NATIONAL ACADEMY
OF SCIENCES OF THE
REPUBLIC OF ARMENIA

BRIEF REPORT 2025

www.sci.am

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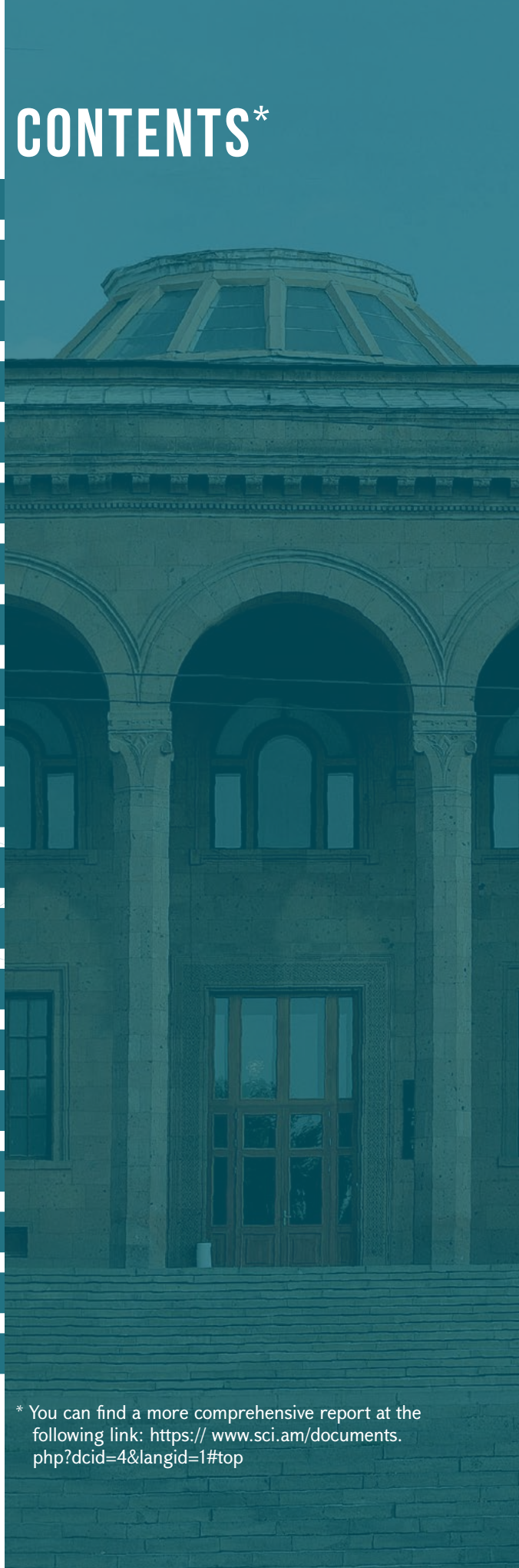

* You can find a more comprehensive report at the following link: https:// www.sci.am/documents.php?dcid=4&langid=1#top

PREFACE

In 1943, pursuant to a resolution of the Council of Ministers of the Armenian SSR, the Academy of Sciences of the Armenian SSR was established on the basis of the Armenian Branch of the USSR Academy of Sciences. In the early years following the proclamation of independence of Armenia, it was renamed the National Academy of Sciences of the Republic of Armenia (hereinafter referred to as NAS RA). One year thereafter, NAS RA was granted the status of official adviser to the Government of the Republic of Armenia. In 2011, the National Assembly of the Republic of Armenia adopted the Law "On the National Academy of Sciences of the Republic of Armenia."

As the supreme scientific institution of the Armenian nation, the Academy has gone through a challenging yet productive path over more than eight decades, achieving significant scientific results and earning international recognition. In its capacity as the principal coordinating body for scientific research within the Republic, the National Academy of Sciences conducts fundamental and applied research in almost all fields of science, in accordance with international standards. The Academy has made a substantial contribution to strengthening national defense capabilities, advancing economic development and the healthcare system, exploring new energy sources, and increasing public awareness of science and education.

In 2025, the National Academy of Sciences continued to advance successfully in numerous fields of science and technology, maintaining effective collaboration with academies, universities, scientific, technological, and innovation centers, as well as governmental and private-sector organizations in various countries. Institutions and research groups within NAS RA actively participated in international grant programs and in competitive scientific projects announced by the Committee of Higher Education and Science of the Republic of Armenia, winning 244 grants.

During the same year, the number of scientific articles authored by NAS RA researchers and indexed in international scientific citation databases exceeded the previous year's output by approximately 26%. In coordination with their affiliated organizations, departments of NAS RA organized 59 international scientific conferences, and, with the direct support of the NAS RA Presidium, 581 scientific missions by NAS RA researchers were carried out.

The professional problem-oriented councils of NAS RA were active, convening a series of substantive discussions on issues including biodiversity, food security, environmental protection, and related fields. These discussions were attended by leading scientists, representatives of governmental institutions, and members of the private sector.

In 2025, the second NAS Prize award ceremony was

held. In the categories of fundamental and applied research, prizes were awarded to six research teams in the fields of physical-mathematical and technical sciences, chemistry, life and Earth sciences, Armenian studies and social sciences, and medicine (sponsors: “Martin Star” LLC and “Liqvor” CJSC).

On October 9, 2025, the President of the Republic of Armenia signed the new Law of the Republic of Armenia “On Higher Education and Science,” pursuant to which NAS RA is a non-profit organization. The principal mission of Academy is to conduct expert evaluation of infrastructures funded by the Government of the Republic of Armenia on a baseline level, as well as of certain scientific programs and the progress/results of their implementation and reporting; to promote the popularization of science; to participate in the training of scientific personnel; and to carry out publishing, library, and other functions. The main operational units of the Academy will be specialized expert commissions and problem-oriented councils.

The leadership of NAS RA, in cooperation with the authorized body, has developed the new Statute of NAS RA, which has been approved by the Government of the Republic of Armenia. In accordance with the Law, following approval of the Statute, elections of associate/corresponding and foreign members of NAS RA will be held. The leadership of the Academy has drafted and submitted for approval by the authorized body the procedures for conducting the elections and the criteria applicable to candidates. After the elections, the General Assembly of the Academy will be convened, which will elect the Presidium and the Scientific Council. Subsequently, the election of the Academy’s executive leadership, as well as the approval of its new structure, staffing schedule, and financial budget, are planned.

Taking into consideration the importance of science for the development and progress of Armenia, as well as the pivotal role of the Academy within the country’s overall scientific and educational system, the leadership of NAS RA expresses its readiness to continue its mission under the new status for the advancement of the nation’s scientific progress, economic development, and the strengthening of national defense capabilities.

President of NAS RA

Academician

Ashot S. Saghyan

STRUCTURE

GENERAL ASSEMBLY

PRESIDIUM

PRESIDENT
ASHOT SAGHYAN

VICE-PRESIDENT
ARAM PAPOYAN (acting)

VICE-PRESIDENT
PAVEL AVETISYAN (acting)

ACADEMICIAN-SECRETARY
ARTUR ISHKHANYAN

DEPUTY PRESIDENT FOR GENERAL AFFAIRS
GAREGIN SNGRYAN

DIVISIONS

PRESIDIUM STAFF

MATHEMATICAL AND TECHNICAL SCIENCES
LENSER AGHALOVYAN

- **Institute of Mathematics** *Rafik Aramyan*
- **Institute of Mechanics** *Lilit Dashtoyan*
- **Institute for Informatics and Automation Problems** *Hrachya Astsatryan*
- **Department of Hydromechanics And Vibrotechnics** *Gurgen Avetisyan*

PHYSICS AND ASTROPHYSICS
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- **Institute of Applied Problems of Physics** *Vahan Kocharyan*
- **Institute for Physical Research** *Pavel Muzhikyan*
- **"ICRANET Center" International Organization** *Narek Sahakyan*

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- **Center for Ecological-Noosphere Studies** *Lilit Sahakyan*
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- **A.Takhtajyan Institute of Botany** *Zhanna Hovakimyan*
- **G.Davtyan Institute of Hydroponics Problems** *Khachatur Mayrapetyan /Anna Tadevosyan (act.)*
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- **Institute of Molecular Biology** *Arsen Arakelyan*
- **L. Orbeli Institute of Physiology** *Naira Ayvazyan*
- **Scientific Center of Zoology and Hydroecology** *Sargis Aghayan*

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- **A.Nalbandyan Institute of Chemical Physics** *Seyran Minasyan*
- **M.Manvelyan Institute of General and Inorganic Chemistry** *Karen Grigoryan*
- **Institute of Geological Sciences** *Khachatur Meliksetyan*
- **A.Nazarov Institute of Geophysics and Engineering Seismology** *John Karapetyan*

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YURI SUVARYAN

- **Institute of History** *Ashot Melkonyan*
- **Institute of Oriental Studies** *Gohar Iskandaryan*
- **Institute of Archaeology and Ethnography** *Arsen Bobokhyan*
- **H. Acharyan Institute of Language** *Victor Katvalyan*
- **M. Abeghyan Institute of Literature** *Heriknaz Vorskanian*
- **M. Kotanyan Institute of Economics** *Mary Manucharyan*
- **Institute of Philosophy, Sociology and Law** *Emil Ordukhanyan*
- **Institute of Arts** *Anna Asatryan*
- **Shirak Center for Armenian Studies** *Armen Hayrapetyan*
- **"Armenian Encyclopedia" Publishing House** *Hovhannes Ayvazyan*

ORGANIZATIONS/ STRUCTURES NOT INCLUDED IN THE DIVISIONS

- **National Bureau of Expertises** *Argam Hovsepyan*
- **International Scientific-Educational Center** *Armen Sargsyan*
- **Fundamental Scientific Library** *Maya Grigoryan*
- **"Science" Publishing House** *Vache Hovakimyan*
- **Expert Commission on Protection of Lake Sevan** *Bardukh Gabrielyan*
- **Science Development Foundation** *Hrant Matevosyan*
- **All Armenian Foundation Fin. Armenological Studies** *Arman Yeghiazaryan*
- **"Geghard" Scientific Analytical Fund** *Robert Ghazaryan*
- **Academic Scientific Research Computer Network of Armenia (ASNET-AM)** *Vladimir Sahakyan*

NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF ARMENIA

DIVISION OF MATHEMATICAL AND TECHNICAL SCIENCES

Academician-Secretary **– academician L. Aghalovyan**
Assistant to the Academician Secretary **– L. Martirosyan**

The Division of Mathematical and Technical Sciences includes Institutes of Mathematics, Mechanics, and Informatics and Automation Problems, as well as Hydromechanics and Vibrotechnics Department CJSC.

The Division comprises 8 full members (academicians) of NAS RA, 6 corresponding members, and 24 foreign members, as well as 5 honorary doctors.

During the reporting year, one general assembly of the Division was held.

At the annual General Assembly on April 22, the Division discussed and approved the report presented by L. Aghalovyan, titled "The Main Results of the Scientific and Scientific-Organizational Activities of the Division in 2024."

The Division held 24 Bureau meetings, during which the following issues were discussed and approved: 2025 work plan of the Division, the candidacies for the positions of Deputy Director and Scientific Secretary of Institute of Mechanics, as well as the report on the scientific and scientific-organizational activities of Institute of Mathematics and the new composition of its Scientific Council.

The Bureau also discussed and approved the nomination of Doctor of Physical and Mathematical Sciences R. Aramyan for the position of Director of Institute of Mathematics; and he was subsequently elected Director.

The most significant scientific results achieved by the Institutes in 2025 and other issues of a scientific-organizational nature were also discussed.

Researchers of the Institutes published 2 monographs (abroad) and 230 scientific articles, including 158 in peer-reviewed journals (117 are indexed in Scopus/WoS), 72 in conference proceedings (including 15 abroad), and 47 theses (including 31 abroad).

The institutes of the Division organized 5 international and 2 national scientific conferences. Nine grant projects with international funding were implemented (IAPI).

Within the specialized scientific councils of the Institutes, 5 candidate (PhD) dissertations were defended.

In December 2025, the Institutes held their annual reporting meetings, during which the reports on activities for 2025 were discussed and approved.

INSTITUTE OF MATHEMATICS

M. Baghramyan 24/5, 0019. Yerevan
www.math.sci.am

Fundamental Scientific Results

- The foundations of a general theory of Gibbs random fields have been established through the introduction of a purely probabilistic definition of a Gibbs random field. An effective criterion has also been proposed for determining when a random field is non-Gibbsian, based on a system that includes the filtration of conditional distributions of the embedded random field.
- A new condition has been obtained for recovering a function defined on the sphere (possibly non-even). A weighted Funk transform and the invertibility of two datasets are considered. An iterative inversion formula for the transform is presented. In the class of even functions, this formula provides a new and more stable solution to the classical problem.

Applied Research Results

- A new condition for the weighted spherical Radon transform has been obtained, and the inversion from two datasets has been considered. An inversion formula for the transform is presented, which uses local data to reconstruct the function. The resulting formula expands the range of applications of tomography.
- A method was proposed for identifying and isolating programs operating in cloud infrastructures using log data and machine learning techniques. A method was proposed for detecting and explaining faults in cloud programs based on program execution traces. A method was proposed for removing non-functioning but resource-consuming components from cloud infrastructures.

Three international conferences were organized and held. Scientific and scientific-technical work was carried out within the framework of one basic program and 4 thematic grant projects. One monograph (published abroad), 41 articles in peer-reviewed journals (including 38 indexed in Scopus), and 15 theses (11 published abroad) were published. 2 Candidate of Sciences (PhD) dissertations were defended.

Scientific instruments/equipment worth 531 000 AMD were acquired.

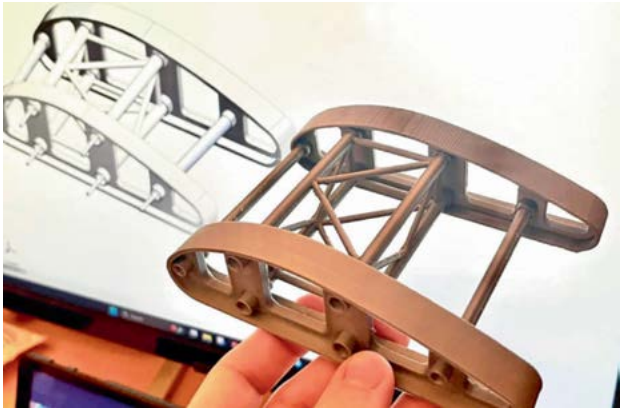
Cooperation agreements have been signed with one organization operating outside the system of the National Academy of Sciences of the Republic of Armenia and with one foreign scientific institution.

INSTITUTE OF MECHANICS

0019, Yerevan, Baghramyan 24/2
www.mechins.sci.am

Fundamental Scientific Results

- A new class of spatial mixed boundary value problems has been solved for plates with a plane of elasticity symmetry (13 elasticity coefficients), for which the classical and refined plate theories are not applicable.
- The problem of optimizing the rotational motions of a two-link electromechanical manipulator has been solved using the criterion of minimizing heat losses in the motors.
- The flexural vibrations of a beam partially covered with a piezoelectric layer and supported by periodically arranged external supports have been investigated. The stability and vibration analysis of a multi-span beam on periodic supports has been considered using the Bloch–Floquet forbidden-frequency theory. The conducted research is devoted to the study of wave-propagation band gaps and localization in piezoelectric periodic structures, as well as to the bending vibrations of beams with periodic supports and problems of energy harvesting. Special attention has been given to periodic structures composed of piezoelectric materials with cubic symmetry, in which the mechanical and electric fields are fully coupled, leading to the emergence of new types of strongly pronounced wave effects.



- A quadrature rule has been constructed for calculating integrals whose kernel is a discontinuous Weber–Schafheitlin integral. Within the framework of the theory of creep of nonhomogeneous aging bodies, an axisymmetric problem has been considered for a layer of finite thickness whose lower surface is clamped, while a perfectly rigid circular disk subjected to a torque is attached to the upper surface. The solution to the problem has been constructed using this quadrature rule.

Applied Research Results

- A new structural design of the wing framework of an unmanned aerial vehicle has been developed, possessing improved and more controllable mechanical properties while maintaining the same mass.

Two international conferences were organized and held. Scientific and scientific-technical work was carried out within the framework of one basic program and 6 thematic grant projects. One monograph (published abroad), 54 articles in peer-reviewed journals (including 38 indexed in Scopus), 49 articles in conference proceedings (including 15 published abroad), and 2 theses (published abroad) were published. OneCandidate of Sciences (PhD) dissertation was defended.

Cooperation agreements were signed with three organizations, including one organization operating outside the NAS RA system, one foreign university, and one private-sector organization.

INSTITUTE FOR INFORMATICS AND AUTOMATION PROBLEMS

0014 Yerevan, 1, P.Sevak str.
www.iiap.sci.am

Fundamental Scientific Results

- The partially ordered set $(P(n,3),\preceq)$ has been considered, where $P(n,3)$-ը consists of triples of increasing elements from set $[n]$, and $\preceq$ denotes the component-wise partial order on $P(n,3)$. An algorithm has been developed that partitions $P(n,3)$-ը into the minimum number of pairwise disjoint symmetric chains. Such chains can be used to recognize monotone binary functions defined on $P(n,3)$ through queries, in the same way as Hansel chains are used in the case of the Boolean cube. These functions are important because they can generate the degree sequences of 3-uniform hypergraphs, which is known to be an NP-hard problem. The possibility of applying reinforcement learning to the recognition of monotone Boolean functions has also been investigated. All elements of the reinforcement learning framework have been designed, including the environment, agent, policy, and others. Algorithms have been developed for performing the necessary transformations of structural data and for calculating rewards, value functions, and other parameters of the algorithm.

Applied Research Results

- The UAV swarm management software platform has been improved, evolving into a multi-platform system with real-time simulation and visualization capabilities. An interactive simulation environment has been introduced, enabling the testing and validation of multi-UAV system behavior. An interactive online map has also been integrated, allowing work with real geographic data and enabling the definition of mission waypoints, roles, and objectives, thereby bringing mission planning closer to real-world deployment. Telemetry reception has been improved by eliminating the external antenna and using the built-in communication module. A prototype vision-based navigation system has also been developed, allowing the UAV to maintain stable positioning in the absence of satellite navigation.

Two international conferences were organized and held. Scientific and scientific-technical work was carried out within the framework of one targeted program, 2 basic programs, 4 contractual (economic) projects, and 14 thematic grant projects (including 9 international thematic projects). A total of 63 articles were published in peer-reviewed journals (including 41 indexed in Scopus), 23 articles in conference proceedings, and 26 theses (14 published abroad). 2 Candidate of Sciences (PhD) dissertations were defended.

Scientific instruments and equipment worth 37 667 000 AMD were acquired, including 17 570 000 AMD funded through foreign grants and programs.

Cooperation agreements and memoranda were concluded with five organizations operating outside the system of the National Academy of Sciences, including one higher-education institution and four foreign scientific and academic institutions.

DEPARTMENT OF HYDROMECHANICS AND VIBROTECHNICS

Shirak region, Gyumri city, V. Sargsyan 14
energopower@mail.ru

Fundamental Scientific Results

- A fundamentally new stabilizer for fluctuations in the pressure and flow rate of liquids and gases has been developed (Patent of the Republic of Armenia No. 650Y).

