well as during the proving in criminal cases of this category are the regularities of the activity of the subjects of the investigation, the understanding of which allows for the development of theoretical foundations and practical recommendations aimed at increasing the effectiveness of the process of investigation of the considered crimes.

The goals and objectives of the study. Based on the generalization and analysis of the modern state of organizational, legal and methodological support for the use of information about microobjects, it consists in the preparation of theoretical provisions and practical recommendations aimed at solving the problems that arose during the use of microobjects in the investigation and detection of crimes in the execution of criminal justice.

The specified goal conditioned the setting and solving of the following tasks:

- to analyze the modern technical criminological tools and methods of detecting, taking and studying micro-objects in the detection and investigation of crimes;
- to determine the special role of micro-objects in the investigation of criminal cases committed under covert conditions;
- on the basis of sociological studies, to mention the most important factors that determine the possibilities of increasing the efficiency of the use of micro-objects in the process of solving and investigating crimes;
- on the basis of the generalization and analysis of the investigative experience in criminal cases, to detect the mistakes made by the subjects of the investigation during the work with

microobjects at the scene, and to propose their possible solutions. Establish an algorithmized work order with microobjects at the scene;

- to study the experience of expert research in order to develop recommendations for increasing the efficiency of obtaining the results of expert research determined on work with microobjects through modern technologies;

- to study the possibilities of expert research on specific types of micro-objects and justify the expediency of appointing complex expertise of micro-objects as the most effective form of research that provides the opportunity to obtain criminalistically important information;

- Develop and justify proposals for making changes and additions to the criminal procedural legislation of the Republic of Azerbaijan regarding the assessment of expert opinion.

The research methods. Provisions of materialist dialectics as teachings on the interconnected general laws of movement and development of nature, human society and thinking from a materialist point of view, as well as general and special scientific cognitive methods such as surveying, measurement, modeling, observation, system-structure, statistics, logic, etc. organized. Synthesis of expert and investigative experience and criminological, criminological, operative-search, criminal-procedural, etc. special literature of a different nature was studied, as well as microchemical and instrumental analysis methods applied in the study of microobjects, as well as forensic methods applied in modern devices and equipment were used.

The main provisions of the defense. In accordance with the objectives of the research, based on its content, the following new scientific provisions are to be defended:

1. The basics and understanding of distinguishing microobjects as material evidence in the process of proof;

2. Substantiation of proposals and recommendations put forward regarding the legal regulation of issues related to the addition of microobjects as material evidence to the materials of the

criminal case, research in the criminal process and evaluation of the results;

3. On the basis of the analysis of the characteristics of the search, detection, recording, removal and packaging of micro-objects, recommendations were given for work in dozens of incidents and in laboratory conditions, and an algorithmized procedure for such work was proposed;

4. Actively conveying the results obtained from micro-objects as a carrier of criminalistic information to research subjects through modern devices and equipment, providing the necessary scientific and methodological assistance to investigative bodies, expert-criminalists;

5. To study the possibilities of expert research on specific types of micro-objects, to justify the feasibility of appointing complex expertise of micro-objects as the most effective form of research that provides the opportunity to obtain criminalistically important information;

6. To emphasize the importance of studying microobject research methods within the conditions arising from the requirements of the standard in order to increase the efficiency in the investigation of crimes.

The scientific novelty of the research. On the basis of the study of researches on the analysis of the experience of their application in criminal proceedings against the person, against the sexual integrity of the person, against the sexual freedom, and in the opening and investigation of criminal cases that occurred in road traffic incidents, theoretical works, as well as separate scientific provisions and the use of micro-objects during proof individual aspects, as well as for the first time the dissertator tried to develop legal, organizational and tactical recommendations aimed at increasing the effectiveness of this work.

For the first time in our country, in the field of forensic expertise and criminology, a comprehensive study of the theoretical and practical problems of using micro-objects in evidence and the modern possibilities of expert expertise was conducted, taking into

account the provisions of the Criminal Procedure Code of the Republic of Azerbaijan.

Theoretical and practical provisions containing the possibilities of effective use of micro-objects as a carrier of criminalistically important information in evidence have been developed. Recommendations were made on optimizing work with microobjects at the scene and increasing the efficiency of their expert research.

A number of provisions of the dissertation are also characterized by scientific innovation:

- Systematization of research methods of micro-objects at the scene, identification and evaluation of the advantages and disadvantages of each of these methods in the process of application, more efficient technical-criminological and tactical research of micro-objects that are important in the investigation and are used as material evidence. defining a set of methods;
- Preliminary research of micro-objects, that is, their detection, recording, removal, packaging, etc. determination of tasks facing investigators and expert-criminologists in connection with;
- Procedural bases of sending micro-objects for examination as material evidence and stages of examination research; methodical bases of reconstruction of the conditions of occurrence of the crime with reference to microobjects and microparticles at the scene; application of complex methods in expert research of microobjects; systematic study and analysis of issues such as formalization of the process and results of the expert research of micro-objects and their evidential importance, development of methodical, technical and procedural bases of the expert research of micro-objects that are important from a criminalistic point of view;
- A comprehensive review of the scientific and technical possibilities of the stages of investigation of micro-objects at the scene and in laboratory conditions, and the procedural features of their involvement in the criminal prosecution process as a type of evidence.

The theoretical and practical significance of the research. The significance of the research results is defined as the conclusion, expansion and grouping of the evidentiary basis of criminal cases of

this category, with provisions aimed at strengthening the theoretical and practical basis of the use of microobjects in the investigation of criminal cases, interpreted in this study in general. In order to increase the effectiveness of using information about microobjects, the author's approach to the organization of work with microobjects at the scene was proposed during the research, as well as recommendations for determining the complex expertise of microobjects.

In the theoretical results interpreted in the dissertation work, there are new methods of solving the problems of using micro-objects in the criminal proceedings against the person, against the sexual integrity of the person, against the sexual freedom and in the investigation of the criminal cases on road traffic incidents. These methods consist of regulating the procedural order of working with micro-objects according to the legislation, interpreting the rules of the inspection of the crime scene in secret conditions in the protocols, and improving the organization of activities on the appointment of expertise of micro-objects. The research results can be included in the educational process of law universities and institutes, as well as in the systems of training and professional development of research subjects and experts.

