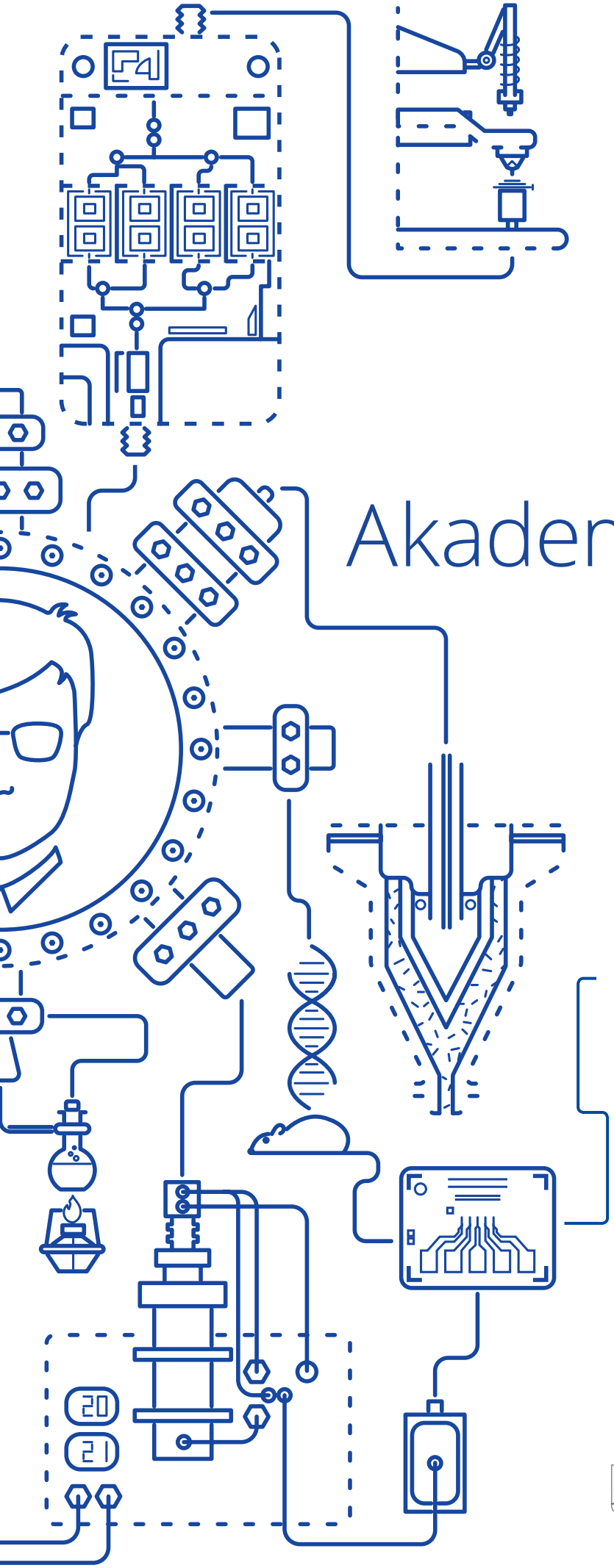


Akademgorodok 2.0

Development Program for the Novosibirsk Scientific Center

www.akademgorodok2.ru

Government of the Novosibirsk Region

Siberian Branch of the Russian Academy of Sciences

"The Siberian Branch of the Academy of Sciences is not only the largest regional branch, but also such a complex division of the Russian Academy of Sciences that brings a significant contribution to various directions of research, economy and fields of knowledge, which is put into practice promptly"

Vladimir Putin, President of the Russian Federation, February 2018

"...to the Government of the Russian Federation: together with the Russian Academy of Sciences and Government of Novosibirsk Region to prepare and present a plan of development of Novosibirsk Akademgorodok as the territory with high concentration of R&D"

From Instructions of President of the Russian Federation to the Russian Government, April 18, 2018

"These plants (*of mega-science class. – Editor's note*) will become a great contribution into the solution of problems of spatial development of Russia, into the appearance of territories with high concentration of R&D.
One of the leader's positions must be given here to Novosibirsk Akademgorodok; it is already in this position, but we will support it in every possible way...
...I would underline that one of the key directions of the development of Akademgorodok should be the establishment of new, high-tech, competitive manufactures, including the export-oriented ones. And in this work our business community must take the most active part."

Vladimir PUTIN,
President of the Russian Federation,
August 2018

Andrey TRAVNIKOV
www.nso.ru

Valentin PARMON
www. sbras.ru

Dear colleagues!

The 21st century has brought new challenges for our country and the humankind in general. The responses to the challenges are reflected in the new Strategy of the Research and Technology Advancement of the Russian Federation and specified in the Decree of the President of Russia of May 7, 2018, "On the National Goals and Strategic Missions of the Development of the Russian Federation for the period to the Year 2024". The tasks set before the country and its regions include the entrance of Russia into the top five scientific nations of the planet and global economies on the whole, increase in the life expectancy and quality of our citizens, creation of the artificial intelligence and digital technologies, manufacture of new materials and energy sources, preservation of the cultural and natural heritage, improvement of the environmental situation in the cities, etc.

Nothing but the focused and coordinated interaction of science, education, industry, and authorities can guarantee a solution to the main problem determined by the Strategy of the Research and Technology Advancement of RF as "The sphere of science, technologies, and innovations must function as a single system integrated with the socio-economic system of the country ensuring independence and competitiveness of Russia".

Within a short time we need to create attractive working conditions in our country for the leading Russian and foreign scientists and promising young researchers, to establish the world-level research centers, cutting-edge infrastructure of academic studies and developments, innovation activities, as well as to develop a network of the unique facilities of the mega-science class.

In compliance with the instructions of the President of Russia Vladimir Putin of April 18, 2018, the Siberian Branch of the Russian Academy of Sciences and the Administration of Novosibirsk Region in close collaboration with the Russian Government have developed the Plan of development of Novosibirsk Science Center ("Akademgorodok 2.0") focused on fulfilling these tasks.

Novosibirsk Region already boasts an entirely developed powerful center of science, education and innovations. Its nucleus is Akademgorodok built 60 years ago and still setting the pattern for similar centers all over the world. The research projects of the institutes of NSC, university and technology park which are among the best in Russia, the comfortable social infrastructure constitute an integral complex organism with the purpose of generation of new knowledge, new materials and technologies, training of the world-class experts.