Applied Research Results

- A 20 kW wind power plant with a vertical-axis wind turbine was designed, manufactured, and installed. The system has been connected to the “Electric Networks of Armenia” CJSC (Patent of the Republic of Armenia No. 647Y).

Scientific and scientific-technical work was carried out under one economic contractual program. Four theses were published abroad.

Scientific instruments and equipment worth 1 000 000 AMD were acquired, including Vibrometer BBM-201 and Vibrometer VM-1-M1.

A cooperation agreement was concluded with a private-sector organization.

DIVISION OF PHYSICS AND ASTROPHYSICS

Academician-Secretary: **Academician R. Kostanyan**
Assistant to the Academician-Secretary: **N. Davidyants**

The Division comprises the V. Ambartsumian Byurakan Astrophysical Observatory, the Institute of Physical Research, the Institute of Applied Problems of Physics, the Institute of Radiophysics and Electronics, and the International Center for Relativistic Astrophysics Network (ICRANET) – Armenia.

The Division includes three academicians of NAS RA, ten corresponding members, and twenty-two foreign members.

During the reporting year, three general meetings of the Division and seventeen Bureau meetings were held. Continuous communication was maintained with the organizations of the Division in order to discuss and resolve numerous current issues.

At the General Assembly of the Division held on April 22, the report of the Academician-Secretary R. Kostanyan, entitled "Main Results of Scientific and Scientific-Organizational Activities in 2024" was discussed and approved.

At the meetings of the Bureau, the programs for basic financing of the scientific and scientific-technical activities of the Division's research institutions, including programs aimed at the maintenance and development of infrastructure, were discussed and approved. Applications related to postgraduate studies and business trips (five applications) were also considered. Expert opinions were prepared on letters received from governmental bodies.

Report meetings of the editorial boards of the journals Astrophysics and Proceedings of NAS RA. Physics were held, during which organizational issues and opportunities for improving the journals' international standing and ratings were discussed. The candidacy of the Editor-in-Chief of the journal Astrophysics was submitted for approval to the Presidium of NAS RA. A new editorial board was elected with the participation of prominent foreign scientists. An agreement for the publication of the journal under its current title was signed between Springer Nature Switzerland and NAS RA.

The new composition of the Scientific Council of the Institute of Physical Research was approved. At a joint meeting of the institutes of the Division, CJSC "Geocosmos," CJSC "Bazumk," and the Specialized Council on Investment Issues of NAS RA, the program "Armenian Satellite: Past, Present, and Future" was discussed.

The basic funding applications for 2025, the research programs, and the strategic directions for the development of the Division's organizations were also discussed.

During the reporting year, thirty seminars, including twenty-three international seminars, as well as a conference of young scientists were held. Reports at these seminars were delivered both by the directors of the institutes and by foreign scientific leaders supervising joint research projects conducted within the framework of international scientific cooperation.

In December, annual reporting meetings were held in the scientific organizations of the Division. At these meetings, the most significant fundamental and applied research results were discussed, and reports on scientific and scientific-organizational activities were approved.

The institutes of the Division obtained 3 patents, including one international patent. Four researchers defended Candidate of Sciences (PhD) dissertations. The researchers of the Division published 7 monographs, including two abroad, 233 articles in peer-reviewed journals, including 175 indexed in Scopus or Web of Science, 33 papers in conference proceedings, including 13 published abroad, and 214 theses, including 48 presented at international conferences.

The Division publishes the scientific journals Proceedings of NAS RA. Physics (impact factor 0.4, four issues), Astrophysics (impact factor 0.7, four issues), and the electronic journal Armenian Journal of Physics (four issues).

V. AMBARTSUMIAN BYURAKAN ASTROPHYSICAL OBSERVATORY

Byurakan, Aragatzotn Province, 0213 Armenia
www.bao.am/index.php

Fundamental Scientific Results

- During the study of blazars exhibiting X-ray emission, a cross-identification was carried out between the known blazar catalogue (BZCAT) and data obtained from several X-ray satellites (ROSAT, Chandra, XMM-Newton, Swift, and INTEGRAL). As a result, 1 535 sources were identified. For all of these objects, the optical and X-ray fluxes, absolute magnitudes, luminosities, and spectral indices were calculated. Using X-ray–optical flux ratios, color–color diagrams, and other derived parameters, their properties were investigated and the differences among them were determined.
- Using the methods of Boltzmann kinetic theory, the coefficients of electrical conductivity, thermal conductivity, and thermoelectric power of the inner crust of a magnetized neutron star were studied in the liquid plasma state, taking into account the scattering of electrons by ions and free neutrons. The electrical conductivity of the outer crust of the star was also investigated, where the contribution of the positron component of the plasma was taken into account for the first time. It was shown that the role of positrons becomes significant at temperatures of 1 MeV and higher. The thermoelectric coefficient of hot quark matter in the strongly coupled regime was calculated using the Kubo formalism.

Applied Research Results

- Work continued on the development of a new software package and new methods for processing observational data. The automatic processing pipeline was also improved, making it possible to process the scientific images obtained during an entire night of observations using numerous calibration frames (bias, flat-field, dark, etc.).
- At the Armenian–Russian joint station, a total of 493 400 measurements were carried out during 230 observing nights, and the orbits of 430 artificial satellites were reconstructed.

Three international conferences and one international school were organized and held. Scientific and scientific-technical work was carried out within the framework of one basic program, one contractual (economic) project, and 6 thematic grant projects, including 2 international projects. A total of 3 monographs, 58 articles in peer-reviewed journals (including 18 indexed in Scopus/WoS), 10 articles in conference proceedings (including 8 published abroad), and 10 theses (all published abroad) were published. 2 Candidate of Sciences (PhD) dissertations were defended.

Cooperation agreements and memoranda were concluded with 5 foreign scientific and scientific-educational organizations.

INSTITUTE FOR PHYSICAL RESEARCH

Ashtarak-2, Aragatsotn Region, 0204 Armenia
www.ipr.sci.am

Fundamental Scientific Results

- A new time-dependent two-state quantum model has been proposed describing level crossing in a system interacting with a constant-amplitude laser field. The asymptotic behavior of the solution with respect to the quasi-energies was analyzed, and the final transition probability was calculated for the case when the system initially occupies the first quasi-energy state.
- Mirrorless lasing was observed in a backward laser-emission configuration, where dilute rubidium vapor is excited by linearly polarized continuous laser radiation scanned across the frequency range of the hyperfine resonances of the Rb D_2 line. The dependence of the backward laser signal on the frequency and power of the incident radiation, as well as on the magnetic field (B) applied along the direction of linear polarization of the incident light, was investigated.
- For the first time, the Cs-þ 6S1/2→7P3/2 transition at 456 nm was investigated in atomic vapor layers of an optical nanocell in the presence of sub-Doppler resonances. For an atomic vapor layer thickness of $\ell = \lambda/2 \simeq 230$ 230 nm, Dicke narrowing of the spectral lines was observed, accompanied by a red shift of the atomic transition frequencies, which is attributed to atom–surface interactions with the nanocell.

Applied Research Results

- A field-effect transistor based on a zinc oxide semiconductor with an n-type ferroelectric channel was developed. A ZnO:Li film, exhibiting the properties of a low-conductivity ferroelectric semiconductor, was used as the channel layer.

Measurements of the static characteristics of the transistors, as well as data writing and reading processes, were carried out.

- Using a new non-invasive method for imaging and studying biological samples, the trapping and measurement of coiled DNA molecules in a saline solution were carried out. The trapping, measurement, and control of the motility of bacteria with a more complex structure (Escherichia coli) were also achieved.
- With the support of the Armenian technology company "PSI", and in close cooperation with the L. Orbeli Institute of Physiology of NAS RA and the Research Institute of Physics of YSU, the design, fabrication, operation, and parameter optimization of a hydrophone operating on the basis of a single-layer flat-coil self-oscillator were carried out. Using the new hydrophone, the locomotion of the fish Danio rerio (zebrafish) was investigated, making it possible to reveal and analyze the behavioral patterns of its movements.

Four international and one national scientific conferences were organized and held. Scientific and scientific-technical work was carried out within the framework of one basic program, 6 contractual (economic) projects, and 27 thematic grant projects, including 4 international thematic projects. A total of one monograph, 65 articles in peer-reviewed journals (including 64 indexed in Scopus/WoS), 4 articles in conference proceedings (including one published abroad), and 51 theses (12 published abroad) were published. one patent was obtained and one Candidate of Sciences (PhD) dissertation was defended.

Scientific instruments and equipment worth 568 161 000 AMD were acquired.

Cooperation agreements and memoranda were concluded with 2 organizations outside the NAS RA system: one higher education institution and one foreign scientific-educational organization.

INSTITUTE OF APPLIED PROBLEMS OF PHYSICS

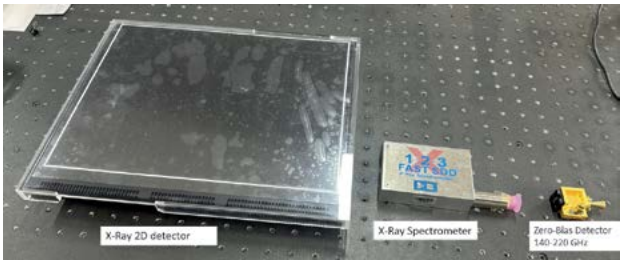
25 Hr.Nersessian Str., Yerevan, 0014
www.iapp.am

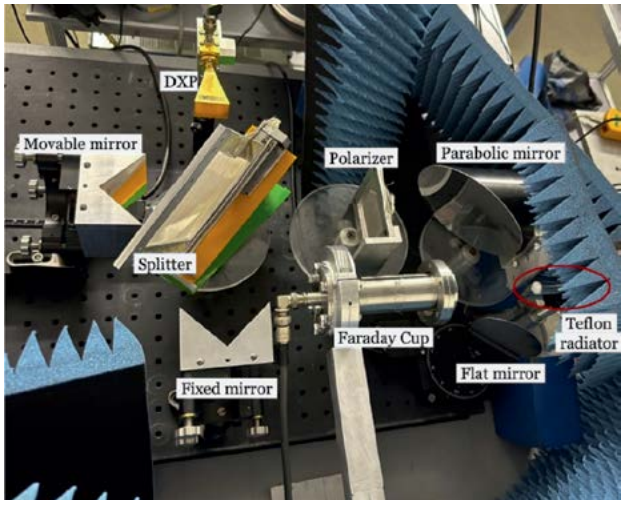
Fundamental Scientific Results

- At the TB21 beamline of the DESY research center, resonant transition radiation from electrons with energies of 800–2500 MeV was investigated in the 10–200 keV photon-energy range using two targets consisting of twenty aluminum foils (10 μm thick) separated by 100 μm layers (air in one case and Teflon in the other). It was shown that for the air-separated target the experimental results agree with theoretical estimates with good accuracy, whereas for the Teflon-separated target the energy peak of the resonant transition radiation is shifted toward higher photon energies.
- The radiation emitted by an electron rotating in the equatorial plane of a sphere made of a dispersive dielectric material was theoretically investigated. It was shown that a dispersion law can be chosen such that resonant radiation occurs not at a single harmonic (as in the case of a non-dispersive dielectric sphere), but simultaneously at several neighboring harmonics.
- The linear, nonlinear, and excitonic absorption of CdSe nanosheets was studied in the presence of axial and planar electric fields. The corresponding linear, nonlinear, and excitonic absorption coefficients were calculated, and the resonant frequencies of the corresponding transitions were determined.

Applied Research Results

- An optimized technology was developed for producing spherical ammonium perchlorate crystals of medium (50–160 μm) and large (160–315 μm) sizes. These crystals can be used as a major component in the production of composite solid rocket propellants.





- A device enabling linear magnification of X-ray diffraction images was developed and manufactured.
- A new type of X-ray spectrometer with high resolution was developed. It can be used in X-ray spectrometric studies, in particular for the precise separation and identification of characteristic X-ray spectra of materials.
- An interferometer for spectral analysis of radiation in the GHz–THz frequency range was developed and manufactured.
- A new X-ray microtomograph was developed and assembled, enabling three-dimensional imaging of material inhomogeneities with a spatial resolution of up to 4–5 μm.

Four international scientific conferences were organized and held. Scientific and scientific-technical work was carried out within the framework of one basic program, 2 contractual (economic) projects, and 16 thematic grant projects, including one international thematic project. A total of 4 monographs and collections were published (one abroad), as well as 67 articles in peer-reviewed journals (including 61 indexed in Scopus/WoS), one article in conference proceedings, and 146 theses (21 published abroad). 2 patents were obtained and 2 Candidate of Sciences (PhD) dissertations were defended.

Scientific instruments and equipment worth 106 245 000 AMD were acquired.

Cooperation agreements and memoranda were concluded with 3 organizations outside the NAS RA system: one university and 2 organizations from the private sector of the economy.

INSTITUTE OF RADIOPHYSICS ANE ELECTRONICS

1 Alikhanian broth. Str., Ashtarak, 0204
www.irphe.am

Fundamental Scientific Results

- The radiation of a charged particle traversing a stack of plates was studied in the optical range. For a certain type of periodic photonic crystal, observation of the radiation intensity at the Brewster angle reveals a strong energy dependence of the transition radiation of relativistic particles.
- It was shown that the classical and quantum-mechanical interpretation of the Zernike system confirms its equivalence to the Higgs oscillator on a sphere or pseudosphere.
- A simple model of two-dimensional superconformal mechanics with a spin–orbit interaction term was proposed. It was shown that the symmetry of the model reduces to the Galilean symmetry of the initial free particle.

Applied Research Results

- Laboratory prototypes of low-noise high-power amplifiers and generators operating in the L and S frequency bands were developed. Using these devices, experiments were carried out to reduce the evaporation time of water and glycerin through interaction with microwave (MW) radiation.
- 2D WS_2 crystals containing several atomic layers were deposited on flexible glass and polyimide substrates by laser sputtering. The band gap was tuned from 1.4 eV to 2.1 eV, making it possible to develop flexible broadband photodetectors operating in the visible and ultraviolet regions of the spectrum.
- A radially polarized ultra-wideband (2–40 GHz) conical horn antenna was investigated. The reflection coefficient did not exceed 0.1 across the 2–40 GHz frequency range, while the width of the radiation pattern near 10 GHz was approximately 15%.

Scientific and scientific-technical work was carried out within the framework of one basic program, 8 contractual (economic) projects, and 2 thematic grant projects. A total of one monograph (published abroad), 29 articles in peer-reviewed journals (including 18 indexed in Scopus/WoS), 18 articles in conference proceedings (including 4 published abroad), and 7 theses (5 published abroad) were published. one patent was obtained and one Candidate of Sciences (PhD) dissertation was defended.

Scientific instruments and equipment worth 990 000 AMD were acquired.

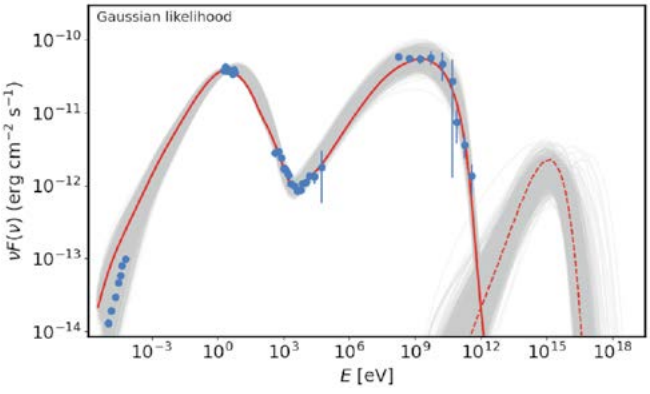
One cooperation agreement/memorandum was concluded with a private-sector organization.

INTERNATIONAL ORGANIZATION ICRANET CENTER

24A Marshal Baghramyan Ave., Yerevan, 0019 Armenia

Fundamental Scientific Results

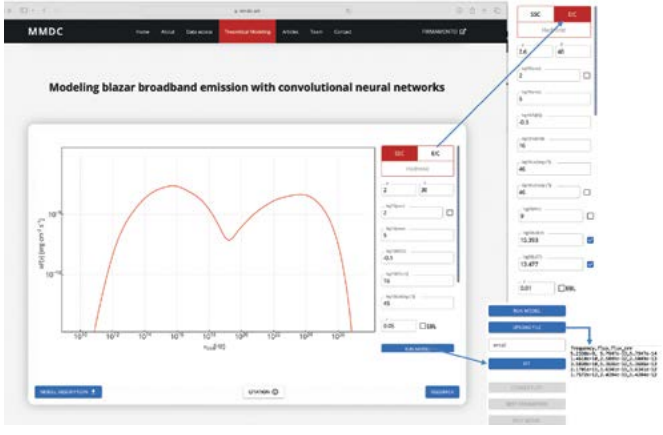
- A method based on convolutional neural networks (CNNs) was developed for modeling hadronic and lepto-hadronic emission from blazars. The network was trained on simulation data generated with the SOPRANO numerical code, covering a wide range of parameters of radiating electrons and protons, as well as the main mechanisms of their energy losses. The resulting network enables rapid and accurate reproduction of the electromagnetic and neutrino emission spectra of blazars. The applicability and reliability of the method were tested through modeling of the spectral energy distributions (SEDs) of the blazars TXS 0506+056 and PKS 0735+178.



- For the blazar OJ 287, modeling of 15 years of multiwavelength data was carried out using 739 quasi-simultaneous spectral energy distributions (SEDs) within a neural-network-based leptonic model. This made it possible to trace the temporal evolution of the main physical parameters, including the magnetic field (B), Doppler factor (δ), and electron distribution, as well as to identify different emission states associated with jet dynamics and particle acceleration processes.
- The multiwavelength data of the blazar 3C 279 covering about 14 years were modeled within the framework of a one-zone leptonic model. The modeling showed that the γ-ray flares observed in this source are mainly caused by changes in the Doppler factor and the electron distribution. It was also shown that in typical states the emission region is located outside the broad-line region (BLR), whereas during the brightest γ-ray flares it is located closer to the boundary of the BLR.

Applied Research Results

- The Markarian Multiwavelength Data Center (MMDC) is a comprehensive platform for the retrieval, visualization, and theoretical modeling of multiwavelength and multimessenger data from blazars. The system integrates archival data from more than 80 catalogs, as well as optical observations from the ASAS-SN, ZTF, and Pan-STARRS surveys, and newly processed data obtained with the Swift-UVOT, Swift-XRT, NuSTAR, and Fermi-LAT instruments. Within the framework of the further development of the database, particular attention has been devoted to the modeling of spectral energy distributions (SEDs) and their physical interpretation. MMDC enables the construction of spectral energy distributions across the entire electromagnetic spectrum and their theoretical modeling within machine-learning-based leptonic and lepto-hadronic models. The database is actively used by researchers from 51 countries, demonstrating its broad international applicability. The combination of extensive data coverage and rapid, physically motivated modeling capabilities within a unified environment makes MMDC an effective tool for the detailed study of blazar variability, radiation mechanisms, and multiwavelength correlations.