The practical importance of the dissertation research is determined by the direction of increasing the effectiveness of science and technology, especially the application of modern technologies in the field of microobject research, in the detection and investigation of crimes, the Constitution of the Republic of Azerbaijan, Criminal and Criminal Procedural Codes, the Law of the Republic of Azerbaijan "On Forensic Expertise Activities" and the implementation of the law normative acts, as well as enterprise acts, the results of the analysis of special literature, the results of expert and investigative experience, were analyzed and conditioned in the direction of increasing the efficiency of the work with the Ministry of Justice of the Republic of Azerbaijan, the Ministry of Internal Affairs, the Prosecutor General's Office of the Republic of Azerbaijan and other law enforcement agencies.

The approbation and application. The results of the dissertation research were published as articles in scientific journals recommended by the Higher Attestation Commission under the President of the Republic of Azerbaijan. The result of the scientific research conducted on the subject of the dissertation was published in the report "Important scientific achievements of the Azerbaijan National Academy of Sciences in 2017". On the subject of the dissertation: "Materials of the International Scientific and Practical Conference - Current Issues in Theory and Practice of Forensic Expertise", "Criminology and Forensic Expertise in the Era of Globalization: Theoretical and Practical Problems", "History and Development Prospects of the Azerbaijan Police", "Union of European Institutes of Forensic Expertise (ENFSI) nin) at the 25th and 26th meetings of the European Stained Glass Working Group, as well as at international scientific and practical conferences dedicated to the subject. Prepared passports and expert manuals for the study of fibrous materials, lacquer and paint materials and included them in the methodical fund. Specific recommendations proposed for the purpose of improving the criminal procedural legislation were presented to the Milli Majlis of the Republic of Azerbaijan, and a positive result was obtained that those recommendations will be taken into account.

The name of the organization where the dissertation work was carried out. The dissertation work was carried out at the Department of Physical and Chemical Expertise of the Forensic Center of the Ministry of Justice of the Republic of Azerbaijan.

The total volume of the dissertation with characters, indicating the volume of the structural units of the dissertation separately. The dissertation consists of an introduction, three chapters and eighteen paragraphs included in them, a conclusion and a list of used literature, appendices and consists of 189 pages (281889 characters) in total.

THE MAIN CONTENT OF THE WORK

In the introductory part, the relevance of the topic and the degree of development, the object and subject of the research, the purpose and tasks of the research, research methods, the main propositions defended, the scientific innovation of the research, the theoretical and practical importance of the research, the approval and application of the research, the name of the organization where the dissertation work is performed, the structure of the dissertation The total volume of the dissertation is marked with a sign, while the volume of the sections is noted separately.

The first chapter of the dissertation, called **"Theoretical foundations of forensic research of micro-objects"**, consists of four paragraphs and ten and a half paragraphs included in them.

In the first paragraph of the first chapter called **"Theoretical foundations of the forensic investigation of micro-objects"**, it is stated that Micro-objects are usually small, small size and mass related to a crime, which are difficult and impossible to detect, take and study without special tools and equipment. objects are understood.

Microobjects are objects that have a fixed shape for solids, a measurable volume for liquids, and the need to use special methods, methods and tools to detect their morphological features that can change in a certain space. Many terms related to microobjects can be found in forensic literature. These include substance traces, overlapping traces of substances and materials, microtraces, microparticles (separate parts of objects), microsubstances, microresidues and others[2].

Among micro-objects, micro-fiber traces are also separated as a separate category. Micro-fiber prints mean objects with permanent properties, light weight and stable external shape. Those whose length is much greater than their thickness - various fabric fibers, rope, thread, etc. The purpose of studying the classification, gender

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[2] Əliyeva, A.Ə. Mikroobyektlərin kriminalistik təsnifatı. Mikroobyektlər informasiya mənbəyi kimi / IV İnternational Scientific Conference of Young Researchers, - Bakı: 29-30 aprel, - 2016, - s. 1724.

and half-types of micro-fibers that can be formed as a result of the interaction of criminal subjects with each other or with other objects at the scene is the correct establishment of the algorithm of the methods applied in the expertise, that is, the correct establishment of the sequence of the working principle of the methods to be applied (microscopy, spectroscopy, chromatography), is important in choosing other methods and tools.

Fiber is a solid body with a certain size and mechanical properties that include many properties during operation (such as weaving, twisting, etc.) suitable for making thread and textile products with a longitudinal dimension greater than the diameter of the transverse dimension [3] .

The main component of textiles is fiber. The main classification feature is the origin and chemical composition of the fibers. All textile fibers are grouped into two main classes: natural fibers and chemical fibers.

The discovery of new fibers continues today as the development of modern technologies expands the production of fibers and fabrics. Fiber-containing polymer has a significant effect on obtaining fiber in the textile field.

Properties of Fiber-Forming Polymers - Whether natural or synthetic, fiber-forming polymers consist of a series of polymer chains that are several hundred times longer than they are wide, and tightly bound together. These polymers must also have the general properties listed below to make fibers for use in the textile industry.

Paint microparticles from micro-objects of non-biological origin are also classified as a separate category. The forensic examination of lacquer and paint materials, coatings and painted objects is widespread in the investigation and prosecution of criminal cases. The importance of this is due to the fact that the objects painted at the crime scene, as well as various particles of their lacquer coatings, are often used for crimes committed, mainly traffic

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[3] Криминалистическое исследование волокнистых материалов и изделий из них. Метод. Пособие для экспертов – М.: - 1983. – вып 2, - с. 9, 206.

accidents, theft, murder, etc. they are carriers of criminalistically important information.