The potential of the Novosibirsk Science Center of SB RAS, science-based and high-tech implementation companies, innovative infrastructure, educational facilities engaged into the system of non-stop training of specialists from schools to postgraduate studies, is extremely high. The merging of the branches of three academies of sciences, RAS, Academy of Medical Sciences, and Academy of Agricultural Sciences, resulted in the appearance of new ambitious interdisciplinary projects, realization of which involves the research facilities and specialists in many fields of knowledge.

Our task today is to scale up this potential dramatically, to fuel a new round of development of the basic science in Siberia, to ensure its leadership. We must build the scientific infrastructure and facilities of such class which would allow the Siberian science to continue holding the quality of fundamental research at the world level.

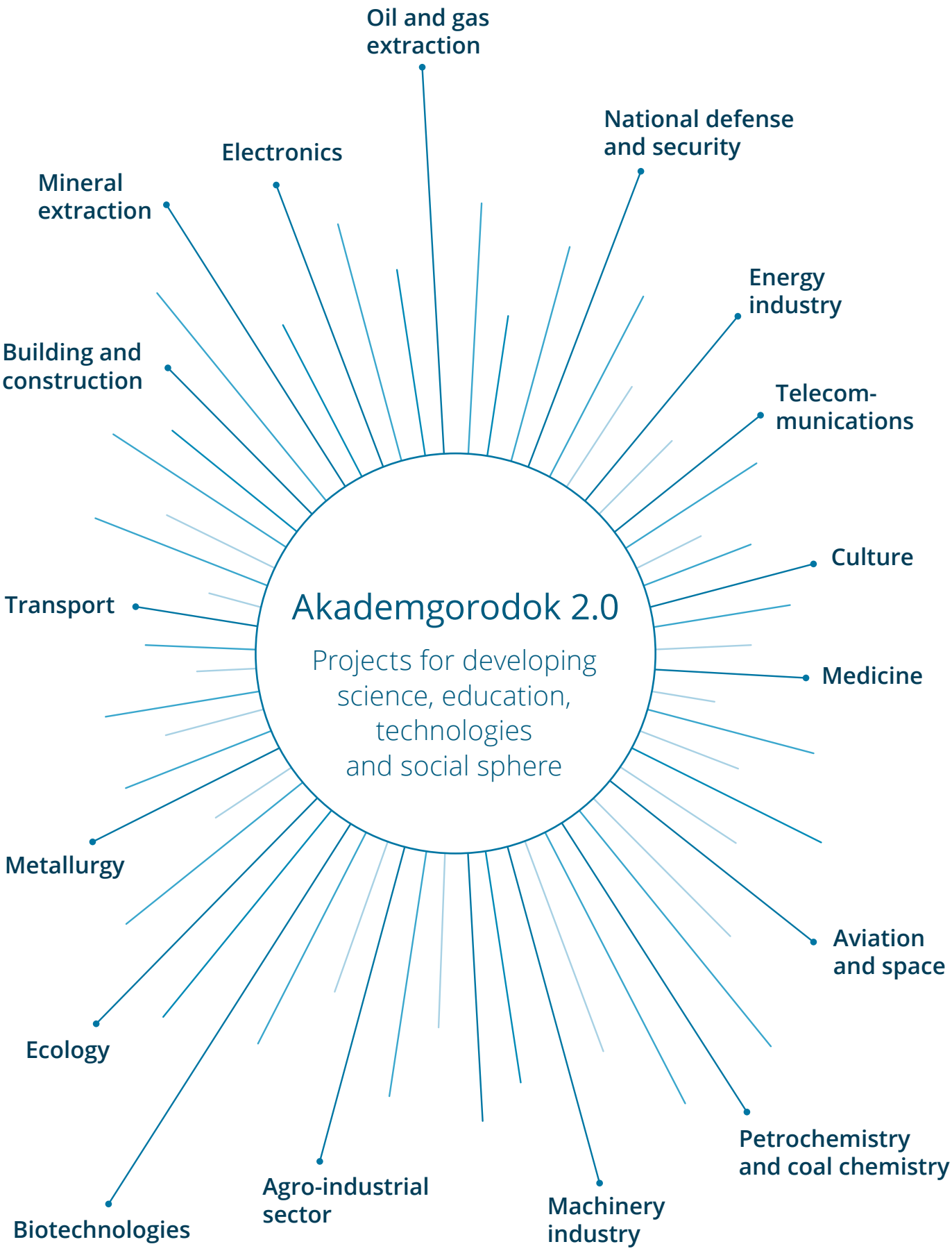
"Akademgorodok 2.0" is a model and a pilot prototype of a single system of science, technologies, and innovations. It is an interdisciplinary and intergovernmental project, already opened for the international and national partners. We are looking to cooperate with public authorities, ministries and agencies, corporations and trade associations, interested in joint establishing of the domestic technologies and products of tomorrow.

Welcome to "Akademgorodok 2.0"!

Sincerely,

Vice-President of RAS,
Chair to Siberian Branch of RAS,
Academician Valentin PARMON

Governor of Novosibirsk Region
Andrey TRAVNIKOV


Oil and gas extraction
National defense and security
Electronics
Mineral extraction
Energy industry
Building and construction
Telecom-munications
Culture
Transport
Akademgorodok 2.0
Projects for developing science, education, technologies and social sphere
Medicine
Metallurgy
Aviation and space
Ecology
Petrochemistry and coal chemistry
Agro-industrial sector
Machinery industry
Biotechnologies

The project is unprecedented for Russia. Possible outside rivals are SIRIUS in Brazil (SIRIUS) and SRF-EBS in France, both yet to be completed

Shared Research Facility “Siberian Circular Photon Source”

A versatile mega-science facility for science and technologies of the future

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Highlights

- the most advanced fourth-generation synchrotron accelerator, which accelerates electrons to 3 GeV with minimum emittance.
- unique cutting-edge multidisciplinary experimental end-stations including those tailored for exploring fast processes and biological objects.
- Adjustable user environment for sample processing and associated studies.

Research outlines

Exploring the structure and properties of substances at micro- and nano-levels for addressing problems in biology and medicine, chemistry and catalysis, energy industry of the future and some other fields:

- composite materials, hybrid substances and biopolymers
- new technologies of surfaces and thin films
- in-situ/operando methods and pump-probe methodology
- fundamental properties of matter (state equations).