The Center's researchers published 14 articles in peer-reviewed journals, all indexed in Scopus/WoS.

DIVISION OF NATURAL SCIENCES

***Academician-Secretary* – corresponding member Ruben M. Aroutiounian**
***Assistant to the Academic Secretary:* A. Minasyan**

The Division includes the Center for Ecological-Noosphere Studies, the Scientific-Production Center "Armbiotechnology", the Scientific Center of Zoology and Hydroecology, the A. Takhtajian Institute of Botany, the H. Buniatyan Institute of Biochemistry, the G. Davtyan Institute of Hydroponics Problems, the Institute of Molecular Biology, and the L. Orbeli Institute of Physiology.

The Division includes 6 academicians, 7 corresponding members, 27 foreign members, and 12 honorary doctors of NAS RA.

During the reporting year, the Division held one General Assembly, 22 Bureau meetings and working consultations, and 8 reporting meetings of the scientific organizations.

At the 22 Bureau meetings, the following issues were discussed and approved: the Division's 2025 work plan; the reports of the Division's scientific organizations on 2024 base funding and state targeted programs; admission issues for postgraduate and doctoral studies for the 2025–2026 academic year; applications from the research centers for the acquisition of necessary equipment; and applications for financing scientific business trips within the NAS RA system.

At one Bureau meeting, the candidate nominated for the vacant position of Director of the H. Buniatyan Institute of Biochemistry was discussed and subsequently submitted for approval to the Presidium of the NAS RA. A. Antonyan, PhD in Biological Sciences, was elected Director of the Institute.

The Division held one meeting of the "Problem Council on Biodiversity and Biosafety," where issues related to biodiversity conservation in the context of the challenges posed by construction and mining activities were discussed.

Following discussions at the meetings of the NAS RA tender commission, the institutes and centers of the Division were provided with funding for the acquisition of necessary equipment.

The Bureau of the Division approved 16 applications for financing scientific business trips of staff members.

The research organizations of the Division organized 36 national and international events, with 2 049 participants, including 405 from abroad.

The research organizations of the Division published 352 articles in peer-reviewed journals (300 indexed in Scopus), 24 articles in conference proceedings (21 abroad), 179 theses (120 abroad), 7 monographs (published abroad), and 4 educational manuals. Two patents were obtained.

During the reporting year, one doctoral dissertation and ten candidate (PhD) dissertations were defended, five of which were defended at four specialized councils of the Division.

The research organizations of the Division implemented 32 grant programs with international funding.

The research organizations of the Division presented their results at the booths of the "Science Week" scientific festival.

CENTER FOR ECOLOGICAL-NOOSPHERE STUDIES

68 Abovyan Str., Yerevan 0025
www.cens.am

Fundamental Scientific Results

- Generalization of results of long-term radioecological studies conducted in Aragats massif has indicated that by the contents of natural radionuclides (Ra–226, Th–232, K-40) the soils are background. This is proved by a steady increase in radionuclide activity from topsoils to deeper horizons, low values of geoaccumulation index for all radionuclides as well as the Th/Ra ratio. The major share in formation of a dose and carcinogenic risk for humans determined by radionuclides in the Aragats soils belongs to Th-232, for biota-to Ra-226. Bottom sediments of rivers rising from Aragats have high activity of natural radionuclides in high-mountain fast-flowing parts of rivers and low activity in low-lying regions.
- The work summarized methodical approaches for evaluating morphological, physical and biological characteristics (water level, ice cover, algal bloom) of ecological status of Lake Sevan based on optical indicators of satellite remote sensing (shoreline, water surface temperature, ice cover and regime, chl-a content, harmful algal bloom). As a result, satellite remote sensing was included as a mandatory component in a new integrated state monitoring system of Lake Sevan.

Applied Research Results

- Based on the analyses and generalization of long-term radioecological studies of agricultural lands, assessment was done of baseline activity of natural radionuclides in soils. The resulting data may be used in radioecological studies to assess a zero-background on new nuclear construction sites.
- In some samples of Armenian-produced meat (beef, lamb, pork, chicken), milk, and honey, residual tetracycline quantities did not result in identified dietary risks. In Armenian polyfloral honey, chronic risk from Cu, Mo, Pb, As is absent.

- According to survey results, 27.4% of adults in Yerevan habitually add salt to already prepared food: Basturma and sujukh contain the highest amounts of salt. The main sources of average daily sugar intake are chocolate, confectionery, sweets/pastries, and carbonated beverages. In 25.3% of consumers, sugar intake exceeds the 50 g/day recommended by the World Health Organization.
- Based on remote sensing data, in the eastern part of Yerevan covering 275 ha, mapping of buildings and unclassified unmanaged waste was carried out using Unmanned aerial vehicle (Drone) optical imagery processed with machine learning models, and the areas and volumes of waste and buildings were calculated based on the constructed 3D terrain and surface models.

Scientific and scientific-technical work was conducted under 1 targeted, 1 basic, 5 contractual economic, and 9 thematic grant programs (including 1 international thematic program). 24 articles were published in peer-reviewed journals (17 indexed in Scopus), 5 articles in conference proceedings (5 abroad), and 14 theses (14 abroad). 2 Candidate (PhD) dissertations were defended.

Scientific instruments/equipment worth 64293000 AMD were acquired, including 0 funded through foreign grants/programs.

Cooperation agreements/memoranda have been concluded with 7 organizations including 2 with higher education institutions, as well as 5 with foreign scientific and academic institutions.

A. TAKHTAJAN INSTITUTE OF BOTANY

1 Acharyan Str., Yerevan 0063
www.botany.sci.am

Fundamental Scientific Results

- One fossil site from the Oligocene and one from the Miocene period have been discovered. For the first time, fossil algae belonging to the genera Botryococcus, Pediastrum, Spirogyra, Cosmarium, Mougeotia, Cymbella, Eunotia, Epithemia, Ulnaria, Gomphonema, Neidium, Pinnularia, and Cocconeis, as well as a cyanobacterium of the genus Gloeotrichia, have been identified.
- For Aragats mountain massif, 13 new species of mosses have been discovered.
- For the first time in Armenia, palynomorphological research of the species I. sisianica has been carried out.
- As a result of karyological and molecular-genetic studies of the representatives of the genus Zingeria (Poaceae) from the flora of Armenia, different levels of ploidy have been identified.
- A taxonomic study of the section Pyrus of the genus Pyrus L. from the flora of Armenia has been conducted. Ten species and one variety have been confirmed.
- It has been revealed that the flora of Armenia includes 139 endemic species and subspecies of vascular plants.
- Three new species of fungi have been discovered for Armenia — Onygena equina, Panaeolus plantaginiformis, and Tuber aff. iranicum — and the rare species Battarrea phalloides has been rediscovered.

Plant dryer

Scientific and scientific-technical work was conducted under 1 basic, 5 contractual economic, and 17 thematic grant programs (including 5 international thematic programs). 44 articles were published in peer-reviewed journals (41 indexed in Scopus), 6 articles in conference proceedings (6 abroad), and 8 theses (6 abroad).

Scientific instruments/equipment worth 47.695000 AMD were acquired, including 0 funded through foreign grants/programs.

Cooperation agreements/memoranda have been concluded with 11 organizations including 6 with higher education institutions, 2 with private-sector organizations, as well as 3 with foreign scientific and academic institutions.

SCIENTIFIC CENTER OF ZOOLOGY AND HYDROECOLOGY

7 P. Sevak Str., Yerevan 0014
www.sczhe.sci.am

Fundamental Scientific Results

- 14, not yet described, species have been revealed, including 11 beetle species (Coleoptera), 1 mantis species (Mantodea), and 2 butterfly species (Lepidoptera). In addition, 93 species new to the fauna of Armenia have been recorded, comprising 6 beetle species, 40 fly species (Diptera), 4 thrips species (Thysanoptera), 2 butterfly species, 8 terrestrial tardigrade species (Tardigrada), 30 spider species (Aranei), and 3 pseudoscorpion species (Pseudoscorpiones).
- The results of the craniological study indicate clear craniological differences between subfossil dogs and subfossil and modern wolves, as well as the significantly larger size of the subfossil wolves discovered at the Mets Sepasar sanctuary.
- For the first time in Armenia, the meiosis characteristics in birds were studied – specifically, the process of genome elimination in 3 species of the genus Phylloscopus. The properties of germlineline-restricted chromosomes, which are eliminated from somatic cells but retained in germ cells, were studied.
- One species, not yet described, has been recorded in the caddisfly fauna.
- For the first time in Lake Sevan, representatives of the genus Shadinia were recorded, occurring in sandy, gravelly, stony, and mixed silty substrates, as well as in macrophyte- and moss-associated biotopes.

Applied Research Results

- Within the framework of a contract signed with the Ministry of Environment of the Republic of Armenia, works on the assessment of biological resources (phytoplankton, zooplankton, macrozoobenthos, macrophyte, crayfish, fish) continued.
- As of early October 2025, the commercial stock of whitefish amounted to 1373.9 tonnes. Taking into account the existing problems of population replenishment and significant commercial pressure, the proposed whitefish fishing quota for 2026 is set as 40% of the commercial stock, or approximately 550 tonnes. In 2026, whitefish fishing is proposed to be permitted starting from February 1.

- Within the framework of an agreement with the Caucasus Nature Fund (CNF), insect monitoring was carried out in nature protected areas in Armenia, and materials were collected from 9 protected areas.
- A scientific application for citizens has been developed to enable participation in monitoring river ecosystems.
- Laboratory synthesis of the multi-epitope chimeric Toxoplasma gondii protein was carried out, its immunogenicity was evaluated in BALB/c mice, and in vitro studies of the antitoxoplasma activity of local plant extracts were conducted.
- A method for freezing animal reproductive cells, spermatocytes, and oocytes without using ultra-low temperatures has been developed.

Organized and held one international conference; conducted scientific and scientific-technical work under one basic, 15 economic contractual, and 52 thematic grant programs (including 5 international thematic programs); published 6 monographs and collections (6 abroad), 3 educational manuals and textbooks; published 77 articles in peer-reviewed journals (including 70 Scopus), 5 articles in conference proceedings collections (5 abroad), 49 theses (4 abroad). Defended one candidate dissertation.

Scientific instruments/equipment worth 99000000 AMD were acquired.

Cooperation agreements/memoranda have been concluded with 14 organizations including 10 with higher education institutions, 1 with private-sector organizations, as well as 3 with foreign scientific and academic institutions.

SCIENTIFIC AND PRODUCTION CENTER "ARMBIOTECHNOLOGY"

14 Gyurjyan Str., Yerevan 0056
www.armbiotech.am

Fundamental Scientific Results

- A probiotic strain Bifidobacterium longum ssp. longum, characteristic of the human gut microbiota, was isolated from neonatal meconium. Its genome was sequenced, and the strain was deposited under accession number MDC 11247. Based on this strain, a consortium of bifidobacteria and lactic acid bacteria was developed for the creation of the biologically active supplement "Bifinarin".
- The α-amylase gene of Bacillus amyloliquefaciens MDC1974 was amplified and cloned into the pBE-S vector using Gibson assembly. A recombinant strain B. subtilis RIK1285_amy1974 was obtained, producing approximately 2000 U/mL of α-amylase under optimized conditions. Efficient enzyme purification and stabilization methods were developed.
- Under optimized bioreactor conditions (28 °C, pH 4.5, 120 h, filtered brewery waste as substrate), Phaffia rhodozyma MAS8 achieved a maximum astaxanthin yield of 4.5 g/L. Methods for astaxanthin extraction, identification, and chromatographic and spectral characterization were developed.
- Novel inhibitors of Clostridium histolyticum collagenase were identified; they affect serine protease activity without altering the total extracellular protease activity of P. aeruginosa.
- L-tryptophan biosynthesis was studied using the resistant strain Brevibacterium flavum C18, achieving a maximum yield of 8.0 g/L (15% sucrose, 5% $(NH)_2SO_4$, 96 h).
- Osmotolerant bacterial strains capable of nitrogen fixation (up to 40 μg/mL) and auxin synthesis (up to 20 μg/mL) were identified; they maintained high cell titers for up to six months under unfavorable conditions.
- A gas chromatographic method for qualitative and quantitative determination of organochlorine pesticides in various matrices was developed and validated (Supervisor: PhD A. Tsaturyan).
- During co-cultivation of Lactobacillus and Enterococcus probiotic strains, interactions between synthesized metabiotics (exopolysaccharides and bacteriocins) were demonstrated, leading to a 30–90% reduction in antimicrobial activity, depending on EPS type and concentration.
- Highly proteolytic lactic acid bacteria were identified; fermented dairy products produced using these strains showed superior physicochemical and sensory properties and may serve as starter cultures for novel products.
- The sorption behavior of Nostoc PCC 7413 and 8109 toward Cu^{2+} and Ni^{2+} was investigated, with PCC 7413 showing higher tolerance and more stable metal retention.
- Adaptation of Sulfobacillus thermosulfidooxidans 41 to elevated NaCl concentrations increased copper recovery from chalcopyrite by 5–8 times.
- Ultrasonic methods were developed for obtaining plant-based tinctures enriched with biologically active compounds.
- Novel non-proteinogenic amino acids and biologically and pharmacologically promising peptides were synthesized using Mannich and Suzuki cross-coupling reactions.

International Conference

Applied Research Results

- Technical Specifications (TS AM 39377914.9418–2025) were developed, and the EAEU Declaration of Conformity No. AM-008/SB.-1609-2025 was registered for the production of the powdered lactic acid product "Bioargin", based on lactic acid bacterial strains.

Organized and held 1 international scientific conference; conducted scientific and scientific-technical work under 1 basic, 12 contractual economic, and 30 thematic grant programs, including 3 international thematic programs; published 1 monograph (1 abroad); published 76 articles in peer-reviewed journals (68 indexed in Scopus) and 35 theses (29 abroad). 1 patent was obtained, and 1 Candidate (PhD) dissertation was defended.

Scientific instruments/equipment worth 47 376 000 AMD were acquired.

Cooperation agreements/memoranda have been concluded with 4 organizations including one with private-sector organizations, as well as 3 with foreign scientific and academic institutions.

G.S. DAVTYAN INSTITUTE OF HYDROPONICS PROBLEMS

108 Noragyugh, Yerevan 0082

Fundamental Scientific Results

- For the first time, a wild edible plant, curly dock (Rumex crispus L.) has been introduced into hydroponic and soil cultures, and in aquaponics. It has been found that in hydroponics it is possible to produce up to 27.4 kg yield of fresh curly dock per 1m2, which outperforms soil culture by 6.0 times and aquaponics by 3.8 times. Over a single growing season, each hydroponic plant formed 410 leaves which outperformed soil and aquaponic plants by 3.4 and 1.8 times, respectively. Hydroponic plants surpassed the soil and aquaponic plants in the content of extractive substances, total phenols and crude protein by 1.1 - 1.3 times, and were inferior to them in content of flavonoids and tannins by 1.3 and 1.3-1.4 times, respectively.
- In in vitro culture, in 0.5MS nutrient medium, a concentration of 40 g/L sucrose and 3 mg/L benzylaminopurine promoted the development of saffron (Crocus sativus L.) microcorms weighing an average of 389 mg. Under phytotron climate chamber conditions, the maximum number of saffron flowers (3-4 flowers/plant) and air-dried yield of stigma (8-9.5 mg/plant) were obtained from the corms treated with 60 ml/L of GA3 (Chief: Associated Member of NAS RA S.Mairapetyan).

Autumn saplings of catalpa in drip hydroponics

Various edible plants in NFT hydroponics

Saffron plants in a phytotron chamber

Applied Research Results

- The National Body for Standards and Metrology CJSC has registered the technical specifications for "Moringa oleifera Lam. Leaves, Biologically Active Supplement" TS AM 10012903.9371-2025 (Chief: PhD Kh.Mayrapetyan).
- For the first time, wild edible plants Rumex crispus L. and Astrodaucus orientalis (L.) Drude were introduced into hydroponic culture (Chief: PhD A.Tadevosyan).
- A small-scale experiment on curly rhubarb was performed in outdoor hydroponics (Chief: PhD A.Tadevosyan).
- More than 600 saplings of different tree-shrubs (sycamore, oak, sophora, juniper, thuja, privet, catalpa, silk tree, judea tree, fraxinus), produced as a result of scientific experiments, were realized for about 1.1 million drams. About 40 saplings of sophora were donated to 2 completely renovated schools for benevolent purposes (Chief: A.Ghahramanyan).

Conducted scientific and scientific-technical work under one basic, 21 economic contractual, and one thematic grant programs (including 1 international thematic programs); published 17 articles in peer-reviewed journals (including 16 Scopus), 11 theses (11 abroad).

Scientific instruments/equipment worth 5110600 AMD were acquired, including 0 funded through foreign grants/programs.

Cooperation agreements/memoranda have been concluded with 3 organizations including 2 with higher education institutions and one of a state institution.

INSTITUTE OF MOLECULAR BIOLOGY

7 E.Hasratyan Str., Yerevan 0014
www.imb.am

Fundamental Scientific Results

- For the first time in Armenia, genotyping of the grapevine pest Phylloxera was conducted, accompanied by monitoring of infested areas. More than 100 new genotypes were collected and sequenced.
- Phylogenomic analysis of clinical isolates of Pseudomonas aeruginosa confirmed the genetic diversity of multidrug-resistant (MDR) P. aeruginosa isolates, including sequence types ST389, ST483, and ST1203. The results indicate an increasing penetration in the region of P. aeruginosa strains belonging to the international high-risk clones ST389 and ST654. In addition, extensively drug-resistant (XDR) Acinetobacter baumannii isolates were identified as belonging to the genetic lineages of the International Clone 2 (IC2), which is associated with the spread of multidrug resistance worldwide.
- A comprehensive analysis of telomere maintenance mechanisms (TMMs) in gliomas revealed that TMM pathway activity differs significantly between tumors with short and long telomeres, driven by the activity of the TERT and RAD51 genes and by ATRX and IDH mutations. These findings highlight the importance of selecting therapeutic strategies tailored to specific genetic subtypes.
- Studies on 3D glioblastoma models demonstrated that irradiation with an ultrashort pulsed electron beam has clear advantages over conventional X-ray therapy, particularly due to its ability to penetrate and damage the hypoxic, radioresistant core of tumor spheroids.

Applied Research Results

- The PocketMaster tool has been developed, which is a flexible and automated tool for the analysis, clustering, and interpretation of protein pockets. Due to its capabilities, PocketMaster can serve as a valuable tool in the early stages of drug development, where careful and accurate protein evaluation is required.

- A software package tsantsR for microbiome meta-analysis has been developed, which, based on a provided metagenomic database, constructs a network representing the bacterial composition. The package clusters the nodes of the network and predicts their functional potential using KEGG (Kyoto Encyclopedia of Genes and Genomes) pathway and disease annotations.
- Based on data on toxicophores associated with carcinogenic activity and their molecular initiating events, neural networks of adverse outcome pathways (AOPs) were constructed, achieving a prediction accuracy of up to 0.935 ROC-AUC.