In the second paragraph of the first chapter called **"Microobjects as a carrier of criminalistic information"**, it is noted that during a criminal incident, microparticles and traces of objects, substances, materials, clothing items that came into contact with them remain among the victim and the accused persons, as well as at the place where the incident was committed. In the process of proof, micro-objects are important as a source of information in crimes against identity, against sexual integrity and sexual freedom of an individual, in the opening and investigation of criminal cases related to traffic accidents. In the course of the investigation, the determination of the type, group and gender affiliations, mechanism and source of the micro-objects created during the incident provides guiding information in the study of the circumstances of the criminal case. Microobjects are particularly important in answering questions such as the mutual contact of clothing items of the victim and the suspect in crimes committed under covert conditions, determining the place where the incident took place, moving the discovered corpse to another place, with other objects it came into contact with, and so on. The criminalistic importance of micro-objects as material evidence is that by determining their unique characteristics, it is possible to study the circumstances of the crime incident, and by planning the operation-search activity, as well as the course of the investigation, exposing the criminal with hot traces and solving the crimes.

It may be possible to encounter the absence of fingerprints, shoe prints and other traces of the person suspected of committing the crime at the scene of the crime. The person who committed the crime tries to destroy these traces, but involuntarily does not notice and does not pay attention to the small microparticles. V.E.Capıtanov, noting that he knew by not paying attention to microobjects, thinking that he destroyed the traces that could expose him, writes: "At the scene of the incident, small and small particles and microtraces of various substances and materials that carry information about the crime are always left. The importance of

micro-objects, which are very small in size, as carriers of criminalistic information, has increased with the development of physical, chemical, biological, mathematical-analysis methods, and in the modern era, they have become especially important. The provision of investigative bodies with modern technical and criminalistic tools, using the newest achievements of scientific and technical progress, the results obtained during the study of various types of microobjects serve as a source of information for the investigation".

Small material bodies (objects) in the form of various dust and soil compounds, human and animal hair, various plant fibers, paint microparticles, as well as traces of various objects have always had a special place among the material evidences subjected to microscopic research in criminalistics, which is their immediate It comes from the fact that they are related to the crime that happened [4].

In the investigation of criminal cases related to the theft of someone else's property, when it is not possible to expose the criminal through the available evidence in many cases, it is possible to get a positive result by involving and studying micro-objects in those cases. For example, fiber microparticles remain in the clothing of the suspect from objects of a fibrous nature, such as carpets, curtains, furniture covers, etc., which determines the person who committed the crime.

The use of micro-objects in the identification of an unknown dead body found under covert conditions can give a guiding result, for example, traces of paint on the dead body's nails, micro-particles of fibers, metal particles and other objects may remain on the bottom of the dead body. In such cases, it can provide important information about the profession of the victim or the situation of the incident. These types of microparticles can accumulate not only in nails, but also in palms, hair, and various parts of clothing.

One of the interesting points in the study of microobjects is the discovery of microparticles belonging to that place on the clothing of

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[4] Капитонов, В.Е. Работа с микрообъектами на месте происшествия / В.Е.Капитонов, Н.М.Кузьмин, Т.Ф.Одиночкина - М.: - 1978. - с.6-15.

the criminal in the clothing of another third party during the examination of the crime scene. This is called "secondary resettlement". For example, the person who committed the crime has microparticles of the fibrous object-carpet at the scene, but as a result of mutual contact with another person, he transferred the fibers of that carpet to a third person without depending on his will. His own contact is the result of primary i.e. direct transfer, and what he passes on to another third person is the result of secondary transfer.

Microparticles of clothing belonging to the criminal on the weapon, which is considered a criminal instrument in criminal cases, as well as metal microparticles of the weapon, can identify the place where it is stored or transported.

Microobjects play an important role in criminal cases related to road traffic incidents and in search activities related to such incidents. Microobjects are used to identify the person driving the vehicle who fled the scene in road traffic incidents related to pedestrian collisions. Thus, when a pedestrian is hit, fiber microparticles of clothing belonging to the victim remain on the external parts of the car. At the same time, microparticles of paint, car parts, tires, or broken light glasses may remain on the victim, in the near parts of the road where the incident took place.

As we mentioned above, microobjects that carry information are a guiding and evidential source in the investigation of criminal cases. The research of microobjects allows to determine the mechanism of the criminal case being investigated, the issues related to the situation of the incident, the sequence of the incident, the criminal instrument and objects, the trajectory of the criminal's movement at the scene and other important evidence.

The criminalistic evidential nature of the research object as any material evidence is that, based on the study of its characteristics, it is possible to determine the circumstances of the researched crime, to put forward operational-search and investigative hypotheses, to optimally plan the investigation of crimes, and to solve crimes with hot traces.

In the third paragraph of the first chapter called **"Diagnostic and identifying forensic investigation of microobjects**

(microparticles)", it is mentioned that in order to study the possibilities of forensic diagnostics, it is necessary to consider what types of material carriers can be diagnostic research objects. By mastering the proving information in the diagnostic process, it is necessary to take into account the stages and methods of its transformation in the process of recording the information. The thresholds of obtaining forensically important information about objects, cases, the degree of abstraction and formalization during the transfer of properties and signs of a perceptible object, as well as their fixation, depend to a large extent on the subject's perception of the importance of proving the facts discovered by the subject, their evaluation criteria, and his professionalism.

The distinctive feature of the forensic investigation of varnish and paint materials is that its main goal is not the material and coating, but rather the diagnosis and identification of the painted subject, from which the fragments of the material and coating are separated in relation to the investigated event.

Diagnostics - determining the reasons for changes in the nature, name, purpose, field of application, conditions of existence, characteristics and other classifying characteristics of objects, elements of material conditions, as well as trace-creating conditions, etc.

Identification - determination of the identity of the element of material conditions - the painted object, the specific volume of varnish and paint materials, the common genus (group) of the inspected and required objects.

Finally, it should be especially noted that, unlike identification and classification tasks, the solution of diagnostic tasks often requires the presentation of additional materials, which are also needed during diagnosis. Such necessity is necessary to carry out an investigative experiment, to re-examine the scene of the incident, to reorganize it, to interrogate persons to clarify their statements, etc. can be attributed.