Advanced technologies and industrial applications

- Technologies for the nuclear power industry, nuclear fuel cycle, safe management of radioactive waste and spent nuclear fuel.
- Energy-saving systems of energy transportation, distribution and utilization.
- Technologies for obtaining and processing functional and construction nanomaterials.
- New materials, new properties of materials, new drugs.

Participants

BINP, BIC, IGM, SRC VB VECTOR, LIHD, ISSC, NSU, NSTU, NIIC, RFNC-VNIIEF, RFNC-VNIITF, EZAN, TDISIE, IPM RAS, IKBFU, and other organizations.

Economic numbers

Economic benefit will be in excess of RUB 3 billion per year after attaining the projected capacity.

Industrial partners

ALROSA

GAZPROM NEFT

NORNICKEL

Infrastructure development project for the Novosibirsk State University

Infrastructure for training people from the world's research centers

By 2025, the number of RF students will increase from 6,000 to 12,000, the number of international students, from 1000 to 3,000

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New infrastructure in detail

- A building with lecture theaters for 1,000 seats.
- A research center for 450 seats.
- Dormitories for 6,000 beds.
- A building for the NSU's Specialized Educational Scientific Center for 600 seats.
- Buildings for the Higher College of Informatics for 530 seats.
- Buildings with a diagnostic and treatment center for 450 seats.
- A library for 630 seats.
- An events hall for 1,500 seats with the House of Students.

Training in cutting-edge areas

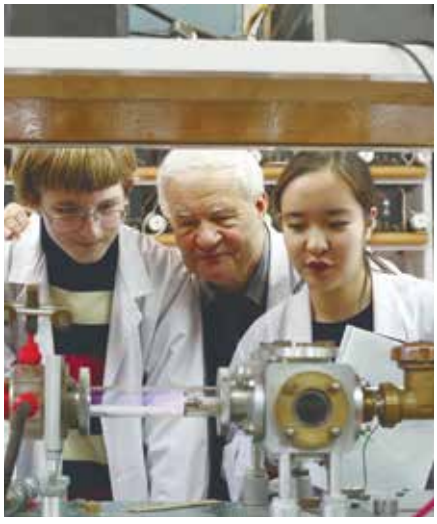
- A new interdisciplinary department entitles "Bioengineering", for training specialists in cutting-edge agricultural technologies.
- A technological institute of the engineering school, to prepare engineers and technologists for research and development projects, including Akademgorodok 2.0.
- Up-to-date laboratory rooms for research in cutting-edge areas, such as new materials, Arctic studies, photonics, nuclear technologies in medicine, and cell technologies.
- A diagnostic and treatment center to launch a unique educational process on the interdisciplinary basis of the NSU's Institute of the Medicine and Psychology, Department of Physics, and Department of Natural Sciences.

Audience

Educational services to applicants from Russia, other CIS countries (primarily Kazakhstan), China, North Korea, and India.
Customized R&D through a network of partnering entities such as academic institutes and high-tech companies in Russia, Kazakhstan, South Korea, Israel, Saudi Arabia, USA, Germany, and Latvia.

Target values

By 2025, the number of RF students will increase from 6,000 to 12,000 (double growth), the number of international students, from 1000 to 3,000 (triple growth).
By 2025, the Novosibirsk State University will be ranked within top 100 universities according to the QS World University Rankings.
Incoming investments will amount to RUB 1,000,000 by 2025.



More than 15,000 graduates over 55 years, with more than 25% with academic degrees

Academic Center of Special Education

Development of intellectual potential in Siberia and the Russian Far East

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Project objectives

- Doubling the number of intramural students.
- Intramural and extramural training of teachers; methodological support of education throughout Siberia.
- Further improvement of the admission policies, academic competitions, traveling schools and special classes in schools.
- Development of the extramural education program "Open School of Physics and Mathematics".
- Setting the from-school-to-university path.
- Creation and development of new advanced programs in natural sciences, engineering, and humanities.
- Ensuring world-level resources for intended activity.

Education highlights

- A multilevel system of selecting future students.
- Teaching by active scientists, including members of the Russian Academy of Sciences.
- Participation in research with institutes of the Siberian Branch of the Russian Academy of Sciences.
- Living as a community = diving deep to a highly intellectual competitive environment = talents are supported = focus on teamwork in addressing complex research problems.
- Original methods.
- Extramural and distance education.
- A methodological center; retraining and supporting teachers from across Russia.

Audience

Graduates of special education programs with research competencies. NSU takes 60%; Russia's leading universities (MSU, SPSU, MIPT, MSTU, etc.), 40%.

Target values

Annually:
- 1,000 graduates enrolling at universities
- 20,000 extramural students
- 200 teachers, advanced training
- paid educational services worth RUB 10 million.

Center of Genetic Technologies

Russia's first national laboratory of life sciences

The place for full-cycle projects – from the generation of knowledge to the development and adoption of genetic technologies

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Highlights

- The space where current genetic technologies meet to address fundamental and applied problems/
- A modular composition of the instrumental and methodological assets; the capability to form technological pipelines.
- Work with basic objects (microorganisms, plants, animals, humans).
- A wide range of technologies: biocollections; methods of molecular genetics, cell biology, and genome editing; omics technologies, and bioinformatics.

Research outlines

- Genomic and genetic studies of agricultural plants and animals; genetic control of agronomic traits; marker-assisted and genomic selection.
- Genetic studies of microorganisms; methods of synthetic biology for the microbiological industry.
- Human genomics and genetics; mechanisms underlying predisposition to socially important diseases; personalized medicine; new drugs.
- Bioinformatics, systems biology and work with "big genetic data".
- Cell biology; regenerative medicine.

Advanced technologies and industrial applications

- Varieties of agricultural plants – highly productive, resistant, with increased nutritional value, hypoallergenic.
- Varieties of industrial crops; biotechnologies of processing vegetable material into cellulose and products with high added value.
- Stock cultures of microorganisms for biotechnological productions;
- embryonic technologies for highly productive cattle breeding.
- Drugs for treatment of socially important diseases.
- Technologies for preventive, personalized, and regenerative medicine.