Organized and held 5 international and 1 national scientific conferences; conducted scientific and scientific-technical work under 1 basic, 20 contractual economic, and 39 thematic grant programs (including 3 international thematic programs); published 42 articles in peer-reviewed journals (41 indexed in Scopus), 3 articles in conference proceedings (1 abroad), and 11 theses (5 abroad). 4 Candidate (PhD) dissertations were defended.

Scientific instruments/equipment worth 87160900 AMD were acquired.

Cooperation agreements/memoranda have been concluded with 3 organizations including 2 with private-sector organizations, as well as one with foreign scientific and academic institutions.

L.A. ORBELI INSTITUTE OF PHYSIOLOGY

22 Orbeli Broth. Str., Yerevan 0028
www.physiol.sci.am

Fundamental Scientific Results

- The plastic transformations of the erythrocyte membrane in 4 different human blood groups during exposure to gyurza venom were studied using atomic force microscopy, and the force parameters were calculated.
- As pharmacological correction agents from alcohol neurotoxic effect, the peptide hepatoprotectors Molixan and Semax were used as controls.
- Studies were conducted to identify physiological correlates of different human emotional states by analyzing multimodal physiological indicators.
- The effect of repeated insulin-induced hypoglycemia on the adaptive capacity of different parts of the rat brain was studied under normal conditions and with the use of honeysuckle.
- The features of the integrative pacemaker activity of different regions of the myometrium of non-pregnant rats were studied for the first time by simultaneous recording of electrical activity.

Applied Research Results

- The prototype of the antidote developed at the Institute was tested on 17 cases of dog bites by gyurza, as part of preclinical studies, in 15 of which the animals' health was fully restored.
- A prototype wearable device was designed and assembled, including heart rate, skin temperature, skin resistance, and motion sensors, controlled by an ESP32 microcontroller, and the data is transmitted to a newly developed smartphone application.
- A hyperspectral imaging method has been developed that will allow visualization of myocardial radiofrequency ablation during surgery, reducing the incidence of unsuccessful ablation of fibrillation.
- A convolutional autoencoder architecture has been developed that allows for the analysis of 4D multi-excitation hyperspectral data while fully preserving the spatial-spectral structure.

- A method for skin tissue engineering based on decellularized intestinal epithelium has been developed. Characterization of decellularized liver and neural tissue scaffolds has been performed. Methods have been developed and implemented to assess residual detergents and other toxic substances in decellularized tissues.

Organized and held 1 international and 3 national scientific conferences; conducted scientific and scientific-technical work under 1 targeted, 1 basic, 13 contractual economic, and 18 thematic grant programs (including 3 international thematic programs); published 1 educational manual; published 48 articles in peer-reviewed journals (41 indexed in Scopus), 3 articles in conference proceedings (3 abroad), and 36 theses (36 abroad). 2 Candidate (PhD) dissertations and 1 doctoral dissertation were defended.

Scientific instruments/equipment worth 76 million AMD were acquired, including 34 million funded through foreign grants/programs. The vivarium-kennel has been completely renovated in accordance with European standards, thanks to a grant from a foreign organization.

Cooperation agreements/memoranda have been concluded with 9 organizations including 4 with higher education institutions, 3 with private-sector organizations, and 2 with foreign scientific and academic institutions.

H.BUNIATYAN INSTITUTE OF BIOCHEMISTRY

5/1, P.Sevak Str., Yerevan 0014
www.biochem.sci.am

Fundamental Scientific Results

- The activities of glutaminase, dipeptidilpeptidase IV, alaninaminotransferase, aspartataminotransferase and creatinine were assessed in blood plasma and homogenates of brain, liver, kidney and pancreas in experimental streptozotocin diabetes infected rat model. Compound $C_20H_20N_2O_4$synthesized at STCOPC exhibited the greatest hypoglycemic effect, reducing blood glucose levels by 3.8 times.
- In the aponeurotic tissue of patients with Dupuytren's contracture, adenosine deaminase 1 and adenosine deaminase 2 activity is 7 times higher. High dipeptidilpeptidase IV and dipeptidilpeptidase II activities has been recorded, that has not been detected in healthy tissue.
- The fresh mass of Anthriscus cerefolium stimulates the growth of L. rhamnosus bacteria by 5-10 times and exhibits antimicrobial activity against E.coli and St.aureus.
- Under conditions of chronic Cd poisoning, blood coagulation in rats increases by 30%. It is regulated by 2-3 times injection of the amino acid mixture, and 5-time injection causes internal bleeding.
- A method for non-covalent complexation of serum albumin with cationic and anionic porphyrins has been developed. The complex is purified from unbound components on an aluminum oxide column.

Applied Research Results

- Adenosine deaminase and dipeptidilpeptidase IV can be considered as target enzymes to avoid surgical intervention of Dupuytren's patients by using inhibitors of these enzymes in medicine.
- The inhibitory effect of Anthriscus cerefolium on adenosine deaminase activity allows it to be used as an anti-inflammatory agent.

- Gold-conjugated lectins produce a colored circlein the presence of bacteria, which can be used to create paper sensors for the detection of any bacterial infection. The sensitivity of the method exceeds the values typical for infections detected in biological fluids. Affinity purification of natural antibodies from human blood plasma, which can be injected into human risk groups, was carried out using milk glycoproteins. They bind to the carrier with the protein part, leaving the carbohydrate components free. The method preserves the native structure of carbohydrates and does not disrupt the structure of antibody determinants.
- Low-molecular-weight bacteriocins synthesized by five probiotics exhibit antimicrobial properties against E. coli, St. aureus, Klebsiella pneumoniae, and Candida albicans. Bacteriocins can be proposed as alternatives to antibiotics and organic preservatives in the food industry.

Conducted scientific and scientific-technical work under 1 basic and 4 thematic grant programs; published 24 articles in peer-reviewed journals (22 indexed in Scopus), 2 articles in conference proceedings (1 abroad), and 15 theses (15 abroad). 1 patent was obtained.

Scientific instruments/equipment worth 33 100 000AMD were acquired, including 0 funded through foreign grants/programs.

DIVISION OF CHEMISTRY AND EARTH SCIENCES

Acting Academician-Secretary: **corr. member Artur M. Ishkhanyan**
Scientific Secretary: **cand. (tech.) L. Gasparyan**

The Division includes the A. Nalbandyan Institute of Chemical Physics, the M. Manvelyan Institute of General and Inorganic Chemistry, the Institute of Geological Sciences, the A. Nazarov Institute of Geophysics and Engineering Seismology, and the Scientific and Technological Center of Organic and Pharmaceutical Chemistry.

The Division comprises 4 full members (academicians) of the NAS RA, 5 corresponding members, and 16 foreign members.

During the reporting year, the Division held one General Assembly and 16 meetings of the Bureau.

At the General Assembly held on April 22, the annual reports of the Acting Academic Secretary of the Division and the directors of the institutes were presented, covering the work carried out in 2024, achievements in the fields of scientific and scientific-technical activities, and the main scientific accomplishments.

At the meetings of the Bureau, the following issues were discussed and approved: applications submitted by the Division's scientific organizations for the 2026 programs of basic financing of scientific and scientific-technical activities ("Preservation and Development of Infrastructure") and state targeted programs; the work plans of the Division and the institutes for 2025; the allocation of tuition-free full-time and part-time postgraduate places for the 2026–2027 academic year; and applications submitted by the Division's scientific organizations for the purchase of equipment within the framework of the program "Maintenance and modernization of scientific equipment, procurement of materials for scientific experiments, and coverage of unforeseen urgent expenses of the institutes of NAS RA."

The Bureau also recommended that the title of Honorary Doctor of the NAS RA be conferred upon Professor Li Li, Director of the Institute of Geophysics of the People's Republic of China, and Professor Athena Geronikaki of the Faculty of Pharmacy, Aristotle University of Thessaloniki (Greece).

Reports on the programs of basic financing of scientific and scientific-technical activities ("Preservation and Development of Infrastructure") and state targeted programs implemented by the Division's scientific organizations were also reviewed and approved.

Scientists of the Division's institutes were sent on missions to foreign scientific centers to conduct joint research and participate in conferences (approximately 80 missions, of which 10 were funded from the NAS resources allocated for scientific missions).

In 2025, scientists of the Division's institutes published 251 articles in peer-reviewed journals (190 indexed in Scopus/WoS), 20 articles in conference proceedings (13 published abroad), and 192 theses (150 abroad). Two patents were obtained, and five Candidate (PhD) dissertations were defended.

The leadership of the Division also participated in the annual reporting meetings of the institutes.

A. NALBANDYAN INSTITUTE OF CHEMICAL PHYSICS

5/2 P. Sevak Str., Yerevan 0014
www.chph.sci.am

Fundamental Scientific Results

- By combining machine learning and finite element methods, the temperature-dependent nonlinear optical rectification coefficient in GaAs/AlGaAs tetrapod quantum dots was obtained for the first time using a hybrid approach.
- In dibenzophenanthroline, an unusually strong emission at a wavelength of 600 nm was observed in both liquid medium and thin film following ultraviolet absorption. The emission originates from the benzene excimer.

Applied Research Results

- The potential of ultra-high-temperature carbides (TaC, HfC) for the development of high-performance energetic materials has been demonstrated. It has been shown that the amount of heat released during their oxidation is comparable to that of well-known thermite systems.
- Under rapid heating conditions, using a high-speed temperature scanner, the widely used permanent magnetic material $Nd_2Fe_{14}B$ was synthesized through a single-step process, whereas its production by conventional methods requires multi-stage processes involving complex equipment.
- A FeNiMnAlCu alloy containing a certain amount of high-entropy oxide was synthesized using the solution combustion synthesis method. By subjecting the obtained material to spark plasma sintering, it became possible to eliminate the oxide phase and obtain an almost pure FeNiMnAlCu alloy with a face-centered cubic crystal lattice, suitable for use as a soft magnetic material.
- Using 3D printing technology, a laminated hydroxyapatite–titanium personalized cranial implant was fabricated. Studies have shown that the produced implant exhibits the required bioactivity, thermal conductivity characteristic of bone, and stable mechanical properties.

3D-printed titanium implants custom-fitted to the eye socket and jaw

The Institute carried out scientific and scientific-technical work under 1 basic, 19 contractual economic, and 73 thematic grant programs (including 3 international thematic programs). Its researchers published 79 articles in peer-reviewed journals (74 indexed in Scopus/WoS), 4 articles in conference proceedings (3 abroad), and 63 theses (48 abroad). Two Candidate (PhD) dissertations were defended.

Scientific instruments and equipment worth 904 800 000 AMD were acquired.

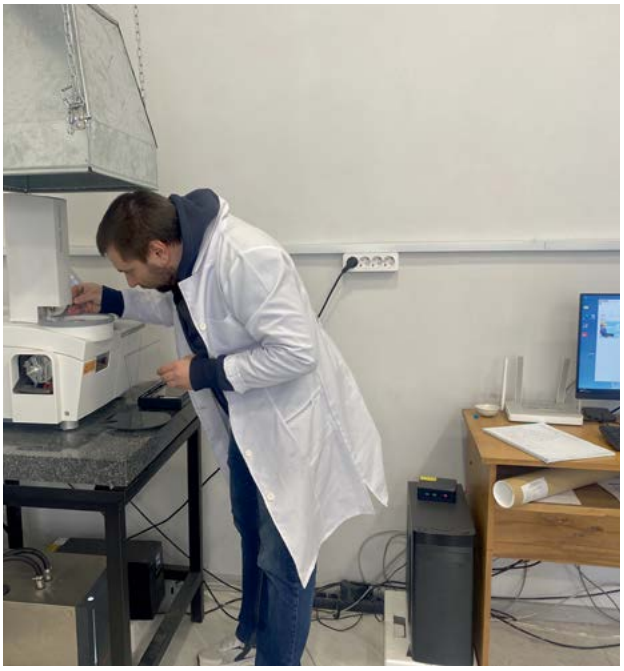
A cooperation agreement was concluded with one foreign academic institution.

M. MANVELYAN INSTITUTE OF GENERAL AND INORGANIC CHEMISTRY

10 Argutyan Str., Yerevan 0051

Fundamental Scientific Results

- New radiation-resistant and radiation-shielding vitreous, glass-ceramic, and composite materials with improved properties and high densities (4.8–6.2 g/cm^3) have been developed. Radiation and absorption studies of the developed materials were carried out for γ-radiation (0.5–1.25 MeV) and fast neutrons (15–50 MeV). Based on measurements of the linear attenuation coefficient of radiation intensity, the synthesized materials demonstrate a high capability for gamma-ray attenuation and exhibit stability under fast-neutron irradiation. Radiation sources used in the experiments included ^{137}Cs (661.7 keV) and ^{60}Co (661.7, 1173, and 1333 keV).
- Based on the properties of hydrosilica gel obtained from iron–magnesium dunite serpentines (Mg(Fe))6[Si4O10](OH)8(Mg(Fe))_6[Si_4O_{10}](OH)_8(Mg(Fe))6[Si4O10](OH)8 and the high activity of amorphous ZnO, the system SiO_2(gel)–NaOH–ZnO–$CoCl_2$–H_2O was investigated. Under mild conditions, cobalt-doped willemite with various color shades was synthesized. It was shown that replacing zinc salts with zinc oxide significantly reduces the consumption of NaOH.
- A waste-free method for producing fertilizers from local non-traditional raw materials—including diatomite deposits from Sisian and serpentinites available in Armenia—has been developed. The physicochemical properties of the obtained fertilizers were studied, and their effectiveness was confirmed.



Applied Research Results

- Based on new fluorine-containing phosphate systems P2O5–Al2O3–0.8MeO/0.2MeF2P_2O_5–Al_2O_3–0.8MeO/0.2MeF_2P2O5–Al2O3–0.8MeO/0.2MeF2 (Me = Mg, Ca), low-melting glasses and glass-ceramic materials were synthesized. Glasses with high microhardness values (480–540 kg/mm^2) were developed, suitable for medical applications as bone implants.
- A microwave method was developed for obtaining complex raw materials for yttrium aluminosilicate glass from solutions of $Y(NO_3)_3$–$Al_2(SO_4)_3$–$Na_2O{\cdot}nSiO_2$ salts, aimed at reducing energy consumption and improving material properties. Comparison of conventional and microwave synthesis and glass melting processes confirmed the advantages of the microwave method: synthesis time is reduced by 2–3 times, melting temperature decreases by 100–150 °C, and glass melting time is reduced by 5–6 times.
- Froth flotation regimes were developed for sulfides obtained from oxidized copper, lead, and zinc minerals, and the required reagent consumption for flotation enrichment was determined. The sulfide concentrates of Cu, Pb, Mo, and Zn obtained using the developed technology meet the requirements of current state standards.

The Institute carried out scientific and scientific-technical work under one targeted, one basic, three economic contractual, and one thematic grant program. 34 articles were published in peer-reviewed journals (8 indexed in Scopus/WoS), 10 articles in conference proceedings (4 abroad), and 5 theses (all abroad). One Candidate (PhD) dissertation was defended.

Scientific instruments and equipment worth 31 468 160 AMD were acquired.

SCIENTIFIC TECHNOLOGICAL CENTER OF ORGANIC AND PHARMACEUTICAL CHEMISTRY

23 Azatutyan Ave., Yerevan 0014
www.stcopc.sci.am

Fundamental Scientific Results

- It has been shown that activation via hydrogen atom transfer provides an alternative approach for the selective activation of aliphatic C–H bonds with the lowest bond dissociation energies.
- It has been shown that visible-light-induced transition-metal photocatalysis, as a unique synthetic tool, enables transition metals to perform a dual function: absorbing light energy and carrying out catalytic transformations.

Applied Research Results

- Active collaboration was initiated with the Martiros Saryan House-Museum. Using Raman spectroscopy, the pigments of Saryan's paintings were studied for the first time. Paintings created between 1909 and 1948, including Morning in Stavrino, Arab Dancer, Caravan, The Banks of the Zangu near Yerevan, and Kirovakan, were examined. Analysis of the obtained results revealed that Saryan's palette contains a wide variety of pigments, including ultramarine blue, cobalt blue, emerald green, cobalt green, celadonite green, cadmium yellow, chrome yellow, Venetian red, yellow ochre, red ochre, lead white, zinc white, and calcium carbonate. Metal carboxylates and oxalates were also detected, which are products of the degradation of paint layers. Such studies contribute to a deeper understanding of Saryan's painting technique and are valuable for the conservation and restoration of his works.

The Institute organized one international scientific conference and carried out scientific and scientific-technical work under 1 basic, 47 contractual economic, and 26 thematic grant programs. Researchers published 75 articles in peer-reviewed journals (69 indexed in Scopus/WoS) and 64 theses (62 abroad). One Candidate (PhD) dissertation was defended.

Scientific instruments and equipment worth 2 026 000 AMD were acquired.

Cooperation agreements and memoranda were concluded with 27 organizations, including 11 higher-education institutions, 11 private-sector organizations, and 5 foreign scientific or academic institutions.

INSTITUTE OF GEOLOGICAL SCIENCES OF NAS RA

24a Marshal Baghramian ave.,
Yerevan 0019
www.geology.am

Fundamental Scientific Results

- Based on data obtained from the Institute's modern seismic network, it has been established that the Afar plume (a deep mantle flow) extending from East Africa and the southern Red Sea moves northward, spreading not only beneath the Arabian Peninsula and Western Anatolia, where it is expressed by OIB-type volcanism, but also reaching the Armenian Highland. Here it heats and melts the lithospheric mantle enriched by previous subduction processes, generating the post-collisional volcanism of the region.
- New data have been obtained on the Paleogene magmatic formations of northern Armenia (Debed and Marziget river valleys). Isotopic U–Pb and Ar–Ar dating (47–41 million years) confirms manifestations of Middle Eocene magmatism, characterized by a predominantly calc-alkaline composition, which is explained by the subduction-related geodynamic setting of that period. In the extreme north of Armenia, in the Alaverdi–Jiliza area, U–Pb ages of 157–152 million years have been obtained for the first time (within Armenian–French–Belgian cooperation) from granitoid intrusive rocks, demonstrating the role of extensive intrusive magmatism in the Somkheti segment during the Late Jurassic (Oxfordian–Kimmeridgian).

Applied Research Results

- Detailed geophysical investigations have been carried out and are ongoing to accurately identify seepage risk zones in the Aparan and Azat reservoirs, assess their nature and intensity, and develop targeted anti-seepage solutions. The studies employed electrical resistivity tomography (ERT), two-dimensional ground-penetrating radar (2D GPR), and seismic exploration methods including two-dimensional multichannel analysis of surface waves (2D MASW) and two-dimensional seismic refraction tomography (2D SRT). Preliminary results have made it possible to identify zones of filtration risk.

The Institute organized one international scientific conference and carried out scientific and scientific-technical work under 1 basic, 1 targeted, 70 contractual economic, and 14 thematic grant programs.
Researchers published 36 articles in peer-reviewed journals (27 indexed in Scopus/WoS).
One Candidate (PhD) dissertation was defended.

Scientific instruments and equipment worth 42 417 000 AMD were acquired.