In the paragraph of the first chapter called **"The modern level of forensic research of microobjects (microparticles)"** it is shown that in modern times, criminality has reached such a high level of

crime preparation, commission and concealment that it is gradually becoming more difficult to detect traces at the crime scene. Microobjects are characterized by the fact that, despite all efforts, during physical interaction with any object of the material world, microobjects are exchanged between that object and the criminal's clothing, body, and tools. In this regard, it should be considered appropriate to study the current state of problems in the process of solving and investigating crimes, from the preliminary study of microobjects to their identification as evidence.

The purpose of our sociological research is to study the efficiency of using micro-objects in the practical activity of law enforcement agencies and the efficiency of using existing methodical recommendations for working with these objects. Our goal is that the results of the obtained survey will enable us to eliminate certain shortcomings and gaps in the work, to improve the quality of work with micro-objects, and to deliver tactical-criminological and methodical recommendations to law enforcement and judicial authorities.

Thus, the main subjects working with microobjects are investigators, investigators, criminologists and experts. That is why the statistical-sociological survey was carried out by investigators of the Investigation Department of the General Prosecutor's Office of the Republic of Azerbaijan, criminologists of the Department of Criminalistic Research, investigators and investigators of the Department of Investigation and Investigation of Road Traffic Accidents of the Ministry of Internal Affairs of the Ministry of Internal Affairs of the Republic of Azerbaijan, experts of the Forensic Expertise Center. , judges were involved.

70% of the respondents evaluated the current state of using micro-objects in crime detection and investigation as average, 20% as high, and 10% as low. The majority of criminologists, investigators and experts have indicated a set of scientific methodical and technical-criminological tools for the detection and removal of micro-objects among the main directions of technical-criminological assurance of the process of using micro-objects. According to them,

the main problem is that the theory does not meet the requirements of practice.

Thus, the investigators - investigators - criminologists involved in the survey attribute the following to the reasons for the inefficiency of microobjects research in terms of detection, recording and removal of microobjects: 70% of them are not taken tactically and procedurally and the low level of professionalism of the specialists involved in this work, 40% and noted the violation of the order of expertise and the lack of scientific and technical means.

More than 85% of the investigators from the participants of the survey stated that 60-80% of the microobjects taken were evaluated and accepted as material evidence in the criminal case.

The experts-criminologists involved in the survey are of the opinion that only the micro-objects taken from the scene of the following crimes can carry evidentiary information:

-homicide-75%,
- harming health - 65%,
-rape-80%,
-theft-10%,
-robbery-5%
-fires-35%
- traffic accidents-70%

In their answers, the experts involved in the survey mentioned a number of reasons that make it difficult, and sometimes impossible, to conduct full-scale research. The experts involved in the survey mentioned that the research objects sent for expert research were not taken in accordance with the appropriate methodology and were presented in an unsuitable condition for research due to improper packaging, that is, first of all, methodological and technical-criminological in the field of research and use of micro-objects by a criminologist or investigator (61%) mentioned that there are shortcomings.

The second chapter of the thesis entitled **"The main stages of forensic research of micro-objects"** consists of five paragraphs and one subsection. In the paragraph called "Investigation of micro-objects at the crime scene and in laboratory conditions", it is

mentioned that during the investigation of the crime scene, the preliminary research of micro-objects is carried out in order to investigate whether they are related to the crime scene and whether they are suitable for comparative research.

Successful preliminary research of microobjects is directly related to the correct selection and application of forensic tools. The crime scene is a very important source of evidentiary information, and its role is increasing due to the improvement of tools and methods for the discovery, identification and investigation of physical evidence. What are the ways to improve the technical and forensic methods and means of working with microobjects at the crime scene? Let's take a closer look at these two main elements: 1) methods and 2) tools.

Methods: Since microobjects are specific, the essence of the concept of "search" is complex and consists of two parts - the search for the most likely locations of microobjects (items) and the search for microobjects themselves in their most likely locations (detection). These concepts form two parts of the microobject search phase. Such a distinction also corresponds to experience: the search for objects-carriers, which can only be carried out at the scene, and the detection of micro-objects both at the scene and in laboratory conditions.

Before starting the search for microobjects based on the investigative versions, the investigator should put forward the appropriate variants of the incident model and pay special attention to the following issues:

- How the crime could have happened;
- How the person(s) arrived at the scene;
- What obstacles did he have to overcome;
- What tools and means did he use;
- What could he do at the scene;
- How did he leave the scene?

Based on this analysis, it is necessary to determine the place where he can put the microobject or whether he can take the microobjects with him from the scene. The nature of the event, the dependence between microobjects and objects-carriers is used to solve this problem.

Tools: After the search for microobjects or carriers, it is advisable to work with them in a laboratory setting, since the detection of microobjects is often quite complex. It is necessary to detect, pick up and store items-carriers where micro-objects can be approximated during inspection of the crime scene and other investigative actions.

The characteristics of working with carriers of micro-objects include high requirements for the sterility of containers and other packaging materials during their storage and transportation, their physical-chemical and biological inactivity, hermeticity and other qualities that exclude the loss of micro-objects or changes in their properties. In the sub-paragraph **"Research of micro-objects in laboratory conditions"**, various sets of research methods are applied to solve expert tasks on the study of micro-objects. This is, first of all, the specificity of the expert's tasks and, first of all, it is related to the fact that the real possible level of recognition of the object (in this case, fiber, paint, etc.) by the expert is not given in advance, so that the task in relation to specific objects is usually formed in a general way: the genus of microobjects determination of (generic species) affiliation; determination of group (common group) affiliation; identification of the source of origin (common source), etc. Secondly, the solution of such tasks is based on the study of various properties of micro-objects and the detection of a complex of various qualitative signs. Specific types of methods widely used in expert practice or their variants, devices (devices), the purpose and purpose of the method's application in expertise, the nature of the information received about the object, the sensitivity of the method and the minimum amount of the substance (object) needed for research, the competitiveness of the method compared to other methods ability (destructive or non-destructive analysis, sensitive, simple, reliable, etc.) is indicated. Visual, physical, chemical, physico-chemical, biological and biochemical research methods are used in the study of micro-objects in the system by observing the appropriate subordination. These methods are applied to the study of micromorphological features of the structure of natural and, to a lesser extent, microobjects. So, in such cases, the expert is obliged to

apply microscopy not only for the study of micromorphological signs of microobjects, but also for measuring (studying) certain physical and chemical changes under the influence of various reagents. They use the microscopy method to determine the microstructures and other special features of microobjects.