Ready for collaboration

- Laboratories, experimental fields, biobanks and animal facilities for joint research in genetic, biological and agricultural technologies.
- Conducting preclinical studies of new drugs and bringing them to Russia's and the world's market.
- Using genetic technologies for developing new crop cultivars with desired qualities; possessing original collections as sources for large-scale seed production.
- Developing genetically personalized diets.

Participants

Institute of Cytology and Genetics,
11 academic institutes, 2 universities,
7 partnering companies.

Industrial partners

ПРОМБИОТЕХ
ИНЖИНИРИНГОВАЯ КОМПАНИЯ

Rostec

RUSSIAN DIRECT INVESTMENT FUND

SIBUR

National Competence Center “Biocenter of the SB RAS”

For decades of global leadership in biotechnologies and synthetic biology

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Highlights

The Biocenter will become an efficient platform for integrating science, education and business for an accelerated development and mass adoption of advanced technologies in health management involving diagnostic and biopharmaceutical products. The Biocenter promotes the accelerated development of personalized medicine and high-tech healthcare technologies to ensure a decrease in death rates within the working-age population due to diseases. This should increase life expectancy and prolong active longevity.

Research outlines

- Shared Research Facility “Siberian Center of Structural Biology” based on a SKIF station focuses on obtaining the crystals of biomolecules for X-ray diffraction studies and determining the 3D-structures of complex molecules.
- Shared Research Facility “Genomic and Postgenomic Technologies” is intended for sequence analysis of nucleic acids, proteomic analysis, gene expression profiling, genome editing and synthetic biology; prenatal diagnostics and clinical trials.
- The Biocenter provides a full range of services and venture projects as requested by businesses.

Advanced technologies and industrial applications

- *Encemab*, a drug for immediate use in prevention of tick-borne encephalitis;
- *Laktaptin*, an anticancer drug based on an oncolytic virus and a protein;
- Drugs for antisense therapy of genetic diseases based on a unique class of DNA analogs;
- Diagnostic kits for analysis of microbiota; means for preventing chronic metabolic diseases.

Ready for collaboration

- Synchrotron radiation-based synthesis and study of biomolecules with desired properties for use in pharmaceutics and medicine.
- Scope for joint projects devoted to new medical diagnostic procedures and tools.
- Commercialization of the results coming from experimental bioengineering: testing new biomaterials, drugs and diagnostic agents, and bringing them to Russia’s and the world’s market.

Participants

Institute of Chemical Biology and Fundamental Medicine, SB RAS
Novosibirsk State University, Academpark, Institute of Organic Chemistry SB RAS, Institute of Molecular and Cell Biology SB RAS, Institute of Cytology and Genetics SB RAS, SRC VB VECTOR, and others.

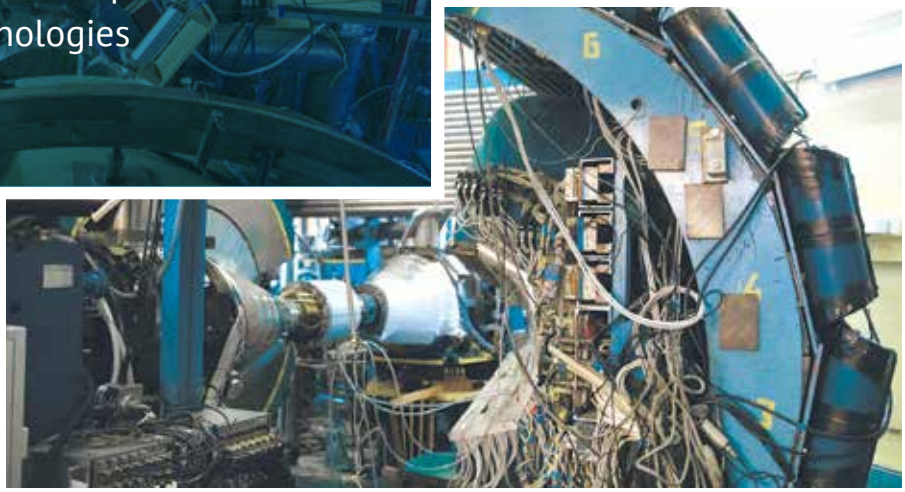
Industrial partners

Generium Pharmaceutical
BAYER
AstraZeneca
Takeda
Pharmeko Your partner

Center for Radiation Technologies

Reinforcement of Russia's leadership in the field of radiation technologies

Electron accelerators for research and industry



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Highlights

The Novosibirsk State University is a classic research university, which operates in close collaboration with academic institutes of Akademgorodok, keeps together science and education, multidisciplinary approaches and cutting-edge research.
The Budker Institute of Nuclear Physics of the Siberian Branch of the Russian Academy of Sciences is the world's leader in the development of accelerators and associated equipment, it has produced more than 200 industrial electron accelerators over the past 40 years. It supplies accelerators and associated equipment to research centers worldwide, including CERN.
The Center will be exploring interactions of intensive electron beams and braking radiation with various matters and developing radiation technologies.

Participants

Novosibirsk State University
Budker Institute of Nuclear Physics, SB RAS

Research outlines

- Studies of interactions between intense electron beams and matter. It may result in the development of new approaches in physics and chemistry.
- Expanding scope for multidisciplinary studies.
- Exploring physical and technical nuances that belong to the operation of charged particle accelerators.
- Development of new radiation technologies and improvement of existing radiation technologies.

Ready for collaboration

- The Center will run powerful electron accelerators with energies of up to 10 MeV and a beam power of up to 100 kW, underbeam equipment for experimental works, rooms for mounting and tuning experimental equipment, rooms for sample preparation and analyses before and after radiation treatment.

Advanced technologies and industrial applications

- Medical products: implants, including absorbable implants, hydrogel dressings, new drugs.
- New composite materials.
- Ceramic membranes, including gas-permeable membranes.
- Synthesis of ferrites and ceramic materials, especially for the development of fuel elements.
- New radiation polymerization and copolymerization processes for monomers, mixtures and compounds.
- Sanitizing agricultural and food products; extending their shelf life.
- Wastewater and flue gas treatment.