Cooperation agreements and memoranda were concluded with 8 organizations, including 1 higher-education institution, 3 private-sector organizations, and 4 foreign scientific or academic institutions.

A. NAZAROV INSTITUTE OF GEOPHYSICS AND ENGINEERING SEISMOLOGY

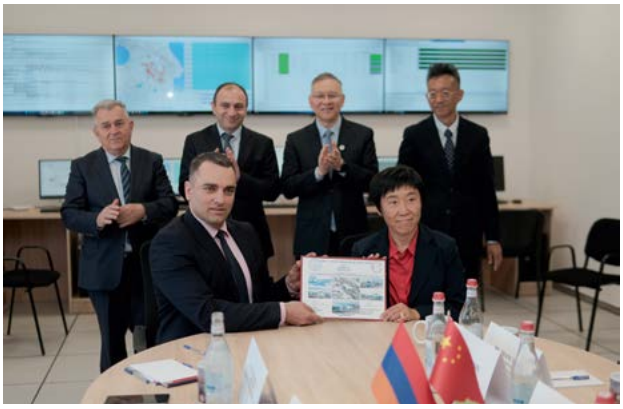
5 V. Sargsyan Str., Gyumri 3015
www.iges.am

Fundamental Scientific Results

- Based on recordings from automated seismo-geodynamic stations operating within the framework of Armenian–Chinese cooperation, the anomalous burst of weak and moderate earthquakes, a phenomenon rarely observed in seismological practice, was studied in February 2025 in the central part of the Aegean volcanic zone. Analysis of instrumental records and focal mechanisms revealed the complex volcanotectonic structure of the subduction zone between the African macroplate and the Aegean mesoplate.
- A new methodology for calculating synthetic accelerograms based on normative spectral curves has been developed. The proposed methodology makes it possible to approximate synthetic accelerograms of strong earthquakes for different regions of the Republic of Armenia. The developed accelerograms can be used in engineering analysis of seismic impacts, seismic hazard assessment, and the improvement of seismic design standards.
- Based on analysis of summarized data from the global network of magnetic observatories, the spatiotemporal characteristics of short-term abrupt variations in the Earth's magnetic field known as "jerks" were investigated using linear regression, statistical analysis, and spatial spherical-harmonic modeling tools. As a result, a scientific hypothesis has been proposed and substantiated that high-frequency secular variations of the main geodynamo cycle arise from the recurrence of jerks exhibiting stochastic spatiotemporal behavior.

Applied Research Results

- An Armenian–Chinese integrated seismo-geodynamic network and data acquisition and processing center has been established. In terms of technical equipment and instrumental recording methodology, it is the only system of its kind in the region meeting international standards.
- Using integrated geophysical methods, the spatial distribution of groundwater within the Aragats volcanic mountain range (Karkachun, Selav–Mastara, and Kasakh river basins) was determined. Within long-term comprehensive studies conducted in these basins, the types and structures of regional deep impermeable rock formations (up to 300–500 m) were mapped for the first time. The spatial relationships between modern and paleo-watersheds of the studied river basins were identified. Using water-balance calculations, the quantitative parameters of groundwater components were determined.



- A seismic hazard map of the Republic of Armenia at a scale of 1:200,000 has been compiled. For the first time, expected quantitative parameters of ground motion are presented in terms of response spectrum values for specified frequencies. The secondary instrumental spectra of copper, zinc, and lead in polymetallic ores were studied using the Am-241 isotope with a silver reflector as the primary radiation source. A new method for separating analytical lines in complex spectra using differential filters has been developed. A horizontal pendulum sensor has been designed and manufactured, ensuring a natural oscillation period of 5 seconds (0.2 Hz).

The Institute organized one international scientific conference and carried out scientific and scientific-technical work under 1 basic and 18 contractual economic grant programs. Researchers published 27 articles in peer-reviewed journals (14 indexed in Scopus/WoS), 5 articles in conference proceedings (all international), and 3 theses (all abroad). Two patents were obtained.

Scientific instruments and equipment worth 45 000 000 AMD were acquired.

Cooperation agreements and memoranda were concluded with 5 organizations, including one higher-education institution and four foreign scientific or academic institutions.

DIVISION OF ARMENIAN STUDIES AND SOCIAL SCIENCES

Academician-Secretary: **Academician Yu. Suvaryan**
Assistant to the Academician-Secretary: **A. Melkumyan**

The Division of Armenian Studies and Social Sciences comprises the Institutes of History, Oriental Studies, Arts, Archaeology and Ethnography, Economics named after M. Kotanyan, Language named after H. Acharyan, Literature named after M. Abeghyan, Philosophy, Sociology and Law, the Shirak Center for Armenological Research, and the Armenian Encyclopedia Publishing House.

The Division includes 5 academicians and 13 corresponding members of NAS RA.

At the Division's General Assembly held on 22 April, the report of the Division's Academician-Secretary Yu. Suvaryan, entitled "The Main Results of the Scientific and Scientific-Organizational Activities of the Division of Armenian Studies and Social Sciences in 2025," was discussed and approved, and 4 scientific reports were heard.

With the participation of the Division, 3 international scientific events were organized jointly with scientific institutions.

At the 13 meetings of the Bureau, the following were discussed and approved: the Division's 2025 work plan; applications from the Division's research institutes for the preservation and development of infrastructure under the basic funding of scientific and scientific-technical activities; proposals for state targeted programs and postgraduate admission places; reports on the 2025 scientific and scientific-organizational activities of the Division Bureau and research institutions; and other issues.

At the meetings of the Division Bureau, the candidacies for the position of director submitted by the general assemblies of the scientific staff of the Institutes of Philosophy, Sociology and Law, as well as Archaeology and Ethnography, were discussed and approved. These nominees were, respectively, Candidate of Political Sciences E. Ordukhanyan and Doctor of Historical Sciences A. Bobokhyan.

The specialized problem-oriented council of NAS RA on terminological issues discussed and adopted decisions regarding the rules of practical transliteration of Armenian and the Armenian equivalents of 20 technical and public terms, which were submitted to the Ministry of Education, Science, Culture and Sports to recommend their use in written and oral speech.

In 2025, 3 issues each of Patma-Banasirakan Handes, Banber Hayagitutyan, and Lraber Hasarakakan Gitutyunneri were published, and 2 issues of the English-language electronic journal Fundamental Armenology were released. The H. Acharyan Institute of Language published one issue each of Language and Linguistics and Jahukyan Readings, M. Abeghyan Institute of Literature published 2 issues of Literary Studies, and Institute of Arts published 2 issues of Art Studies.

Employees of the Division's research organizations published 118 books (11 abroad), 22 textbooks and manuals, 1027 articles, including 707 in peer-reviewed journals (200 in Scopus/WoS) and 320 in conference proceedings (101 abroad), as well as 214 theses (99 abroad).

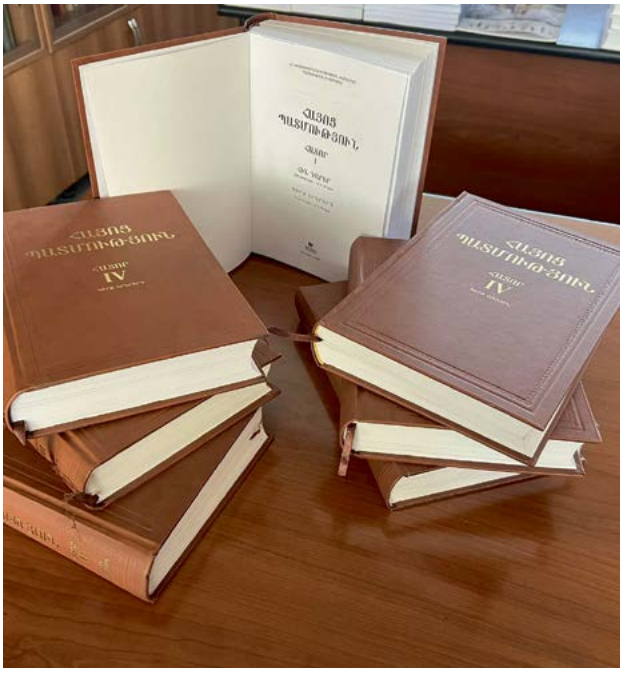
A total of 21 international and 18 national conferences were held.

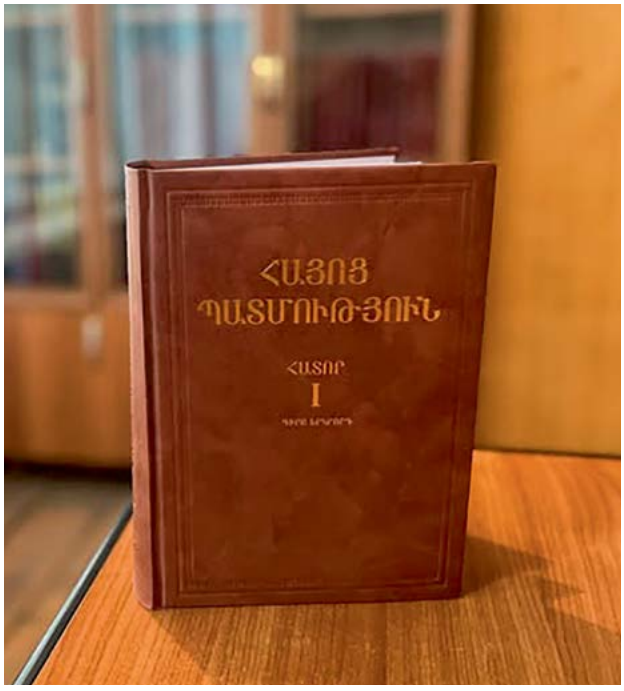
INSTITUTE OF HISTORY

24/4 Marshal Baghramyan Ave.,
Yerevan 0019
www.academhistory.am

Fundamental Scientific Results

- In the work «Процесс отпадения Закавказья от России. Возникновение независимых государств (январь–май 1918 г.)» (“The Process of Transcaucasia’s Secession from Russia: The Emergence of Independent States, January–May 1918”), based on a broad historical source base, the history of the formation and activities of the Transcaucasian Sejm, the proclamation of the Transcaucasian Republic, and the process of Transcaucasia’s separation from Russia are examined. The formation of the independent republics of Georgia, Azerbaijan, and Armenia is also analyzed.
- The monograph “The Artsakh Melikdoms (17th–19th Centuries)” is devoted to one of the most important periods in Armenian history—the history of the melikdoms of Artsakh. Drawing on newly discovered archival materials, epigraphic inscriptions, and historiographical literature, the work examines questions related to the rights and responsibilities of the meliks of Artsakh, presents the history of the melikdoms, and demonstrates the continuity of Armenian authority in Artsakh until the region’s incorporation into Russia.





Applied Research Results

- The works published by the Institute, in addition to their theoretical significance, may serve as a basis for new historical research, be used in the revision of various topics, and be applied in the revision and teaching of textbooks on “Armenian History,” “World History,” “History of Neighboring Countries,” and other related subjects. The rich factual material contained in these works is also important for exposing anti-scientific and fabricated viewpoints in historical scholarship.

4 international and 3 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under 3 basic, 2 economic contractual, and 4 thematic grant programs; 18 monographs and edited volumes (3 abroad) and 8 educational manuals and textbooks were published; 200 articles were published in peer-reviewed journals (40 indexed in Scopus/WoS), 49 articles in conference proceedings (9 abroad), and 8 theses. One Candidate (PhD) dissertation was defended.

Scientific instruments and equipment worth 1 200 000 AMD were acquired.

Cooperation agreements/memoranda were concluded with 3 foreign scientific and academic organizations.

INSTITUTE OF PHILOSOPHY, SOCIOLOGY AND LAW

24/6 Marshal Baghramyan Ave.,
Yerevan 0019
www.ipsl.sci.am

Fundamental Scientific Results

- The book "A Study of the Spiritual Activity of Nerses Shnorhali and the Political Concept of Nerses Lambronatsi" was published.
- The book "A Study of the Characteristics of Historical Memory and Historical Identity" was published.
- The book "A Study of the Historical and Contemporary Problems of the Evolutionary Development of Legal Concepts and the Evolution of Theoretical and Conceptual Approaches to Law and Legal Understanding" was published.
- The book "A Study of the Formation of a New Balance of Power in the South Caucasus and Armenian–French Military Relations" was published.

Applied Research Results

- Two employees of the Institute continued their work as experts within the Advisory Committee of the Council of Europe Framework Convention for the Protection of National Minorities and within the UN group on the protection of the rights of peasants and other people working in rural areas.
- Some researchers of the Institute regularly appeared in the public expert-analytical sphere with analyses and proposals concerning the organization of the legal and political life of the state.

- In order to promote the Institute and its fundamental scientific results, a new series of scientific lectures was recorded in podcast format, which was widely disseminated through the Institute's Facebook page and YouTube channel.
- Within the framework of the memorandum signed with the organization Foreign Policy Community of Indonesia, the Institute participated as a co-organizer in the international forum "Global Town Hall 2025" entitled "The Future We Need."

One international and 2 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under one basic program; 9 monographs and collections were published; 39 articles were published in peer-reviewed journals (including 10 Scopus), and 21 articles in conference proceedings (6 abroad); 2 candidate dissertations were defended.

A cooperation memorandum was signed with oned foreign organization.

M. KOTANYAN INSTITUTE OF ECONOMICS

15 Grigor Lusavorich Str., Yerevan 0015
www.economics.sci.am

Fundamental Scientific Results

- The problems of circular and linear economies, the economic opportunities of circular economy business models, and waste management were analyzed, and the advantages of introducing the circular economy concept from the perspective of improving food security were substantiated.
- The application of international experience in the development of a state science strategy was examined, as well as indicators describing the effectiveness of science in the Republic of Armenia and in the countries of the region.
- It was proposed to ensure real diversification of the Republic of Armenia's exports by reducing dependence on one or several markets and expanding presence in the markets of the European Union, the Middle East, and Asia.
- The formation of a technological and digital economy was substantiated as a stimulus for overcoming long-term challenges. In particular, the use of AI can contribute to the development of modern knowledge-based industries that would ensure job creation while preventing the outflow of highly qualified specialists.

Applied Research Results

- The increasing scale of organic waste leads to serious socio-economic and environmental problems.
  - Environmental consequences. If we assume that in the Republic of Armenia in 2024 about 55–60% of solid municipal waste consisted of organic waste (350.3–380.1 thousand tons), then in the case of unmanaged landfills methane emissions would amount to 11.9–12.9 thousand tons, which is equivalent to 321.3–374.1 Gg of CO_2 (the global warming potential of methane over a 100-year period is 27.0–29.8 times higher than that of carbon dioxide). Proper waste management (composting, anaerobic digestion) can reduce these emissions.
  - Economic consequences. Food losses and waste also include the loss of water, land, fertilizers, energy, and labor resources. For example, in 2023 total wheat losses amounted to 45.6 thousand tons, which under conditions of average actual yield (19.6 centners per hectare) could have been obtained from 23.3 thousand hectares. In grain-growing regions, 2 500–2 700 m^3 of water are required to irrigate 1 hectare of wheat. Thus, the loss of 45.6 thousand tons of wheat in 2023 led to the loss of 58 250–62 910 thousand m^3 of water.
- In international practice, the GERD indicator (Gross Domestic Expenditure on Research and Development) is widely used to assess the effectiveness of science funding. To increase this indicator, science should be closely linked with the economy, working jointly to rapidly apply the results of scientific research and generate innovations.

2 international scientific conferences were organized and held; scientific and scientific-technical work was conducted under one basic program; 5 monographs and edited volumes were published; 76 articles were published in peer-reviewed journals (27 indexed in Scopus/WoS), and 36 articles in conference proceedings (22 abroad).

Cooperation agreements/memoranda were concluded with 2 foreign scientific and academic organizations.

H. ACHARYAN INSTITUTE OF LANGUAGE

15 G.Lusavorchi Str., Yerevan 0015
www.language.sci.am

Fundamental Scientific Results

- The first fascicle of the Dialectological Atlas of the Armenian Language was published. For the first time in Armenian scholarship, a regional dialectological atlas has been issued, including about 70 isoglosses, with 2 general maps and 65 isogloss maps, covering around ninety settlements. The work is bilingual—Armenian and English—which allows researchers from other linguistic backgrounds to familiarize themselves with the presented material and make use of it.
- The book "Handes Banasteghtsats" Manuscript Dictionaries (13th–18th Centuries) was published. Sixty-three manuscript versions of medieval dictionaries entitled Handes Banasteghtsats, preserved in the Mesrop Mashtots Matenadaran, were examined. These dictionaries are valuable collections that faithfully reflect the linguistic state—particularly the lexical realities—of the period of their creation. The material they contain has been introduced into scholarly circulation for the first time and subjected to comprehensive analysis from both philological and linguistic perspectives.
- The book "Essays on the History of Literary Armenian" was published. It addresses issues concerning the history of literary Armenian, the resolution of which is important for obtaining a more concrete understanding of the historical and cultural development of the language and the community that speaks it. The work presents a textual-linguistic analysis of selected, previously unstudied linguistic materials from the Old, Middle, and Modern periods of the written era.

Applied Research Results

- The book "New Words, Fascicle T" records words not attested in explanatory dictionaries or dictionaries of neologisms.

- The manual "General Linguistics: A Guide to Practical Work" is aimed at facilitating students' independent work and developing their practical skills. The book may also be useful for those interested in general and Armenian linguistics.
- The scientific-practical model "From the Subconscious to Linguistic Consciousness and Communication: A Three-Stage Labyrinth" was presented at the event "Psychological Vernissage: Expo-25." The model made it possible to obtain diverse observations concerning linguistic thinking, internal communicative dynamics, and the awareness of perceptual processes.
- The book "NAS RA Institute of Language Bulletin 2024" presents the bibliographic lists of scientific works published by the Institute's researchers, as well as brief summaries of the publications (in Armenian, English, and Russian).

One international and 2 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under 4 basic and 3 thematic grant programs; 12 monographs and edited volumes were published (3 abroad), and one educational manual; 40 articles were published in peer-reviewed journals (9 indexed in Scopus/WoS), and 48 articles in conference proceedings (27 abroad). One doctoral dissertation was defended.

Scientific instruments and equipment worth 11 400 AMD were acquired.

M. ABEGHYAN INSTITUTE OF LITERATURE

15 Grigor Lusavorich Str., Yerevan 0015
www.litinst.sci.am

Fundamental Scientific Results

- The second book of "Avetik Isahakyan: A Scholarly Biography (1901–1912)" was published. It is based on documentary and bibliographic materials, some of which are introduced into scholarly circulation for the first time.
- The monograph "Yeghia Temirchipashyan: Life and Work, or 'I Must Always Be a Man Searching for the Path'" was published. It represents the first attempt at a comprehensive analysis and evaluation of the writer's life and work.
- The monograph "Henrik Edoyan: 'The Word Is My Support'" was published. The work evaluates and interprets the artistic system of Edoyan's poetry, his aesthetic conception, and his place and role in the literary-historical context of contemporary Armenian and world poetry.
- The monograph "Hakob Movses: The Poet and the Aesthete" was published. It constitutes the first comprehensive examination and evaluation of the writer's literary heritage.
- The first volume of N. Aghbalyan's Collected Works (in 7 volumes) was published.
- The second volume of Y. Charents' Collected Works (in 13 volumes) was published.
- The sixth volume of H. Tumanyan's Complete Collected Works (re-edited edition) was published.