The forensic investigation of varnish and paint materials is complex in nature. If the study of morphology with the application of microscopy methods leads to the discovery of a set of general and special features of varnish and paint coating, sufficient for the identification of a specific painted object, then there is no need to analyze the composition of varnish and paint materials. If during the research it is not possible to solve the questions put before the expert on the basis of morphological signs, then more complex analytical methods are used. Highly sensitive analytical methods are of limited use for the detection of distinguishing features of varnish and paint material. Thus, varnish and paint coatings are not homogeneous in terms of their composition - the varnish-paint coating of objects, with the same production batch, even in the same amount of painted materials, differs in quantity and often in quality composition. The coating of an object varies according to its composition even in different areas of its surface, and therefore, it is very difficult to evaluate the identified distinguishing parameters of comparable varnish and paint coatings as distinguishing features of the comparable sample in many cases.

If we are talking about the identification of the subject with an individual color, then the consistent detection of the gender (group) characteristics of the varnish and paint material, even with the help of complex analytical methods, can be quite appropriate.However, in all cases, the expert must justify the scope of the research, including the methods used, based on the characteristics of the objects being studied and his special knowledge. The paragraph entitled **"Methodology for identifying micro-objects or their remains on various objects"** indicates that micro-objects, micro-particles (fragments) are found on carrier objects at the crime scene due to various reasons (random passage of unrelated persons before and after the crime scene, natural factors- effects of wind, rain, snow,

etc.) are assumed to be displaced, canceled and replaced, so it is required to search the scene and find the sources of the carrier items without delay. These actions include the search, seizure, fixation of possible transport items, vehicles and other various items at the scene, examination of the dead body, interrogation of the suspect. The detection of varnish and paint particles at the scene of the incident is often carried out in places of possible contact of the painted objects with other elements of the scene: In traffic accidents, the carrier of fiber particles is the vehicles, and the objects that create traces are the clothing of the victim. When the fiber particles found on the vehicles match the fibers of the victim's clothing, this plays an important role not only in solving the case, but also in evaluating it as evidence.

In the third paragraph of the second chapter of the work entitled **"Criminalistic research methods of micro-objects with the help of Lambda 35 UV/VIS and FT-IR spectrometers"**, it is noted that the results obtained from micro-objects using Lambda 35 UV/VIS and FT-IR spectrometers in forensic laboratories are evaluated and compared research is being conducted. Fiber samples are subjected to quantitative and qualitative analysis of visible or ultraviolet UV/VIS spectroscopy in the range from 240-nm to 760-nm. In the study of micro-objects (fiber, paint, polymer, etc.), Infrared spectroscopy provides information about different functional groups of the sample, which makes it possible to differentiate more widely used classes of objects. The study of spectra in infrared spectroscopy involves obtaining information about chemical composition, structure, configuration, and conformation, where energy changes and transitions occur between vibrational levels. Spectrum is the relationship between a property that can be measured during the interaction of a substance with electromagnetic rays and its frequency or wavelength. The shape of the spectrum is its qualitative (characteristic), and the intensity of the spectrum is its quantitative (quantitative) indicator. Each substance has its own spectrum. In the infrared spectroscopy technique, the substance to be analyzed is subjected to infrared rays in the wavelength interval of 4000 cm-1-400 cm-1 after being prepared according to the

appropriate sample technique. IR rays are absorbed by the substance at different wavelengths depending on the chemical structure of the substances, leading to changes in the transition energy of the substance. As a result of the analysis, IR spectra showing the absorption of IR rays against the wavelength are obtained. The IR spectrum is information that reflects the chemical structure of the analyzed substance, and is used for the purpose of direct description and comparison by comparing the structural images and reference substance spectra. Infrared spectroscopy instruments are generally of two types, dispersive and Fourier transform. Today, FT-IR devices are widely used due to the various advantages of high energy transfer, wavelength accuracy, speed of analysis.

In the paragraph of the second chapter entitled **"Investigation of micro-objects in an energy-dispersive automatic scanning electron microscope (SEM/EDX) with an X-ray analyzer"**, it is shown that the use of SEM-EDX is an important tool for the analysis of the element composition of varnish and paint coatings and fibrous materials. The use of this device is widespread in forensic laboratories around the world. The advantage of SEM-EDX over other research methods can be attributed to its ability to perform trace analysis on particles of individual layers within a paint sample, non-destructiveness, speed and sensitivity. However, today and for several years to come, SEM-EDX is and will continue to be important in the forensic investigation of paint and varnish materials, fibers and micro-objects in general.

In the fifth paragraph of the second chapter entitled **"Instructions for expert research"**, it is mentioned that the activity of forensic expertise plays an increasingly important role in bringing research to a successful conclusion in many criminal cases. The quality of the results of research conducted in forensic laboratories is always in the attention of individual forensic experts. Research and results of expert opinions are evaluated by investigative bodies and courts, that is, not by experts who have special knowledge. Therefore, it is necessary to obtain the accuracy and correctness of research results in forensic examination within the conditions arising from the requirements of the standard. In this regard, many factors

make an important contribution to quality assurance in forensic examination. The quality assurance program should be based on relevant international standards. The international standard ISO/IEC17025 is the most commonly used standard in forensic laboratories, while crime scene examination is ISO/IEC17020.

The general requirements for the adequacy of testing and calibration laboratories are an international reference for laboratories performing calibration and testing activities worldwide. The ISO/IEC 17025 standard allows laboratories to implement a quality system and demonstrate that they are technically competent, accurate and capable of producing reliable results.