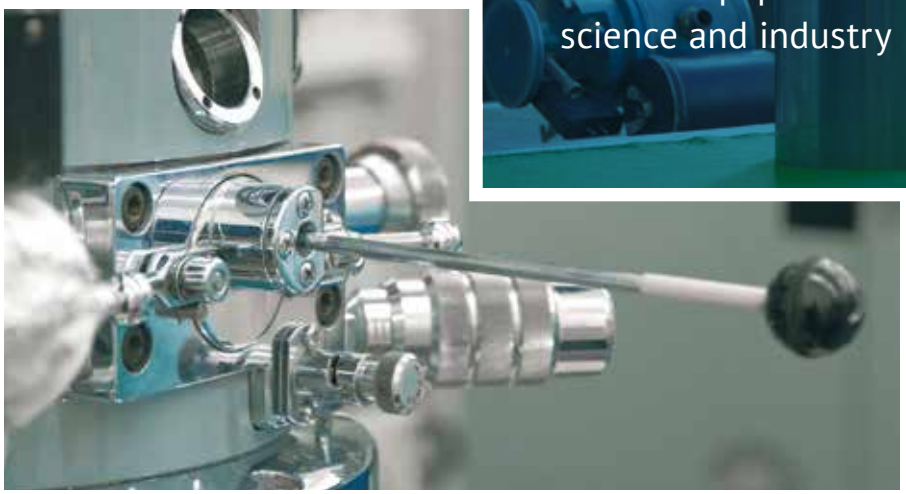
Industrial partners

Rostec
ROSATOM
Shvabe

Establishing a Shared Facility for Instrument Engineering in the SB RAS, to develop and produce high-technology equipment for the institutes of the RAS and the real economy within a shorter cycle from R&D to the introduction and rollout of the developments

Shared Facility for Instrument Engineering

Hi-tech equipment for *Akademgorodok 2.0*, science and industry



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Highlights

- The "one-window" mode for customers: development, production, testing, rollout, maintenance.
- Guaranteed full cycle for high-tech production in the shortest term possible.
- Providing the necessary amount of design and maintenance documentation for the introduction, rollout and support of the developments.
- Availability for our customers: RAS/SB RAS institutes include us in their long-term development plans.

Research outlines

- Unique test stands and research equipment for the institutes and new shared facilities.
- Precision measuring and testing equipment for spacecraft: orbiting antennas and solar batteries, up to 100 m in size.
- Automatic optical-electronic systems for the geometry inspection of the components of nuclear fuel assemblies; technological equipment for nuclear reactors.
- High-performance optical-electronic systems for part geometry and surface inspection.
- Devices for controlling and testing photonics components.

Advanced technologies and industrial applications

- Development and production of unique equipment for the SKIF synchrotron, its working stations and other projects under *Akademgorodok 2.0*; scientific instrument engineering.
- High-performance automatic systems for noncontact sensing of product quality for Russia's aerospace, atomic, engineering, and military-industrial complexes.
- Facilities for controlling and testing photonics components.
- Apparatuses for inspecting railway equipment for Russian Railways.

Ready for collaboration

- Bringing research and development to a commercial level with manufacturing and testing experimental samples
- Development and manufacture of testing and measurement equipment and stands for the needs of potential customers
- Manufacture of precision systems, devices, mechanical parts; the development of design documentation

Participants

Technological Design Institute of Scientific Instrument Engineering, SB RAS

Industrial partners

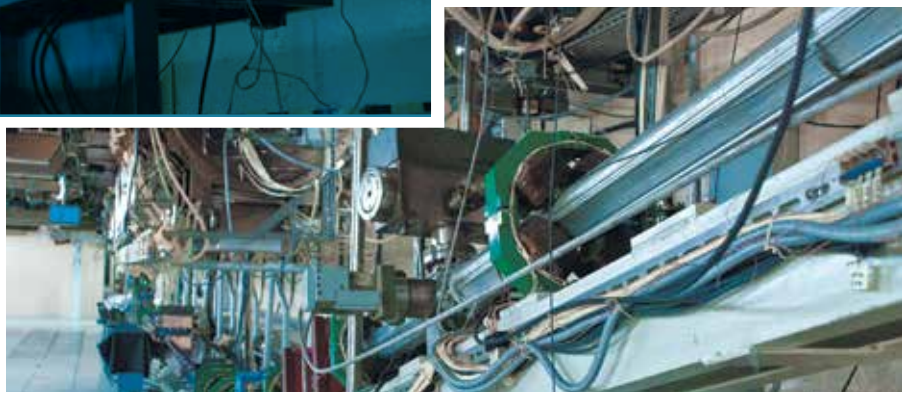
FUEL COMPANY OF ROSATOM TVEL

RESHETNEV COMPANY

ROSATOM

National Center for Extreme Photonics and Laser-Plasma Technologies

A laser-plasma facility with an ~100 m3 chamber, the first in the word for modeling plasma processes in the Earth magnetosphere



Contacts
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Highlights

- A national center for extremely powerful and extremely precise laser systems, to develop and apply new industrial, special, space, and advanced technologies.
- Introduction of laser-plasma processing and synthesis of materials into the industry to dramatically increase the qualitative increase in the performance of technological processes.
- High-accuracy laser clocks for mobile and space stationing.
- Advanced magnetoplasma technologies for near- and deep-space exploration.

Research outlines

- New physics beyond the Standard Model using high-accuracy optical clocks.
- New physical horizons on vacuum polarization and generation of electron-positron pairs.
- 4D-subatomic and subattosecond diagnostics in chemistry, biology and medicine; methods of control and remote detection of nuclear isotopes.
- Laboratory modeling of processes in the Earth's magnetosphere and ionosphere. Prognosis and methods of space infrastructure protection from natural and artificial threats.

Advanced technologies and industrial applications

- A many-fold increase in the durability, shock resistance, chemical and corrosion resistance of metal parts, machine parts and mechanisms, including those intended for use in the harshest operating conditions in the Arctic.
- Magnetic protection of spaceship crews from radiation; an aeromagnetic brake utility for saving fuel. New methods of energetic deposition in the near-Earth space.
- New-generation optical clocks with unparalleled precision, mobile optical clocks, high-sensitivity quantum sensors.

Participants

Institute of Laser Physics, SB RAS
Research and educational organization of the Novosibirsk Scientific Center: BINP, ISP, ITAM, IAO, IAE, NIIC, ICKC, FRC ICG, NSU, NSTU, STU, IGM, SSUWT, IAP RAS, SRI RAS, ISAN, LPI RAS, ISEF SB RAS, JIHT RAS, FRC KSC SB RAS.