Applied Research Results

- The textbook "Armenian Literature 12" was published. It consists of two thematic sections: "Human, Nature, Technology" and "Contemporary and Diaspora Armenian Literature." The material included in the textbook concerns Armenian literature of the second half of the 20th century and the period of independence. The best works of Armenian classics as well as contemporary and Diaspora Armenian writers are included. Information on the authors' lives and general characteristics of their works, as well as additional materials, are available through QR codes.
- The textbook "Literature 9" was published. It includes chapters devoted to the 5th-century Armenian literature, Mesrop Mashtots and the invention of the Armenian alphabet, the epic "Sasna Tsrer", and hayrens. It also presents the biographies and selected works of M. Khorenatsi, P. Buzand, Koryun, G. Narekatsi, N. Shnorhali, Frik, Sayat-Nova, M. Nalbandian, R. Patkanyan, and D. Demirchyan. On the basis of these materials, students' understanding and literary knowledge are expanded regarding concepts such as historiography, lyric poetry, hymnography (sharakan), riddles, hayren, myth, narrative poem (viperg), epic, and others.

2 international and 3 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under 2 basic, 4 economic contractual, and 5 thematic grant programs; 16 monographs and edited volumes and 2 educational manuals and textbooks were published; 78 articles were published in peer-reviewed journals (19 indexed in Scopus/WoS), and 22 articles in conference proceedings (2 abroad). Four Candidate (PhD) dissertations were defended.

Scientific instruments and equipment worth 975 000 AMD were acquired.

INSTITUTE OF ORIENTAL STUDIES

24/4 Marshal Baghramyan Ave.,
Yerevan 0019
www.orient.sci.am

Fundamental Scientific Results

- The analysis of Azerbaijan's post-war policy toward Armenia within the framework of ontological security theory has been completed. The study substantiates that the persistence of anti-Armenian narratives is conditioned by the internal logic of Azerbaijani nation-building and identity construction. Another important result is the systematic study of the dynamics of Russian–Turkish competition, revealing its impact on the political-military environment of the South Caucasus.
- A comprehensive, systematized, and institutional model of the governance system of the Islamic Republic of Iran has been presented. For the first time in Armenian Iranian studies, this system is examined not fragmentarily but as an interconnected and multi-layered mechanism of governance. The study analyzes the system's "nine pillars," revealing their powers and the mechanisms of mutual oversight.
- New source-based and theoretical studies have been conducted on the historical and cultural heritage of Artsakh, issues of Azerbaijani statehood and ethnogenesis, as well as Turkey's regional military policy.
- As a result of research on medieval and early modern European and Armenian political systems, two new models of statehood—the hierarchical and the "horizontal" models—have been proposed, and the political-legal concept of "loyalty" has been reconceptualized.

Applied Research Results

- The work "Iran (Country Studies Reference Book)" published by the Institute has important applied significance, providing comprehensive information on the economy and social life of the Islamic Republic of Iran. It contributes to a deeper understanding of Armenian–Iranian relations and serves as a reference source for expert, diplomatic, and educational circles. At the same time, it can also be used in university teaching.

- The popular-scientific work "An Outline of Christian Ethics" presents the fundamental principles of Christian ethics in an accessible manner in the public sphere and contributes to the strengthening of values-based education. The book promotes a conscious understanding of moral norms and fosters the development of a culture of social responsibility.

3 international and 3 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under 3 basic, 2 economic contractual, and 11 thematic grant programs; 16 monographs and edited volumes were published (one abroad), and 3 educational manuals and textbooks; 37 articles were published in peer-reviewed journals (16 indexed in Scopus/WoS), 11 articles in conference proceedings (2 abroad), and 7 theses (4 abroad). One Candidate (PhD) dissertation was defended.

Scientific instruments and equipment worth 2 085 395 AMD were acquired.

Cooperation agreements/memoranda have been concluded with 10 organizations operating outside the system of the National Academy of Sciences, including 4 with higher education institutions and 5 with foreign scientific and academic institutions.

INSTITUTE OF ARCHAEOLOGY AND ETHNOGRAPHY

15 Charents Str., Yerevan, 0025
www.iae.am

Fundamental Scientific Results

- Field research of 39 monuments from different historical periods significantly enriched the source base for the study of the material and spiritual culture of the Armenian Highlands.
- A new, previously unknown fact concerning the urban development activities of the kings of Van was recorded at the archaeological site of Shamiram, where excavations uncovered remains of fortification walls and structures dating to the Urartian period.
- Two new early medieval churches were discovered (in the territory of the Kecharis Monastery and in the citadel of Kapan), and new information about the monastic economy was revealed (Shativank).
- Research on the cultural heritage of the territory of Artsakh continued. The results were published in English. The study addressed 40 state and private museums, their role, and their current condition. An interdisciplinary fundamental study of Tigranakert—one of the most important monuments of the historical and cultural heritage of Artsakh—has been completed, the results of which were published in a collective monograph. A study devoted to the analysis of the Second Artsakh War has also been completed and published in English.
- The results of the anthropological analysis of the century-long process of commemorating the Armenian Genocide were summarized. The monograph "Remembering the Armenian Genocide," published in English and Armenian, represents a valuable contribution to the field of genocide studies.

Shativank Monastery (Vayots Dzor Province), the 18th-century treasure discovered during the excavation of the church

Kecharis Monastery (Kotayk Province), the newly discovered 7th-century tetraconch church

Applied Research Results

- In the reporting year, materials concerning refugees from Artsakh were collected in the National Archives of the Republic of Armenia and through field research. The compilation of five volumes of the "Book of Memory" dedicated to the victims of political repressions in the USSR, as well as the analytical study "The Monument Policy of Soviet Azerbaijan," is in its final stage. The materials and data systematized in these works are intended particularly for the development of decisions, measures, concepts, and programs of public importance.
- An important precedent in monument preservation is the relocation and reconstruction of a newly excavated tomb on the territory of the Kapan Museum of Local Lore.
- Finds discovered at 22 monuments from different historical periods were restored and prepared for research and museification, including 93 complete and 97 fragmentary vessels.

5 international and one national scientific conferences were organized and held; scientific and scientific-technical work was conducted under 2 targeted, one basic, 22 economic contractual, and 25 thematic grant programs (including 3 international thematic programs); 33 monographs and edited volumes were published (5 abroad), and 5 educational manuals and textbooks; 139 articles were published in peer-reviewed journals (67 indexed in Scopus/WoS), 97 articles in conference proceedings (24 abroad), and 95 theses (79 abroad). Three Candidate (PhD) and 2 doctoral dissertations were defended.

Scientific instruments and equipment worth 1 711 300 AMD were acquired.

Cooperation agreements/memoranda were concluded with 5 organizations operating outside the system of the National Academy of Sciences, including 2 with higher education institutions and 3 with foreign scientific and academic organizations.

INSTITUTE OF ARTS

24/IV Marshal Baghramyan Ave.,
Yerevan 0019
www.arts.sci.am

Fundamental Scientific Results

- Within the framework of the program "Comprehensive Study of Armenian Art," research on contemporary art continued. The activities of the National Philharmonic Orchestra of Armenia in the 21st century were studied, its concert activities were presented, and its contribution to the musical life of Armenia as well as to the popularization of Armenian classical and contemporary symphonic and vocal-symphonic music was revealed. The monograph "The World of Ruben Sargsyan: The Composer and His Time" presents a comprehensive study of the composer's work.
- Within the study of Armenian visual arts of the modern and contemporary periods, materials devoted to the works of 19th-century Armenian artists in the first illustrated literary and artistic Armenian periodical "Araks" were examined. The role of "Araks" in the popularization of Armenian visual art in the 19th century was revealed. The monograph "Armenian Fine Arts in the 'Araks' Journal (1887–1898)" was published.

Applied Research Results

- Within the framework of the program "Comprehensive Study of Armenian Art," dedicated to the publication of the spiritual heritage of Armenian classics, the second volume of the second edition of Komitas's Collected Works was published, which includes part of Komitas's choral compositions.
- Textbooks for the subject "Music" for the 4th and 11th grades of general education schools were published.
- Four issues of the popular science illustrated art magazine "Roslin" were published, most of whose articles are authored by specialists of the Institute.
- Broadcasts of the program "Identity" of the Araratian Patriarchal Diocese of the Armenian Apostolic Church on Public Radio are aimed at popularizing the results of art studies; specialists of the Institute participated in these broadcasts.

2 international and 3 national scientific conferences were organized and held; scientific and scientific-technical work was conducted under one basic and one thematic grant program; 14 monographs and edited volumes and 4 educational manuals and textbooks were published; 51 articles were published in peer-reviewed journals (14 indexed in Scopus/WoS), 15 articles in conference proceedings (7 abroad), and 19 theses (5 abroad).

SHIRAK CENTRE FOR ARMENOLOGICAL STUDIES

5a V. Sargsyan Str., Gyumri 3101
www.shirakcenter.sci.am

- Through the investigation of the Jradzor fortress and the adjacent cave complexes, the administrative-cultic landscape of northern Shirak has been reconstructed. A key discovery is the documentation of the Urartian temple at Jradzor, which substantiates the expansion of the Kingdom of Van's influence into the frontier zone. The fortress's triple defensive system (Early Iron Age).
- The socio-political and ethno-demographic dynamics of historical Shirak, Tayk, Kars, and Javakhk (the 1st millennium BC – 20th century) have been reconstructed. The connection between Sumerian mythology and the landscape of the Armenian Highlands has been substantiated, and a new localization of Pactyike has been proposed. Patterns of social movements in Alexandropol district have been identified, as well as the influence of the Turkish factor during the Sovietization period and the changes in the ethno-religious composition of Tayk and the South Caucasus (16th–20th centuries).
- The material and spiritual heritage of Shirak has been systematized. The culture of textiles has been summarized in a monograph, and the evolution of Leninakan's industrial workers' settlements has been examined. Through ethnopsychological analysis, models for overcoming the trauma of the 1988 earthquake have been identified. In folklore studies, a comprehensive collection of Shirak dance-song folklore (928 units) has been compiled. Morphological developments of the contemporary Gyumri dialect have also been documented.
- A typological analysis of Shirak's musical folklore and architecture has been conducted. Transformations of traditional singing arts under the influence of Soviet ideology have been identified. In the field of architecture, using the example of the hexaconch church of the Ani citadel, the construction phases of the Bagratid and Zakarid periods have been distinguished, clarifying the interconnections between the Ani–Shirak and Tayk–Gugark architectural schools.

One international and one national scientific conference were organized and held; scientific and scientific-technical work was conducted underone basic and 3 thematic grant programs; 7 monographs and edited volumes were published; 47 articles were published in peer-reviewed journals (including 8 indexed in Scopus/WoS), 21 articles in conference proceedings (2 abroad), and 74 theses (11 abroad).

Cooperation agreements/memoranda were concluded with 2 organizations operating outside the system of the National Academy of Sciences, including one with a higher education institution and one with a foreign academic organization.

"ARMENIAN ENCYCLOPEDIA" PUBLISHING HOUSE

15 Grigor Lusavorich Str., Yerevan 0015
www.encyclopedia.am

Work continued on expanding the headword list and preparing the articles for Volumes 1, 2, and 3 of the Hayashkhar (Armenian World) Encyclopedia. The "Personal Names" section was supplemented with more than 200 new biographical entries.

NATIONAL BUREAU OF EXPERTISES

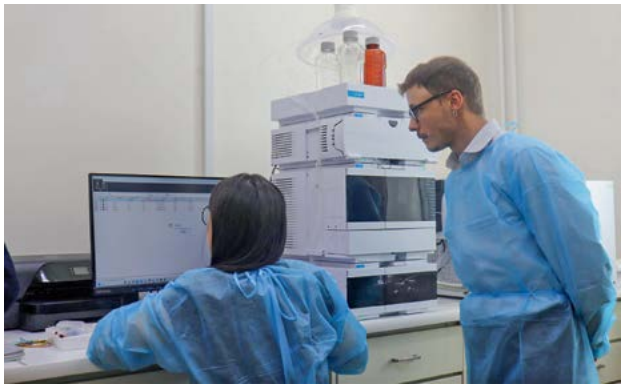
24, Admiral Isakov Ave., Yerevan, 0004
www.nbe.am

Fundamental Scientific Results

- Scientific research, scientific-methodological, scientific-technical, and experimental activities were organized and carried out with the aim of ensuring and improving expert examinations commissioned by the competent authorities.
- In order to ensure methodological uniformity in forensic expert examinations, the existing research methodologies were systematized, new methodologies were developed, tested, and approved for practical application.
- Studies were conducted on the causes and conditions contributing to crime, and measures aimed at crime prevention were developed along with relevant recommendations.
- Modern experimental methods and scientific-technical tools were developed, tested, and introduced in the field of expert examinations commissioned by bodies conducting criminal prosecution and administering justice.

Applied Research Results

- Research methods and methodologies consistent with modern scientific concepts were developed, localized, and implemented using up-to-date equipment and software; expert databases were also established.



- Expert examinations were conducted in 28 types and 114 subtypes, with expert analyses carried out on more than 16 000 objects, yielding scientifically substantiated results.
- Training courses were organized for authorized personnel responsible for obtaining baseline data and for commissioning expert examinations.

Training and certification of forensic experts were carried out across various specialties.

The organization held one international and one national scientific conference. Scientific and scientific-technical work was carried out under one basic program. A total of 7 monographs and edited volumes were published (3 abroad). 42 articles were published in peer-reviewed journals (including 2 indexed in Scopus/WoS), and 7 articles were published in conference proceedings (0 abroad).

INTERNATIONAL SCIENTIFIC-EDUCATIONAL CENTER

24d Marshal Baghramyan Ave.,
Yerevan 0019
www.isec.am

- More than 20 academic departments operate at the Center, offering Master's degree programs in approximately 33 specializations. Each year, around 500 Master's students and more than 390 PhD students and research applicants study and conduct research at the Center.
- Cooperation with partner organizations has been expanded, and new international mobility programs have been introduced.
- In the World University Rankings, ISEC NAS RA ranked 305th among 422 participating universities, with a total score of 5 241 points, placing the Center among institutions with above-average performance.
- The Center received funding from the European Commission under the Erasmus+ Capacity Building in Higher Education (CBHE) action to implement the "EUBridge" project, in which it will, for the first time, serve as the project coordinator.
- The Center has participated in a number of Erasmus+ capacity-building and international credit mobility programs.
- Within the framework of the Erasmus+ International Credit Mobility program, students of ISEC NAS RA have studied at St. Cyril and St. Methodius University of Veliko Tarnovo (Bulgaria), the University of Lille (France), the International Telematic University, the University of Tuscia, the University of Bologna, and the University of Naples Federico II (Italy).

- Lectures at the Center have been delivered by professors from St. Cyril and St. Methodius University of Veliko Tarnovo (Bulgaria), the University of Lille (France), the University of the National Education Commission in Krakow (Poland), the Higher School of Economics National Research University (Russia), and the University of Washington (USA).
- The publication of the scientific journal Kachar and the popular science magazine In the World of Science has continued.
- In line with the development and implementation of learning outcomes–based educational programs, all academic departments have reviewed and improved their respective curricula.

One international and one national scientific conference were organized and held. Scientific and scientific-technical work was carried out under one thematic grant program. One monograph and one educational manual were published. A total of 46 articles were published in peer-reviewed journals (including 8 indexed in Scopus).

Cooperation agreements and memoranda were concluded with 12 organizations operating outside the system of the National Academy of Sciences, including 9 higher education institutions and 3 foreign scientific or scientific-educational organizations.

FUNDAMENTAL SCIENTIFIC LIBRARY

24/6 Marshal Baghramyan Ave.,
Yerevan 0019
www.flib.sci.am

In 2025, a total of 5 090 library items were acquired, including 4 066 books, 958 periodicals, 57 other materials, and 8 newspaper sets. By language, the acquisitions included 3 400 items in Armenian and 1 690 items in foreign languages. Through Armenian and international book-exchange programs, 339 library items were received, while 1 219 items were transferred to the book-exchange fund.

A total of 530 366 pages were scanned, processed, and digitized, enriching the Pan-Armenian Digital Library. At present, the digital library contains 309 025 digital items, including 196 352 articles, 7 570 periodicals, 6 743 books, 32 videos, and 15 maps.

The library served 7 298 readers through both traditional and electronic services. The service department's computers were used by 2 338 visitors; 2 129 electronic requests and 3 573 paper requests were processed, and 18 996 library items were provided to users.

A total of 620 scientific articles from NAS RA journals and 6 books were assigned Digital Object Identifiers (DOIs).

As of January 1, 2026, the library collection comprised 3 089 498 library items, including 1 693 080 books, 1 370 666 periodicals, and 25 752 other materials.

"GEGHARD" SCIENTIFIC-ANALYTICAL FOUNDATION

24 M. Baghramyan Ave., Yerevan 0019
www.geghard-saf.am

- The "Geghard" Foundation monitored and responded to scholarly publications and events containing anti-Armenian narratives.
- Letters of protest were sent to several international academic journals for publishing articles with anti-scientific and anti-Armenian content, including *Akademik Tarih ve Düşünce Dergisi, Вопросы истории, The Caucasus and the World, Universidad y Sociedad, Современная научная мысль*, as well as to Tomsk State University and the Pontifical Gregorian University (Vatican) regarding the organization of the conference titled *"Christianity in Azerbaijan: History and Modernity."*
- The Foundation also organized a petition of protest against the anti-Armenian and anti-scientific activities of Russian archimandrite A. Nikonorov. In response to the Foundation's activities, A. Bakikhanov Institute of History of the Azerbaijan National Academy of Sciences sent a protest letter, to which a formal response letter was provided.
- Based on continuous monitoring of various Azerbaijani information sources, the Foundation issued six scientifically substantiated statements.

Two conferences and two workshops were organized and held, 6 books and 11 articles were published.

EXPERT COMMISSION ON THE PROTECTION OF LAKE SEVAN

24 M. Baghramyan Ave., Yerevan 0019

- The Commission provided expert opinions on 39 programs, projects, and proposals submitted for evaluation, of which 24 received negative and 15 positive assessments.
- Recommendations were submitted regarding the cleaning of territories subject to inundation by Lake Sevan, the construction of planned new reservoirs, the study of the causes of the lake's negative water balance, and the determination of annual maximum allowable catches of fish and crayfish in the lake.
- Issues related to water releases from Lake Sevan, reduction of water losses, compliance with irrigation water demand norms for agricultural crops, and wastewater treatment in settlements within the lake's catchment basin were discussed, and relevant recommendations were provided.
- The Commission conducted a field mission to the Gegharkunik Region, including visits to the small wastewater treatment facility of the Noratus kindergarten, the Lichk fish farm, the Geghamavan observation point for monitoring water releases from Lake Sevan, the Sevan Hydropower Plant, and the basalt quarries of the Lchashen community, in order to assess on-site the potential environmental impact of geological studies.