In the last 20 years, considerable efforts have been made to standardize in the field of forensic expertise, including the expertise of fiber and paint materials. Various organizations have developed and recommended relevant guidelines and standards at the international level. Quality management, which includes quality assurance and control of various processes in the forensic field, is essential to ensure that the results obtained are produced with the highest accuracy and based on reliable standardized guidelines. Since forensic expertise is the only branch of science that deals with law and the justice system, it is important that the results of expert opinions obtained are of the highest quality. When criminal cases are presented to the court, the results of expert opinions are evaluated as evidence. Since this is based on scientific evidence rather than eyewitness testimony, the laboratory where the physical evidence is examined must meet the requirement of the standard. Laboratories operating according to approved methods and quality assurance rules should adapt to the specific fields of developing science, integrating methods and methods, and apply the work principle in accordance with quality standards.

The third chapter of the work, called **"Procedural and methodological issues of forensic expert opinions on the study of microobjects"** consists of two paragraphs. In the paragraph entitled "Features of drawing up forensic expert opinions on the study of micro-objects", it is mentioned that the increase in the demand for the use of special knowledge in science, technology, art, art and other

fields within the framework of criminal proceedings makes the institution of forensic expertise an independent and most important institution for the protection of the rights and freedoms of citizens and the interests of the state. from the prospective procedural mechanisms, gives grounds for evaluating it as one of the most efficient means of criminal-procedural evidence.

The requirements for the content and form of the expert opinion are reflected in the Law of the Republic of Azerbaijan "On Judicial Expertise Activity", as well as in the procedural legislation.

Article 127 of the Civil Code of the Republic of Azerbaijan contains provisions on the essence of expert opinion. Thus, according to part 1 of this article, "the expert's opinion is based on special knowledge in the field of science, technology, art or profession expressed by him in writing: on the questions posed to the expert by the body implementing the criminal process or by the parties to the criminal process, as well as are the results of the investigation of other cases related to his powers that emerged during the study of work materials; it is a description of the research carried out by the expert that substantiates these results". The essence of the expert opinion is that, with the help of this type of evidence, preliminary investigative bodies and courts are experts in science, technology, art, art and other fields to explain or clarify these or other facts that are important for the case in the process of determining the truth in the case. gets the opportunity to use the results of applying the special knowledge of individuals - experts.

In criminalistics, a significant place is allocated to the recording of evidentiary information. At the same time, the course of expert research is not always clear to non-experts. Therefore, it is important to make expert research more visible, which is related to the recording of its progress and results.

There is no norm in the criminal procedural law that directly provides for the recording of expert research. At the same time, Article 26 of the Law of the Republic of Azerbaijan "On Judicial Expertise Activity" states: "Materials reflecting the opinion of the judicial expert (experts) are added to the opinion and form its component. The documents containing the progress, conditions and

results of the investigation are kept in the forensic examination office. Therefore, according to the meaning of the law, it is possible to reflect not only the progress and results of the investigative action and the results of the expertise proceedings, but also its progress.

It is clear that in the modern conditions of differentiation of scientific knowledge, expert opinion and results cannot be turned into a puzzle for the investigator and judge. Therefore, we believe that the provision "materials reflecting expert research are added to the opinion and are part of it" established in the law should be interpreted as a necessary requirement, that is, illustrative materials that increase visibility should be added to every expert opinion. It is more appropriate to implement this process using modern digital technical means.

In our opinion, it is also appropriate to make a number of changes and additions to the norms of the criminal-procedural legislation regulating the activity of forensic examination, and it will allow to optimize the process of drawing up expert opinions and evaluating them by the courts.

The name of Article 271 of the CPM should be changed, this article should be called "Expert opinion, its structure and content", a new paragraph should be added to the content of this article, which includes the following provisions: "During the preparation of the expert opinion, the methods used in the content of the opinion should be "Expert methods it should be noted that the methods are included in the state register", and the methods are included in the "Expertise methods fund", if these methods are not included in the fund, their passports should be added to the expert opinion".

State standards regarding the form, content and structure of the expert opinion should be developed and these standards should be mandatory for experts of both private and state expertise offices.

We believe that in the appendix of the expert opinion reflecting the results of the expert research of micro-objects, photos showing the descriptions of the devices and equipment, facilities, technical and software complex used during special research, the working principles and functions of these technical tools, and the suitability of their use during the expertise process. official documents showing,

information about the essence and content of applied methodologies should be included.

In our opinion, the introductory part of the expert's opinion should contain the fabula of the criminal case (brief description of the crime). Also, in the introductory part of the opinion, information about the conditions under which the objects submitted to the study were taken, during the course of which investigative actions, should also be determined.

Taking into account that the procedural legislation does not fully meet the requirements for the content of the expert opinion, especially its research part, we consider it appropriate to add the following amendments to Article 271 of the CPM:

- "Expert opinion structurally consists of an introductory part, a research part and conclusions."

- "When there are several questions before the expert research, the expert has the right to group them and interpret them in a sequence that provides the most appropriate and logical order of conducting the research. If necessary, the expert can make corrections in the wording of the question without changing its meaning."

We consider it appropriate to add such a provision to the CPM: "The expert opinion is drawn up in written form or in the form of an electronic document. One of the necessary requisites of an expert opinion drawn up in the form of an electronic document is the presence of an electronic digital signature.

Expanding the range of cases requiring the appointment of an expert in the criminal process and adding new clauses to Article 140 of the Criminal Code of the Republic of Azerbaijan, in addition to the above, a number of cases in the criminal process, including: signs indicating the commission of crimes against the sexual integrity of the person; counterfeiting of money or securities; drugs, psychotropic substances and precursors; group affiliation of weapons (fire and cold), ammunition, explosives and devices, microobjects and microparticles taken from the scene during the investigation of serious and especially serious crimes, the fact of mutual contact, etc. for its determination, it should be considered appropriate to appoint

and conduct a forensic examination. In addition to the above, it is appropriate to add a new part to Article 140 of the Criminal Code in the following wording: "If it is necessary to conduct scientific research in a suitable specialty to determine the circumstances that are important for the criminal case, it is mandatory to appoint and conduct a forensic examination."