Economic numbers

Incoming investments worth no less than RUB 700 million.
Creating more than 150 high-tech jobs.
R&D and services worth RUB 1,500 million per year.
Tax revenues for the Project period will be no less than RUB 1,400 million.

Industrial partners

Russian Railways

Сельскохозяйственная техника производства компании СИБЭЛЕКТРОТЕРМ

NPZ

ELSIB

10+ new unique research facilities and complexes.
20+ technologies with a total production capacity in excess of RUB 10 billion per year

Center of Optical Information Technologies and Applied Photonics

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Highlights

- A network of unique research facilities for the synthesis of precision large-size diffraction elements, laser 3D printing of items from heat-resistant and composite materials, femtosecond nano-/microlithography for the synthesis of optical integrated circuits and optical, fiber and micromechanic components.
- A unique combination of competencies in optics, materials science and informatics helping Russia's industries to adopt cutting-edge laser-optical, optoelectronic and digital technologies.

Research outlines

- Developing ultraspeed photonic devices;
- Developing intelligent optoelectronic sensors for advanced navigation systems;
- Developing unique superlarge holograms for controlling space monitoring systems;
- Developing additive technologies of 3D printing of items from heat-resistant materials based on micro- and nanopowders;
- Developing a technology of recording the waveguiding and periodic structures in transparent materials and elements of integral optics for advanced laser and sensor systems.

Advanced technologies and industrial applications

- Optical information technologies: laser lithography, additive 3D printing, fiber-optic sensors, "smart" composite materials, intelligent control systems, information-measuring monitoring systems, the design of specialized hardware/software solutions for Big Data processing, virtual and augmented reality.
- The optical-mechanic industry, instrument-making, space, power industry, oil and gas extraction, IT and telecommunications, medicine, special applications.

Ready for collaboration

- Services in manufacturing superlarge computer-generated holograms for precision control of on-ground and space-based components and systems.
- Services in the field of additive laser technologies for 3D printing of articles with unique characteristics.
- Services in using technologies based on a laser with a tunable pulse duration (femto-/pico-) for micromachining.

Participants

Institute of Automation and Electrometry SB RAS, NPZ, OOO "Modular Systems Tornado", OOO "SoftLab-NSK", OOO "VMK-Optoelektronika", OOO Femtotekh (Novosibirsk), PAO "PNPPK", OOO "Inversiya-Sensor" (Perm).

Industrial partners

ГЕОФИЗИКА Космос
www.geofizika-cosmus.ru

RESHETNEV COMPANY

Siberian National Center for High-Performance Computing, Data Analysis and Storage “VVOD”

Reviving scientific schools for supercomputing technologies, machine learning, big data analysis and organization

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Highlights

VVOD seeks to unite the unique competencies of Siberian scientific schools and Russia’s best R&D teams in the field of computational mathematics, mathematical modeling, data processing, supercomputer and cloud technologies, virtualization and systems programming. *Akademgorodok 2.0* requires a new level of computational performance and service organization for scientific computing and scientific data processing. In terms of computing resources and storage capacity, VVOD should eventually take on a leading position in Russia and be known within the world’s top 100 HPC and HPDA centers.

Research outlines

- Development of technologies of high-performance computing and data analysis: new architectures of computing systems – supercomputers, clusters, clouds.
- Application of supercomputing technologies and high-performance data analysis in all fields of science: high-energy physics, genetics and medicine, modeling and design of processes, machines and systems, power industry, new materials, geology and mining, Earth and space studies, sociology and many more.

Advanced technologies and industrial applications

- High-performance processing and analysis of big data.
- High-performance computing and software for supercomputers.
- Digital twins with the use of mathematical and computer modeling, hybrid models and decision support systems.
- Developing the digital economy using big data processing and analysis.
- Machine learning, deep Learning, and Artificial Intelligence methods for computer simulation, data analysis and decision making.

Participants

Novosibirsk State University, ICMMG, ICT.

Ready for collaboration

- Providing supercomputing services to scientific, engineering, and industrial partners.
- Joint projects devoted to the development of supercomputing architectures to suit our partners’ needs.
- Development of supercomputing algorithms for designing complex and unique application software.
- Training, work placements and updating skills in information technology and computer science.

Industrial partners

VimpelCom
NVIDIA
intel
PCK Рождая инновации
РФЯЦ ВНИИЭФ

Center of Nano-technologies

Science for the Russian electronics of the future

New materials for electronic industry

Attractor for talented youth

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Highlights

The project implies the creation of a unique center with state-of-the-art research equipment:
- for conducting world-class research, technologies and developments in the field of new materials and advanced electronics;
- for undertaking full-cycle projects;
- for providing technological and engineering services;
- for training to develop top experts.

The Center will bring studies to an all-new level, and its capacities will allow the industries to try out the latest technologies and order the small volume manufacturing of materials and electronic components.

Achievements in fundamental research

The scientific basis for the technologies of semiconducting quantum nanostructures, hardware components for micro-, nano-, bio-, optoelectronics, nanophotonics, sensorics, radiation-resistant and quantum electronics.

New materials for
- highly reliable hardware components
- super high-frequency electronics for wireless communications
- infrared equipment.

Новые приборы:
- advanced memory elements
- high-sensitivity sensors for medicine
- global systems of monitoring emergencies
- complexes for defense purposes.

Advanced technologies and industrial applications

The Center of Nanotechnologies seeks to obtain breakthrough results and develop the basic technologies of advanced electronics:
- silicon technologies, e.g. the creation of nanoheterostructures for advanced facilities, silicon-on-insulator systems;
- technologies of A3B5 materials for microwave electronics, infrared photodetectors, elements and devices of optoelectronics, radiophotonics and infrared equipment;
- technologies of A2B6 materials, materials elements and devices for infrared photodetectors for the purposes of security, defense, and medicine;
- technologies of new materials for advanced electronics.