- The issue of establishing annual maximum allowable catch quotas for fish and crayfish in Lake Sevan was reviewed and approved.
- An expanded session of the Commission was organized, devoted to issues of water releases from Lake Sevan, water losses, and water resources management. The meeting was attended by specialists from the RA Ministry of Economy, the RA Ministry of Territorial Administration and Infrastructure, and the RA Ministry of Environment. As a result of the discussions, it was decided to establish a working group to assess the main causes of water losses in irrigation water drawn from Lake Sevan and to propose possible solutions. Recommendations were also submitted to the Higher Education and Science Committee on strengthening cooperation within scientific programs addressing the preservation of the lake's ecosystem.
- The Commission continues active cooperation with the RA Ministry of Environment and its subordinate structures, including the "Hydrometeorology and Monitoring Center" SNCO, as well as with the RA Water Committee of the Ministry of Territorial Administration and Infrastructure and the Gegharkunik Regional Administration. The Commission also maintains close cooperation with international organizations. Regular discussions have been held with the EU4Sevan project team regarding ongoing and planned activities within the framework of the program, including the periodic updating of information.

CONFERENCES

59 international and 31 national scientific conferences were organized and held.

On the occasion of the 60th anniversary of Markarian survey (First Byurakan Survey, FBS, included in UNESCO Documentary Heritage "Memory of the World" International Register) and the 20th anniversary of the Armenian Virtual Observatory, the international conference "Astronomical Surveys and Big Data-3" (ASBD-3), brought together around seventy scientists from 15 countries. The conference

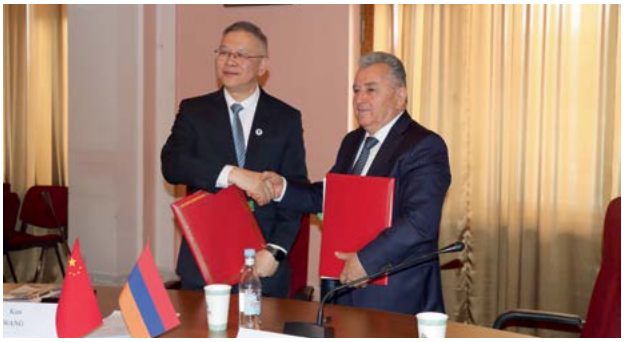
was organized by the V. Ambartsumian Byurakan Astrophysical Observatory, the Armenian Astronomical Society, the Armenian Virtual Observatory, and the International Astronomical Union's Regional Office of Astronomy for Development for Southwest and Central Asia.

The international conference "New Emerging Trends in Chemistry-2025" (NewTrendsChem-2025) brought together several dozen prominent chemists and young scientists from different countries. Participants delivered presentations on organic synthesis, catalysis, medicinal, supramolecular, and heterocyclic chemistry, materials science, as well as modern digital technologies applied in chemistry, biology, and medicine.

The international museum conference "Solutions through Cooperation" (Belt and Road) brought together representatives of scientific, cultural, and diplomatic institutions from the USA, Italy, Iran, Armenia, China, Serbia, and Georgia. Approximately twenty presentations were delivered, addressing innovative approaches in the museum sector, the opportunities and challenges created by artificial intelligence, the role of museums in the development of geotourism, issues related to the museumification of historical and cultural heritage sites, Armenia–China relations, ongoing archaeological studies of the Silk Road, and prospects for cooperation.

INTERNATIONAL COOPERATION

The research institutions of the National Academy of Sciences of the Republic of Armenia continued to develop international cooperation by concluding 40 new agreements and expanding partnerships with organizations from 16 countries. In particular, memorandums of understanding and cooperation agreements were signed with the Earthquake Administration of the People's Republic of China and Ghent University (Belgium).



Delegations of NAS RA participated in a number of prestigious international scientific events, including the 3rd General Assembly of the International Science Council (ISC) (Muscat, Oman), the 2nd Summit of the Scientific Councils of the International Association of Academies of Sciences (IAAS) (Jinan, PRC), as well as the 4th General Assembly of ANSO (Beijing, PRC), along with a number of other international conferences.

Two young scientists from NAS RA participated in the Lindau Nobel Laureate Meetings, contributing to the strengthening of ties with the global scientific community.

In recognition of contributions to science and international cooperation, the honorary doctorate of NAS RA was awarded to Prof. A. Geronikaki (Faculty of Pharmacy, Aristotle University of Thessaloniki) and Prof. L. Li (Director of the Institute of Geophysics, PRC; Secretary General of the Asian Seismological Commission).

Foreign members of NAS RA were actively involved in scientific and educational activities. In collaboration with NAS RA institutions, they published more than 20 articles in high-impact international journals, trained 29 young researchers, and supervised one doctoral and 4 candidate (PhD) dissertations.

Within the framework of cooperation with the European Commission, information events dedicated to the EU "Horizon Europe" program were organized, aimed at promoting the participation of Armenia and increasing awareness of the program.

YOUNG SCIENTISTS SUPPORT PROGRAM

Within the framework of the "Program for the Support of Young Scientists," five competitions were held, as a result of which 133 young scientists were recognized as beneficiaries.

- **"Training of Young Scientists Abroad" competition** was aimed to support the enhancement of the professional qualifications of young scientists. A total of 58 applications were submitted, of which 15 were approved for funding.
- **"Short-Term Visits of Foreign Scientists to Research Organizations in the Republic of Armenia" competition supports the invitation of scholars** from leading international universities to conduct methodological training courses and workshops. These activities may also be included into the programs of seasonal schools and large-scale scientific events organized in the Republic of Armenia. A total of 17 applications were submitted to the competition, of which 8 received funding.
- **"Acquisition of Supporting Resources for Research Activities" competition** provided financial support to ensure access to modern sources and tools for the collection and analysis of research data, as well as to facilitate the publication of research results in international journals and their presentation at scientific conferences. A total of 38 applications were submitted, of which 13 were funded.
- **"Encouragement of Scientific Article Publications" competition** provided monetary awards to young scientists for articles published in reputable international scientific journals with a high impact factor. A total of 121 applications were submitted, and 91 researchers received monetary awards.
- **"Science Popularization Competition"** was aimed to fund projects dedicated to highlighting the activities of the scientific community in the Republic of Armenia. These projects contribute to strengthening public trust in science and to shaping a comprehensive understanding of the role of scientists in society. A total of 35 applications were submitted, of which 6 were funded.

SCIENCE POPULARIZATION

The National Academy of Sciences of the Republic of Armenia (NAS RA) launched a series of outreach visits entitled “Science in the Regions,” aimed at presenting contemporary scientific achievements to young people and school students in various communities across Armenia, familiarizing them with new technologies, and fostering their engagement in the scientific environment.

The “Summer Science School” program was implemented for high school students. Within the framework of the program, more than 200 students

visited 8 scientific organizations of NAS RA and became acquainted with their activities.

The “Armenian National School Science Festival 2025” was held, with the participation of more than 250 school students. The event aimed to stimulate students’ interest in scientific research and to develop their skills in teamwork, the implementation of innovative projects, and the presentation of results.:

A popular science seminar entitled “From Earth to Mars: The Contribution of Scientists” was organized, attended by dozens of senior school students and university students. The seminar presented recent developments in space science and trends in the development of space research in Armenia.

The conference entitled “Armenian Language and Armenian Literature: Development Trends, Opportunities for Popularization, and Their Reflection in the Educational Process” was held.

The 8th conference entitled “Natural Sciences, Mathematics, Engineering, and Informatics in the 21st Century: Issues and Solutions in Popularization and Education” was held (online).

A seminar entitled “The Role of the Student Scientific and Technical Society in Fostering Students’ Interest in Science” was held.

More than 20 popular science articles under the title “Science for Society” were published in local and international electronic and print media.

With the support of the RA Ministry of Education, Science, Culture and Sport, NAS RA, and the Yerevan Municipality, the "Gituzh" initiative organized the "Science Week" festival from September 30 to October 5. The aim of the festival was to popularize science, foster interest in science among school students and young people, and present the role and significance of technologies in the development of individuals, the state, and society in an accessible way.

The "Science Week" festival consisted of three thematic parts. It opened in Freedom Square under the slogan "Develop through Science," featuring scientific experiments, practical applications of innovation, and project exhibitions presented by researchers from scientific institutes. This was followed by career guidance activities involving universities, laboratories, and educational and innovation organizations. Finally, an event entitled "Science Fiction and Art" was held, encompassing literature, cinema, comics, games, and futuristic projects.

In parallel, decentralized events were held in schools and kindergartens across the regions and in Yerevan, including meetings with young scientists, scientific experiments, lectures, and masterclasses.

NAS RA AWARD

The Award of the National Academy of Sciences of the Republic of Armenia was established in 2023 and is awarded every two years. In 2025, the award was funded by the companies “MARTIN STAR” and “LIQVOR”.

On October 15, 2025, the Council coordinating the award of the NAS RA announced the laureates.

In the field of fundamental research in physical, mathematical, and technical sciences, T. Maghakyan and T. Movsisyan were awarded for the work “Manifestations of Eruptive Activity in the Early Stages of Stellar Evolution”.

In the field of applied developments in physical, mathematical, and technical sciences, G. Ayvazyan was awarded for the work “Formation, Investigation, and Application of Black Silicon in Microelectronic Devices”.

In the field of fundamental research in chemistry, life, and Earth sciences, A. Petrosyan, V. Ghazaryan, G. Tonoyan, G. Giester, and M. Szafranski were awarded for the work “New Salts of Amino Acids, the Discovery of a New Class of Salts, and Their Possible Applications”.

In the field of applied developments in chemistry, life, and Earth sciences, S. Kharatyan was awarded for the work “Design, Development, and Operation of a New Generation of Thermal Analysis Equipment (High-Speed Temperature Scanner)”.

In the field of social sciences and humanities, A. Kosyan and E. Grekyan were awarded for the work “The Environmental History of the Armenian Highland: Environment, Climate Change, and Civilizational Processes”.

Since 2025, an award has also been established in the “Medical Sciences” category. In this field, A. Asatryan, H. Barseghyan, A. Voskanyan, H. Harutyunyan, and A. Hakheyan were awarded for the work “Introduction and Development of Living Donor Liver Transplantation in Armenia: From the First Steps to a Sustainable Professional Program”.

VIKTOR AMBARTSUMIAN INTERNATIONAL SCIENCE STATE PRIZE

On November 10, 2025, on the occasion of the World Science Day for Peace and Development, a certificate award ceremony was held for the beneficiaries of the competitions announced within the financial framework of the Viktor Ambartsumian International Science State Prize.

Within the framework of the "Scientific Research Support Competition," four projects were recognized as beneficiaries:

1. "Multi-faceted Study of Faint Red Giants and Asymptotic Giant Branch Stars at High Galactic Latitudes Based on Gaia DR3 Data: New Approaches" (Project Leader: PhD in Physics and Mathematics K. Gigoyan, V. Ambartsumian Byurakan Astrophysical Observatory, NAS RA),

2. "Search for Potential Biomarkers in Parsamian Cometary Nebulae, as well as in Carbon-Containing Asteroids" (Project Leader: Doctor of Physics and Mathematics A. Yeghikyan, V. Ambartsumian Byurakan Astrophysical Observatory, NAS RA),

3. "Katsura–Nagaosa–Balatsky Magnetoelectricity in Low-Dimensional Quantum Spin Models" (Project Leader: PhD in Physics and Mathematics V. Ohanyan, Institute of Physics, Yerevan State University),

4. "Maximal Inequalities and Applications" (Project Leader: Doctor of Physics and Mathematics, Professor G. Karagulyan, Institute of Mathematics, NAS RA).

Within the framework of the Prize, 15 researchers were recognized as beneficiaries of the "Competition for Financing Researcher Mobility (Training) Abroad."

As a result of the scholarship competition for students enrolled in master's degree programs at state universities, 10 students from the Institute of Physics of Yerevan State University were awarded scholarship certificates.

Within the framework of the competition for organizing scientific conferences in the Republic of Armenia, the organization of 3 international scientific conferences and one summer school was funded.

NAS RA SPECIALIZED PROBLEM COUNCILS

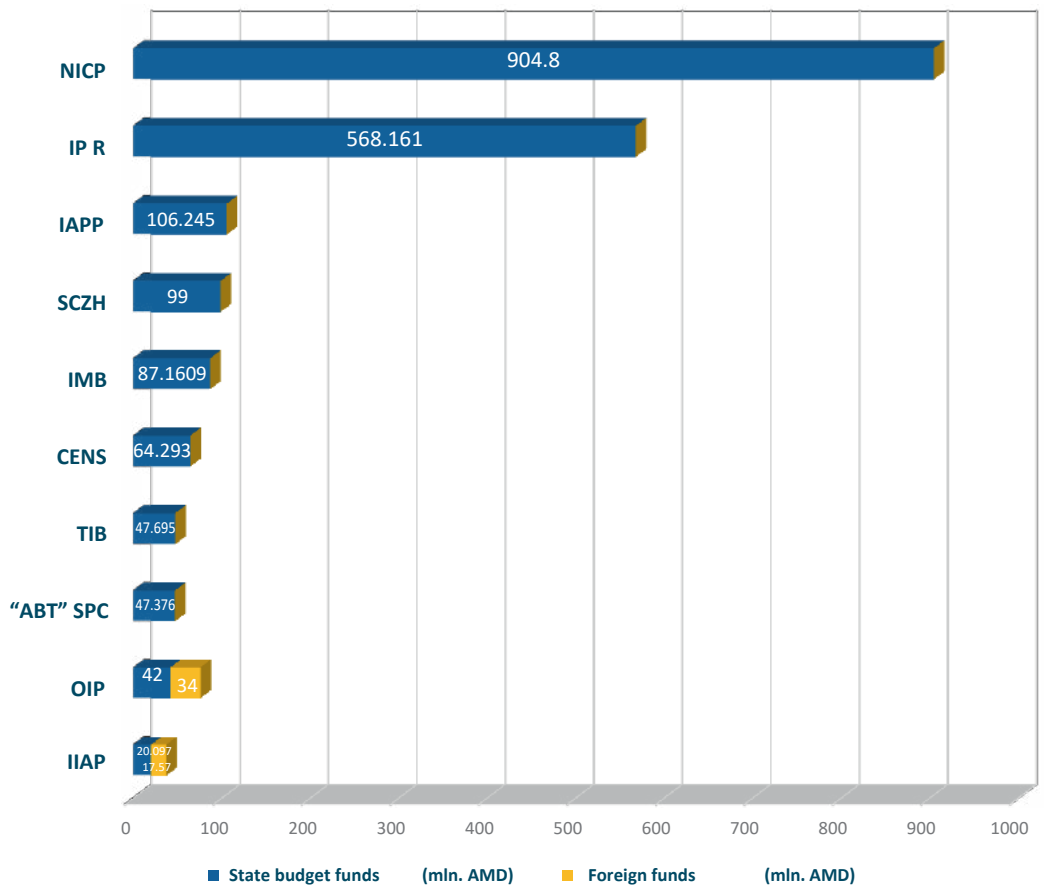
The Specialized Problem Council on “Issues of Special Significance” of the Division of Physics and Astrophysics held a joint session with “Geocosmos” company of the Ministry of High-Tech Industry and “Bazumq” Space Research Laboratory. During the session, a report entitled “The Armenian Satellite: Past, Present, and Future” was presented. The opportunities for collaboration among various agencies and organizations in the fields of radiophysics, communications, and space systems were discussed. It was decided to organize joint visits to scientific institutes.

The Specialized Problem Council on “Biodiversity and Biosafety” of the Division of Natural Sciences discussed issues related to the preservation of species in the context of the intensification of construction and mining activities. The Council decided to bring the issue forward for further discussion.

The Specialized Problem Council on “Terminological Issues” of the Division of Armenology and Social Sciences discussed the draft documents entitled “Rules of Practical Transliteration of the Armenian Language,” “Principles for the Armenianization of Technical Terms and the Usage of Certain Terms,” and “On Armenian Equivalents of Five Frequently Used Terms in the Public Sphere.” As a result of the discussion, the Council decided to submit the drafts to the RA Ministry of Education, Science, Culture and Sports, with the aim of recommendation to endorse the use of the aforementioned terms in written and spoken language.

MODERNIZATION OF SCIENTIFIC INFRASTRUCTURE

In 2025, scientific organizations of the NAS RA system acquired scientific devices/equipment at the cost of 2.164.73 mln. AMD, with 51.6 mln. AMD sourced from foreign grants and program funds.



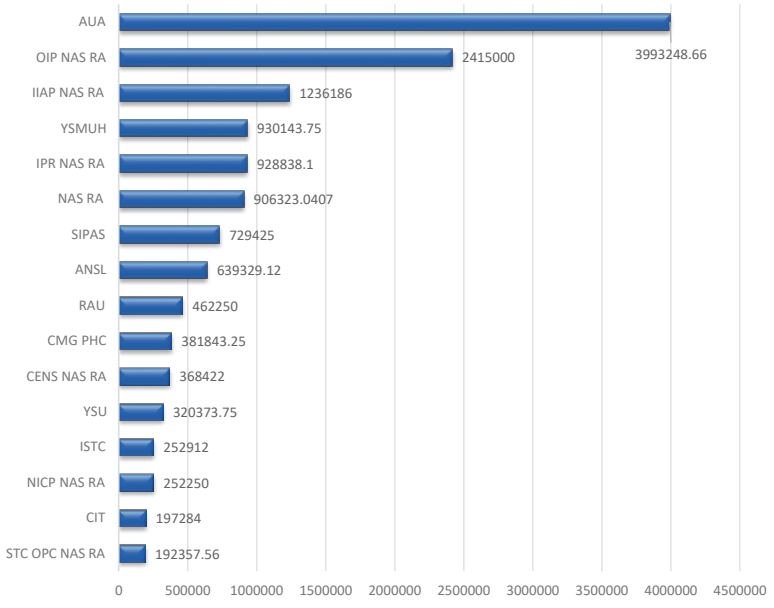
IIAP	Institute for Informatics and Automation Problems
OIP	Institute of Physiology after L.A. Orbeli
"ABT"SPC	"Armbiotechnology" Scientific and Production Center
TIB	Institute of Botany after A.L. Takhtajyan
CENS	Center for Ecological Noosphere Studies
IMB	Institute of Molecular Biology
SCZH	Scientific Center of Zoology and Hydroecology
IAPP	Institute of Applied Problems of Physics
IPR	Institute for Physical Research
NICP	Institute of Chemical Physics after A.B. Nalbandyan

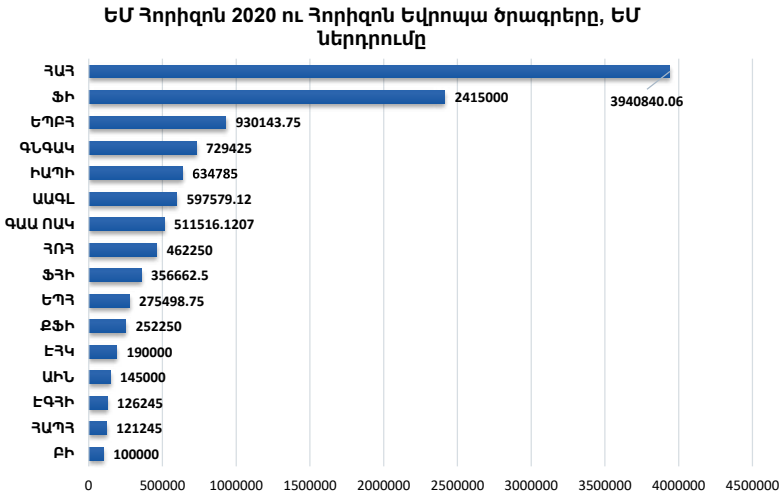
Total financial volumes of scientific devices/equipment acquired by NAS RA organizations in 2025 by funding sources (top ten).