Currently, the trend of standardization of the research process and its transformation into a "chain" of standard operating procedures within the framework of specific expertises is being closely monitored. Expert activity increasingly begins to bear the aspects of modern mass-intensive production. This, in turn, creates objective conditions for the application of models developed in other fields of knowledge and methods of its organization to the process of drawing up an expert opinion.

In this regard, the proposed typical structure and content of the expert opinion on the criminalistic research of micro-objects, in accordance with the requirements of the procedural legislation, ensures the quality and completeness of the expert opinion, and allows more efficient use of the expert opinion as a procedural document and type of evidence.

In the second paragraph of the third chapter called "Evaluation of expert opinion", it is shown that one of the most complicated stages of the proving process is the evaluation of evidence. Evaluation of evidence is one of the necessary conditions for the purposeful conduct of the investigation and court review, the adoption of legal and substantive procedural decisions, and the correct application of the law. The complex scientific research of the technology of the process of using microobjects as a source of evidence, the issues of evaluation of expert opinions on the research of microobjects are almost not considered in the special literature. From this point of view, the scientific study of the characteristics of expert opinions on the study of micro-objects, verified by the investigator and the court, is of special relevance and scientific-practical importance.

In the procedural legislation, the mentioned criteria of evaluation of the evidence are specifically indicated. For example,

Article 145.1 of the Criminal Code of the Republic of Azerbaijan states: "Each piece of evidence must be evaluated for relevance, possibility, and credibility. The totality of all the evidence collected for the criminal prosecution should be evaluated according to their sufficiency for solving the charge."

According to the Law on Forensic Expertise Activity, the expert opinion must be based on the provisions that allow checking the validity and reliability of the conclusions drawn on the base of generally accepted scientific and practical data. This provision is of particular importance in relation to the examination of micro-objects.

The process of evaluating expert opinion on the forensic examination of microparticles of fibrous materials is complex, as it is the result of expert research carried out using specialized knowledge. Therefore, other participants in the process cannot always evaluate the opinion adequately, since they do not have such knowledge.

One of the most important structural elements of the evaluation of the reliability of expert opinions on the research of microobjects is the evaluation of the reliability of expert methods and methodologies. We believe that the passporting of expert methodologies and the creation of a fund of forensic expertise methodologies will greatly facilitate the work of evaluating the methodological scientific validity of expert opinions and their credibility from scientific and methodological aspects.

In addition to the above, the provisions regulating the issues of standardization and passporting of the methodical assurance of forensic examination proceedings should be added to the procedural legislation and the Law on forensic examination activities.

It is clear that standardization contributes to more effective technical regulation only when established at the legislative level. This principle is confirmed by modern forensic expert experience. Therefore, we believe that it is necessary to add such provisions to the Law on forensic expertise. The necessity of standardization of forensic expertise activities in Azerbaijan and the formation of a single scientific-methodical approach to the implementation of expert activities on this basis should be determined at the legislative level.

In this regard, we suggest adding new provisions with the following content to the Law of the Republic of Azerbaijan on forensic expertise:

To Article 1, called "Basic Concepts":

"Standardization of forensic expertise activity is development, approval and application of national standards and other documents on standardization of forensic expertise activity".

- "Validation (assessment of suitability) of methods and methodologies - a method of documented confirmation conducted through the study and presentation of objective evidence related to the fulfillment of requirements intended for a specific use or application."

In addition to naming Article 7 "Scientific validity, objectivity, comprehensiveness and completeness of expert studies", adding a new part in this article with the following content:

"Methodical materials for forensic examination proceedings should be developed, approved and applied in accordance with national standards and other documents on standardization in the field of forensic examination activities approved by competent state bodies."

It should also be considered expedient to add a new article to the law about the possibility of using scientific and technical means, methods and methodologies during the conduct of expert research and issue it in the following version:

"Article 7-1. The possibility of using scientific and technical means, methods and methodologies during expert research".

1. The application of scientific and technical means and methodologies is permitted during the conduct of forensic research if it meets the principles of legality, scientific validity, is effective and safe, and is included in the state register of forensic research methodologies of the Republic of Azerbaijan.

2. It is allowed to apply the generally known, approved and widely used forensic examination methods and methodologies, given in the content of a scientifically based expert opinion, which do not require validation and are not included in the state register of forensic

research methodologies of the Republic of Azerbaijan and the methodological fund of forensic examination.

In addition to the above, it is proposed to include a new Article 40-1 entitled "Validation of expert research methods and methodologies" in the Law "On Forensic Expertise Activity" and issue this article in the following version:

"Article 40-1. Validation of expert research methods and methodologies

1. The methods and methods of expert research must undergo validation in accordance with the rules for assessment (validation) of the suitability of methods and methodologies of expert research.

2. Non-standard and revised and improved methods and methodologies should also undergo validation.

3. Validation of expert research methods and methodologies Rules for the general volume of validation studies for each type of methods and methodologies, the general organization and procedures of validation, statistical processing of the obtained results, acceptance of positive or negative results about quantitative, qualitative identification and validation of diagnostic expert methodologies determines the criteria, general requirements for validation reports.

4. Validation is carried out by applying one of the following methods: control-testing, using standard samples; comparison with the results obtained with the help of other methods; testing and reconciliation of laboratories; regular evaluation of the factors affecting the result.

We believe that the legislative determination of unification (standardization) in the field of forensic expertise in the Law on forensic expertise and the subsequent implementation of these provisions in expert practice will significantly improve the quality of expertise.

As it is known, according to Article 124.2 of the AR CPM, the statements of the suspect, the accused and the victim and the witnesses; expert's opinion; physical evidence; protocols of investigation and court actions, other documents are accepted as evidence in criminal proceedings. As it can be seen, among the

mentioned evidences, only the expert's opinion is compiled by conducting special studies and formulating the results of these studies. Therefore, we believe that the evaluation of expert opinion as evidence has specificity compared to other evidence, and this specificity should be reflected in the criminal procedure code. Along with Article 145 called "Evaluation of evidence" reflected in the CPM, a special article under the name "Evaluation of the scientific validity of the expert's opinion" should be added and this article should be given in the following wording:

"Article 145-1. Assessment of scientific validity of expert opinion

Expert opinion is assessed in aggregate with other evidence collected by the investigator, investigator or court in a criminal case from the point of view of scientific validity, using the latest achievements of scientific and technical progress of special research.