Participants

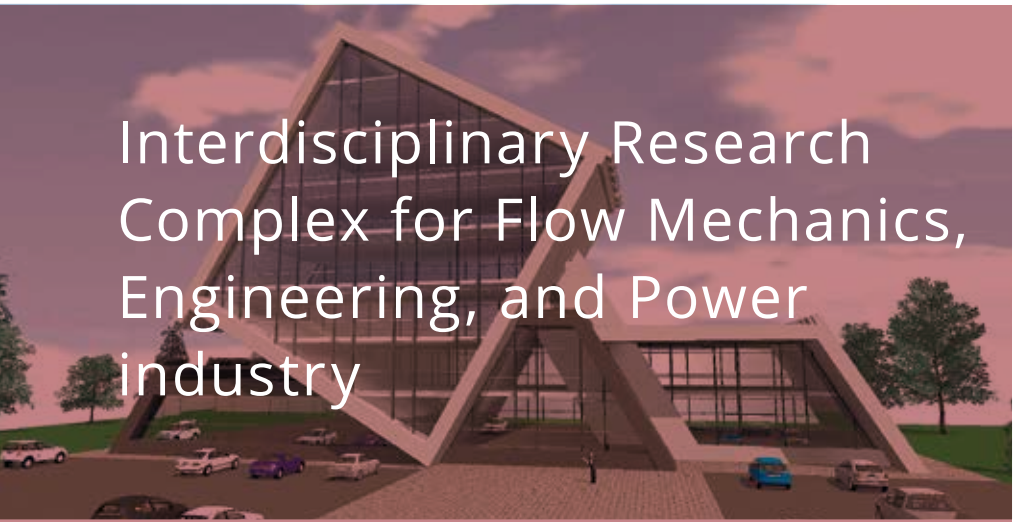
Rzhanov Institute of Semiconductor Physics, SB RAS

Economic numbers

Services worth upward of RUB 1.5 billion per year.
The payoff period is about 6 years.

Industrial partners

ROSCOSMOS
RUSELECTRONICS
ENERGIA



Interdisciplinary Research Complex for Flow Mechanics, Engineering, and Power industry

Fundamental research for new technologies in power industry, engineering, and aviation

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Highlights

The Complex will include scientific facilities, unique to Russia and the world, with unparalleled parameters:

- wind tunnels,
- gas-dynamic stands for modeling combustion in gas-turbine power plants,
- a large-scale rotating platform for modeling wave processes and ocean currents,
- a testing field for testing the technologies of renewable and non-traditional energy industry,
- a high-rise tower for ground modeling of physical processes in microgravity,
- facilities for studying processes related to the hydraulic fracturing of formations.

Achievements in fundamental research

- Aerothermodynamics of air and space systems;
- Research and technological groundwork for new-generation gas-turbine engines;
- Modeling thermophysical processes in the elements of nuclear reactor facilities;
- Hydromechanics of multiphase systems for the oil-and-gas extraction industry;
- Creation and testing of new materials;
- Modeling the processes of combustion of gaseous, solid and liquid fuels, and the processes of detonation.

Advanced technologies and industrial applications

- hypersonic aircraft
- gas-turbine facilities for the power and transport industries
- new sources of energy
- new technologies of hydrocarbon mining.

Participants

Kutateladze Institute of Thermophysics, SB RAS
Khristianovich Institute of Theoretical and Applied Mechanics, SB RAS
Lavrentyev Institute of Hydrodynamics, SB RAS
Voevodsky Institute of Chemical Kinetics and Combustion, SB RAS

Industrial partners

RusHydro
Rostec
ROSATOM
GAZPROM NEFT
United engine corporation
ROSCOSMOS

Ready for collaboration

- World-class experimental facilities to do research for a broad range of industries: nuclear industry, space industry, aviation industry, machinery industry, power industry, oil and gas extraction industry, and the manufacture of new materials.
- Hardware and competencies for interdisciplinary projects marrying research and engineering.
- Scope for developing scientific and technological principles of an energy industry of tomorrow relying on new sources of energy and minimizing environmental damage.
- Established competencies related to processes running within turbines, power facilities, around space and atmospheric vehicles in motion, and in waste disposal.

Center of Waste Management Technologies

A great step toward a green urban future

20% of waste is recycled: glass, metal, polymers, construction residues

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Highlights

Completely automatic robotic sorting of solid municipal wastes (SMW); plasma arc gasification of organic residues.
For sorting SMW, neural networks and a self-learning algorithm for grasping objects on the conveyor belt are used.
Use of new arc-jet plasmatrons capable of working with any gas, with an unparalleled operational life and producing a high-calorific value syngas.

Participants

Kutateladze Institute of Thermophysics, ITAM, ICT, IEIE, FGUP "ZhKKh", FGUP UEV, SKB Sibelektroterm.

Industrial partners

Сельскохозяйственная техника производства компании СИБЭЛЕКТРОТЕРМ

УЭВ

ФГУП ЖКХ ННЦ

Research outlines

The project will use R&D results obtained by the Institute of Thermophysics, Institute of Theoretical and Applied Mechanics, and Institute of Computational Technologies (all of the Siberian Branch of the Russian Academy of Sciences):

- automated sorting and selection of secondary material resources with the use of self-learning algorithms based on neural networks;
- plasma arc gasification of organic materials with the production of syngas and electric power.

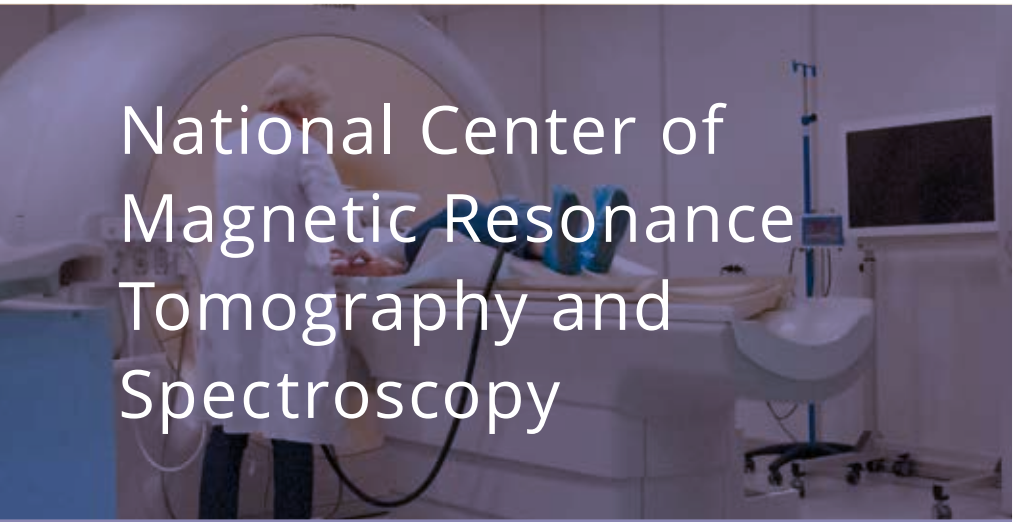
The results are protected by 8 patents and 2 know-how.