SCIENTIFIC PROGRAMS

In 2025, scientific and scientific-technical work was conducted under 6 target, 39 basic, 297 economic contractual and 437 thematic grant programs.

As an example of international grant programs, the EU investment in the programs of Armenian organizations within all European framework programs, in particular, within the framework of the Horizon 2020 and Horizon Europe programs, is presented. The share of EU investment in the organizations of the Academy in all framework programs is 6,299.377 thousand EUR, about 44.34% of the total (14,206.19 thousand EUR), for the last two programs it is 4,460.21 thousand EUR, 37.83% of the total (11,788.44 EUR)[1].





AUA	American University Of Armenia Foundation
OIP NAS RA	L.A. Orbeli Institute Of Physiology of the NAS RA
IIAP NAS RA	Institute for Informatics And Automation Problems of the NAS RA
YSMU	Yerevan State Medical University After Mkhitar Heratsi
IPR NAS RA	Institute for Physical Research of NAS RA
NAS RA	National Academy of Sciences of The Republic Of Armenia
SIPAC	Scientific And Innovation Partnership Assistance Center
ANSL	A.I. Alikhanyan National Science Laboratory / Yerevan Physics Institute
RAU	Russian-Armenian (Slavonic) University
CMG PHC	Center Of Medical Genetics and Primary Health Care
CENS NAS RA	Center for Ecological-Noosphere Studies of NAS RA
YSU	Yerevan State University Foundation
ISTC	Information Society Technologies Center
NICP NAS RA	A.B. Nalbandyan Institute of Chemical Physics of NAS RA
CIT	Center of Ideas and Technologies
STC OPC NAS RA	Scientific Technological Centre of Organic and Pharmaceutical Chemistry of NAS RA

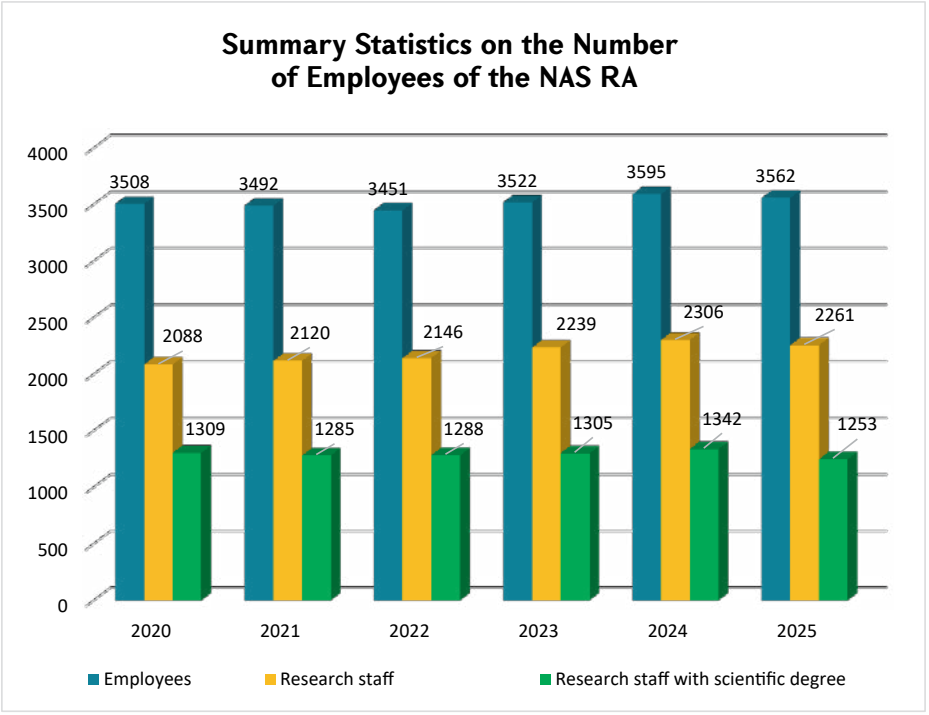
1 The data is provided by the European Commission's "EU Funding & Tenders Portal - EU dashboard" website and was downloaded on March 30, 2025. See https://dashboard.tech.ec.europa.eu/qs_digit_dashboard_mt/public/sense/app/1213b8cd-3ebe-4730-b0f5-fa4e326df2e2/sheet/d1435e56-cdee-4f5f-8b0d-f49d41ffbd6c/state/analysis.

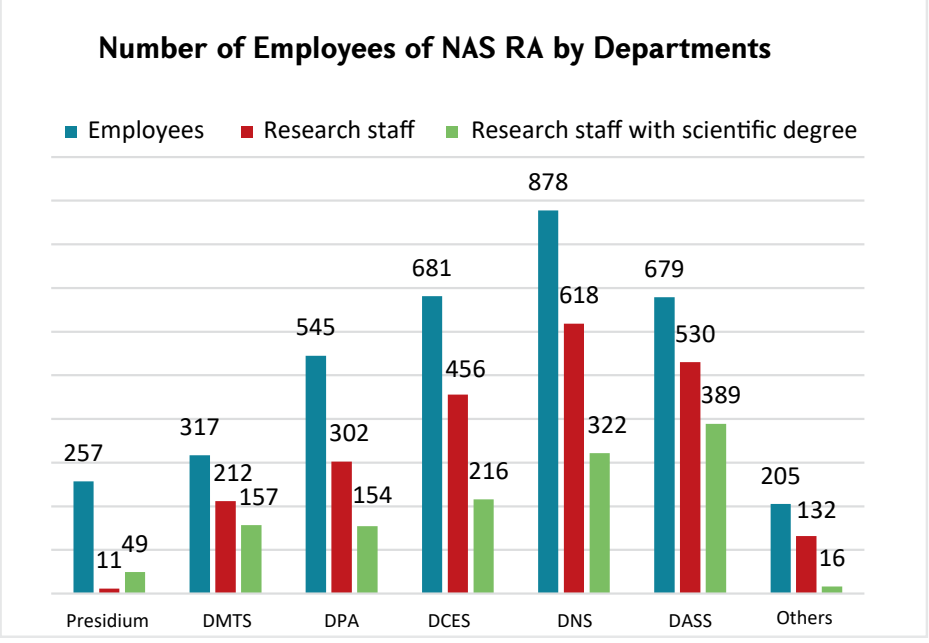
STAFF, PUBLICATIONS, PATENTS, FINANCES

Scientific Staff

The total number of NAS RA system employees is 3,562, including 2,261 researchers. NAS RA comprises 26 academicians and 41 corresponding members, with 12 academicians and 14 corresponding members working outside of NAS RA system.

In 2025, the NAS RA system welcomed 152 new specialists, 40 of whom are graduates of the current year. 18 staff members have successfully defended their candidate theses, and 2 have completed a doctoral thesis.



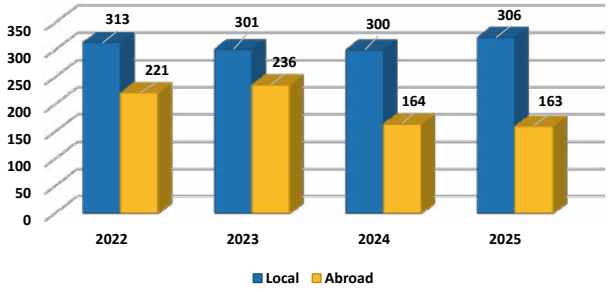


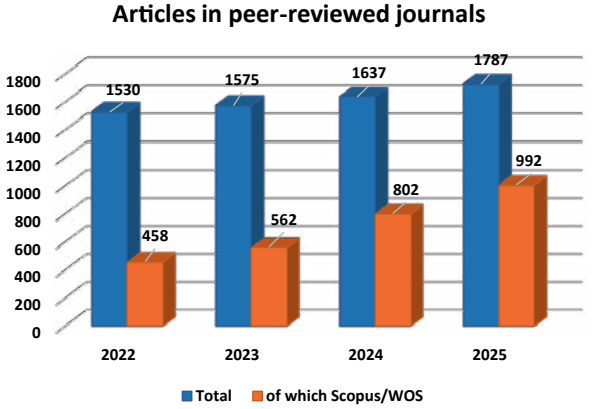
Presidium

DMTS	**Division of Mathematical and Technical Sciences**
DPA	**Division of Physics and Astrophysics**
DCES	**Division of Chemistry and Earth Sciences**
DNS	**Division of Natural Sciences**
DASS	**Division of Armenology and Social Sciences**

NAS Divisions	Number of PhD students					
	as of 01.01.24		as of 01.01.25		as of 01.01.26	
	full-time	part-time	full-time	part-time	full-time	part-time
Division of Mathematical and Technical Sciences	9	0	9	4	8	3
Division of Physics and Astrophysics	9	0	9	0	7	0
Division of Natural Sciences	12	3	16	5	18	4
Division of Chemistry and Earth Sciences	7	1	8	0	14	0
Division of Armenology and Social Sciences	19	4	21	3	15	7
Total	56	8	63	12	62	14

Publications





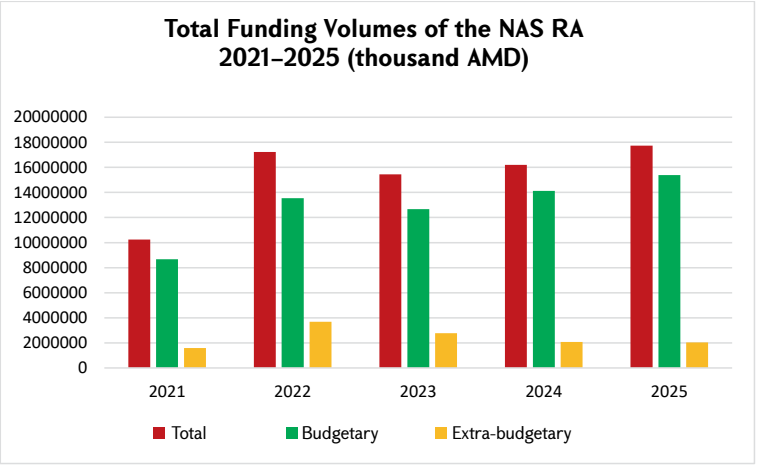
Monographs, collections of articles, chapter(s) in books						
Date	2020	2021	2022	2023	2024	2025
Local	129	140	133	144	138	133
Abroad	11	20	19	27	23	23

Patents

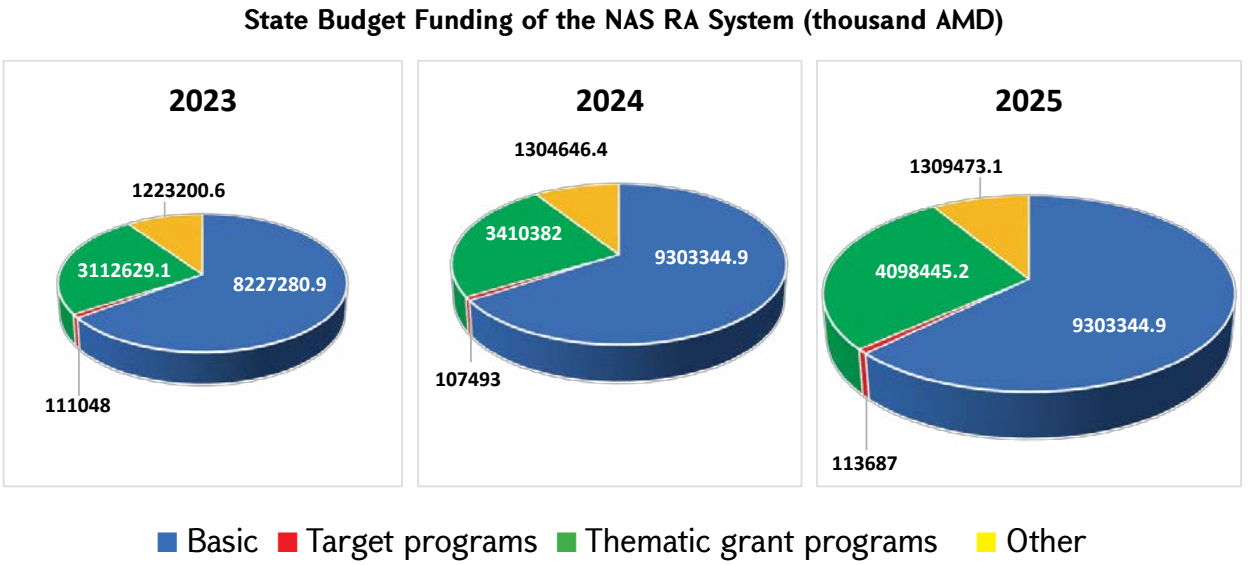
Indices of NAS RA scientific organizations, obtained 5 or more patents in 2021-2025			
Center/Institute	**Number of patent applications**	**Number of positive decisions**	**Obtained**
Institute of Mathematics	33	25	19
Scientific Technological Center of Organic and Pharmaceutical Chemistry	7	10	10
Institute of Applied Problems of Physics	8	8	8
M. Manvelyan Institute of General and Inorganic Chemistry	10	7	8
H. Buniatyan Institute of Biochemistry	6	6	6
Scientific and Production Center "Armbiotechnology"	8	5	5

Funding

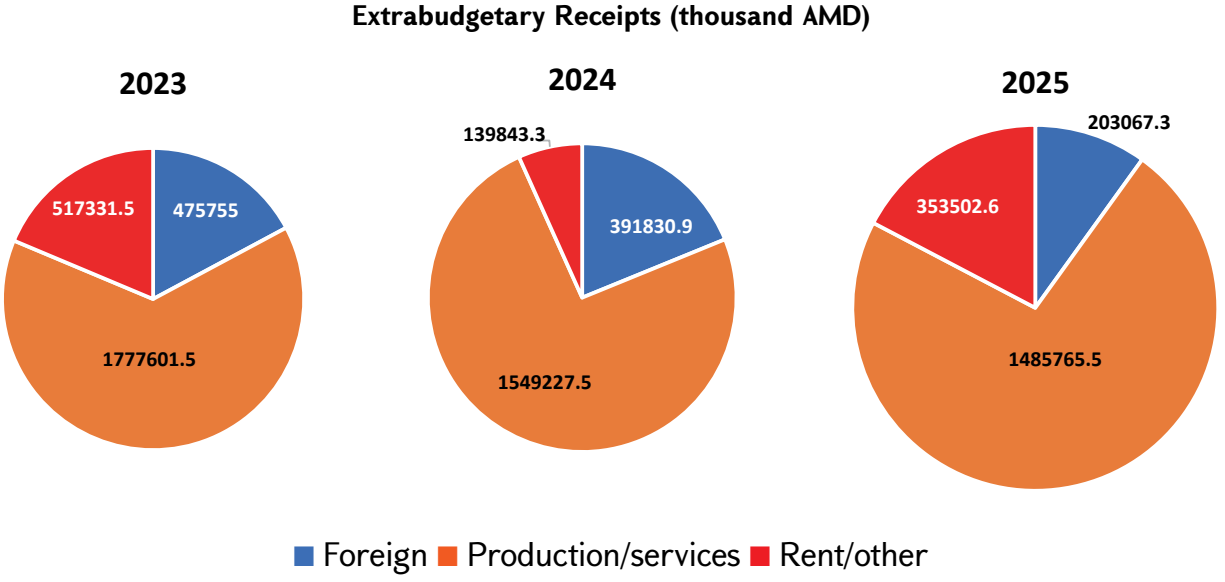
Total funding of the Academy (thousand AMD)



Budgetary



Extra-budgetary



SCIENTIFIC/ POPULAR SCIENTIFIC JOURNALS

NAS RA publishes 17 journals covering all areas of science and technology: 15 scientific journals, the journal "Science in the World", intended for broad strata of society, and the newspaper "Science".

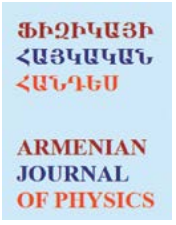
NAS RA Reports
Editor-in-Chief: NAS RA Academician
A. Saghyan

Proceedings of NAS RA. Physics
Editor-in-Chief: DSc(phys.-math.)
K.Ghambaryan

Astrophysics
Editor-in-Chief: DSc(phys.-math.)
G. Ter-Ghazaryan

Proceedings of NAS RA. Mathematics
Editor-in-Chief: NAS RA Corr. Member
A. Sahakyan

Armenian Journal of Mathematics
Editor-in-Chief: NAS RA Academician
H. Nersisyan



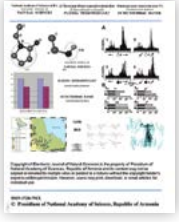
Armenian Journal of Physics
Editor-in-Chief: DSc(phys.-math.)
K.Ghambaryan

Proceedings of NAS RA. Mechanics
Editor-in-Chief: DSc (phys.-math.)
V.Hakobyan

Proceedings of NAS RA and NPUA
(Series of Technical Sciences) Editor-in-Chief: NAS RA Corr. Member
V.Melikyan

Neurochemistry
Editor-in-Chief: DSc(biol.)
N. Gulyaeva

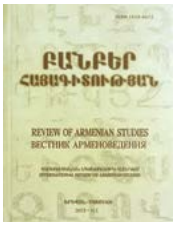
Medical Science of Armenia
Editor-in-Chief: NAS RA Corr. Member
A.Shoukourian



Electronic Journal of Natural Sciences
Editor-in-Chief: DSc(biol.)
A.Poghosyan

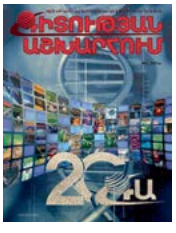
Historical-Philological Journal
Editor-in-Chief: DSc(phil.)
A.Zakaryan

Bulletin of Social Sciences
Editor-in-Chief: DSc (hist.)
A. Bobokhyan



Journal of Armenian Studies
Editor-in-Chief: NAS RA Corr. Member
A.Kharatyan

Electronic Journal "Fundamental Armenology"
(in English)
Editor-in-Chief: DSc (hist.)
A.Kosyan



In the World of Science
Editor-in-Chief: NAS RA Corr. Member
A. Kirakosyan

Newspaper "Gitutyun"
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Editor-in-Chief: Cand.(hist.)
V. Hovakimyan

The booklet is prepared by the Scientific Organizational Department of NAS RA based on materials submitted by the Scientific Divisions and Scientific Organizations of NAS RA, and institutions under the Presidium of NAS RA.

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