An investigator, prosecutor or court (judge) may use the help of an expert to assess the scientific validity of an expert's opinion."

The results of the study and generalization of expert experience in the field of expertise of microobjects show that one of the difficulties faced by investigators and judges when evaluating expert opinions prepared on the basis of this type of expertise is related to the methodology and methods used during research and their essence. Thus, the analysis shows that, as a rule, only the name of the methodology or the applied method is mentioned in the reviews, nothing is said about the essence and content of this methodology, whether it passed the approval or not, the special literature used by the expert, the algorithm of the conducted research. This makes it difficult to evaluate the opinion not only by an investigator or a judge, but also by an expert.

We believe that the special Decision of the Plenum of the Supreme Court of the Republic of Azerbaijan "On the appointment, conduct and evaluation of forensic expertise in criminal cases" should be prepared and adopted, and this Decision should include, among others, the following provisions: "the results are not sufficiently argued, Expert opinion is not considered valid in cases where the methods, technical means and methodologies that ensure

the objectivity, completeness and comprehensiveness of the research are not applied or are not applied properly.

We believe that all the shortcomings listed above should be discussed by the members of the Legal Policy and State Building Committee of the Milli Majlis of the Republic of Azerbaijan and should lead to changes in the relevant laws by putting them on the agenda of the general meeting of the Milli Majlis, and also by the Plenum of the Supreme Court of the Republic of Azerbaijan "On Criminal Cases" "On appointment, conduct and evaluation of forensic expertise" a special Decision should be prepared and adopted.

If successful work is carried out in the investigation of crimes using micro-objects on specific examples, it is necessary to widely publicize their capabilities, to increase the experience of working with micro-objects among operational investigation officers. In this regard, there is no doubt that great attention should be paid to the dissemination of foreign and local best practices in this work.

In our opinion, the current dissertation work can be a valuable methodical tool for investigation, investigative body employees, as well as expert-criminalists.

In the concluding section, the main theoretical generalizations and suggestions are presented in a systematic way.

The appendix contains the content and results of the opinion poll conducted among the interns.

The following scientific works of the author have been published on the topic of the dissertation.

1. Understanding of polyester fibers. Classification, physico-chemical properties, their field of application and research // Current issues of forensic expertise, criminology and criminology. Collection of scientific works. No. 59, Baku-2013, p. 291-299.

2. Cotton fibers of natural vegetable origin. Stages of fiber development. Physico-chemical structure, technological parameters // Current issues of forensic expertise, criminalistics and criminology. Collection of scientific works No. 63, Baku-2015, p. 157-1643.

3. Criminological classification of microobjects. Microobjects as a source of information//Current issues of forensic expertise, criminology and criminology. Special issue. Collection of scientific works. No. 64, Baku-2016, pp. 158-166.

4. Criminalistic classification of microobjects. Microobjects as a source of information // IV International Scientific conference of young researchers, April 29-30, 2016 Baku, Azerbaijan p.1723-1727.

5. Characteristics of fibers used in technical textiles// I. Congress of Medical Expertise and Pathology of the International Court of Justice, summary book of the congress report, October 13-16, Baku-2016, p-9

6. Fiber properties for the production of Nonwovens. Current issues of the theory and practice of judicial examination" Almaty, October 27, 2016 pp. 46-51

7. The topic of the scientific work "The role of criminalistically important information obtained from micro-objects by means of modern technologies in the proving process// Important scientific achievements of the Azerbaijan National Academy of Sciences in 2017, Baku - 2018, volume III, p. 77-78

8. Material carriers of information used in criminalistic diagnostics//material of International Scientific-Practical Conference entitled "History and Development Prospects of Azerbaijan Police" Baku-2018, p.318-325

9. Methods and means of researching microobjects at the scene and in laboratory conditions// Actual issues of forensic expertise, criminology and criminology. Special edition. Collection of scientific works. No. 67, Baku-2019, pp. 140-146

10. Features of the criminalistic research of micro-objects in the investigation of criminal cases// Scientific News of the Police Academy. Scientific Law Journal No. 1 (25) Baku-2020, p. 136-142

11. The role of micro-objects in criminal cases related to road accidents// International Congress of TURAZ Academy of Forensic Sciences, Forensic Medicine and Pathology. "Violence and Media" September 8-12, 2021, Baku, p. 165

12. Trace of the paint on the cars//26th ENFSI, EPG Annual Meeting, online, September 13th – 19th, 2021, p.19

13. Assessment of expert opinion on study of micro-objects// Science of Europe №92, 2022, p. 14-18

14. Micro-objects as an information source in investigating of traffic accidents// International scientific-practical conference material on "Modern methods of forensic expertise and development priorities" organized by the Forensic Expertise Center named after H. Sulaymanova under the Ministry of Justice of the Republic of Uzbekistan in Tashkent, 2023, pp. 176-181

15. Use of Artificial Intelligence for Micro-particle Analysis in Forensic Science // Futurity Economics & Law, 4 (2), 2024, p. 229-246

16. Modern approach to forensic examination of substances and materials: theory and international experience// Current issues of forensic expertise, criminology and criminology. Collection of scientific works. No. 68, Baku-2024, p. 76-82.

The defense of the dissertation will be held on 25 12 2024, at 11 : 00 at the meeting of the ED 2.45 Dissertation Council operating under the National Aviation Academy.

Address: Baku city, Mardakan ave. 30.

The dissertation is available in the library of the National Aviation Academy.

The electronic versions of the dissertation and abstract are posted on the official website of the National Aviation Academy.

The abstract was sent to the necessary addresses on 23 11 2024.

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