Advanced technologies and industrial applications

A pilot batch of robotic sorting facilities and a pilot prototype of a plasma arc gasification system with a capacity of 50,000 tons of SMW per year.
Small- and medium-scale production of the facilities.
The project is oriented at emerging waste-recycling plants in Russia and at the retooling of those existing with automated sorting systems.
Ready to develop other technologies for the processing and utilization of medical, liquid, industry-related and other wastes.

Ready for collaboration

- Joint R&D; the development and delivery of complete recycling facilities handling 10 to 100 thousand tons of MSW annually, depending on the customer's specifications.
- Development of technical projects, working and design documentation for the autonomous systems of reclaiming landfill sites and setting up the production of building materials and fuels.
- Development and delivery of automatic sorting systems for MSW based on neural networks and robotics, plasma gasifiers, plasma-based bottom ash melting systems, plasmatrons, heat pumps, gas analyzers, and vortex scrubbers in accordance with customer specifications.
- Calculation of the mass and energy budgets of the facilities using modern software; chemical kinetic calculations.



National Center of Magnetic Resonance Tomography and Spectroscopy

A world-class versatile research center in the field of magnetic resonance

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Highlights

- The first center where the most recent methods of magnetic resonance spectroscopy (MRS) and tomography/imaging (MRI) are developed and applied.
- Unique equipment for MRS and MRI at strong magnetic fields, which dramatically enhances the sensitivity, resolution and relevance of magnetic resonance methods.
- Integrity and versatility, the availability of all MRS and MRI methods at a single research institute.
- Participation of top experts and world-class scientists.

Research outlines

- A dramatic increase in the sensitivity and relevance of magnetic resonance techniques.
- Development and applications of advanced hyperpolarization methods for addressing urgent problems of MRS and MRI.
- Development and application of optimized MRI protocols for modern medical applications.
- Studies of biologically important processes and the structure of biomolecules on a nanometer scale.
- Studies of the structure and functional properties of nanomaterials; the development and design of new advanced magnetic materials.

Advanced technologies and industrial potential

- Improvement of the quality of medical diagnostics of neuropathologies and socially important diseases.
- Diagnostics of the structural and magnetic properties of new advanced materials and nanostructures using a complex of advanced spectroscopic methods of magnetic resonance.
- Breakthrough top-level fundamental research, participation in Russian and international collaborations with leading scientists and research centers.

Participants

International Tomography Center, SB RAS

Expected results

Development of cutting-edge methods and their practical use in studies of the structural and magnetic properties of new materials, nanostructures, and protein molecules.

Industrial partners

NEUROMED I.R.C.C.S. ISTITUTO NEUROLOGICO MEDITERRANEO

ЦКБ СО РАН

PHILIPS

Silicon carbide composites for the advanced aircraft engine PD-35

Engineering Center of Powder Technologies

Powders for technologies of the future

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Highlights

- Creation of a center of competencies with a set of basic methods and flexible technological pilot lines for an immediate solution of tasks set by our partners in relation to the production and use of powder materials and composites.
- Integration of the services: any process can go through all the stages in one place, from development to scaling up of the technology and cost estimation of the product.

Achievements in fundamental research

- Development of chemical, mechanochemical and radiation- and thermally induced methods of obtaining powders of ceramics, metals, alloys, polymers, and nanocomposites for use in the energy industry, aerospace, medicine, agrobiotechnology, construction and metallurgy industry.
- Design and manufacture of equipment for producing powders with controlled morphology, rheological properties and increased reactivity: high-energy mills, powder classifiers for laboratory studies and industrial applications.

Advanced technologies and industrial applications

- Powders of metals, alloys, ceramics, composites, mechanocomposites for additive technologies and the aerospace industry.
- Pharmaceutical substances and solid forms.
- Materials and technologies for creating new power sources and systems of energy conservation and transportation (fuel elements, accumulators, super capacitors).
- Technologies of the complex processing of vegetable stock into nutraceuticals, functional foods, feed supplements, preparations with fungicidal and antistress properties for crop farming.

Participants

Institute of Solid State Chemistry and Mechanochemistry SB RAS (ISSCM SB RAS), BINP, BIC, FRC ICG, ITAM, IT, ILP, IAE, TDISIE, IPCP RAS, IPCET, NIOC, NSU, NSTU, VIAM

Economic numbers

The overall project cost is RUB 900 million, including RUB 600 million from the public purse. R&D and manufacture orders worth about RUB 1 billion per year. Creation of 50+ permanent high-tech work positions within the project.

Industrial partners

Sib bio®

VELPHARM

KRASTSVETMET

Production of Catalysts

Shared Center

Phasing out imports and keeping the competitiveness of domestic catalysts and technologies permanent

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Highlights

The project seeks to create a unique high-tech basis for the development of new catalysts and technologies, to implement a full-scale transition from applied developments to their commercialization for the production of motor fuels, polymers, nitrogen fertilizers, and low-tonnage chemistry products. The project's objectives include:

- Development of new types of catalysts for the energy industry, military-industrial complex and low-tonnage chemistry;
- Phasing out catalysts for oil processing, oil-and-gas chemistry, and nitrogen industry.

Scientific research

- Catalysts for advanced petroleum refining, the production of motor fuels for Euro-5- and Euro-6-compliant engines, and arctic diesel fuel.
- Titan-magnesium catalysts for olefin polymerization to produce advanced brands of polypropylene and polyethylene, including ultra high molecular weight polyethylene.
- High-purity alumina for catalyst production.
- Catalysts for the main processes of the nitrogen industry for fertilizer production.
- Catalysts for addressing energy-related and environmental problems.

Advanced technologies and industrial applications

- Technologies for the production of new types of catalysts on a pilot and a testing scale, in particular, for diesel hydrotreating, vacuum gas oil hydrotreating, vacuum gas oil hydrocracking, hydroisodeparaffinization of diesel fuel, olefin polymerization.
- Production of pilot and testing batches of catalysts for oil processing and petro- and gas chemistry.
- Development of equipment and software for catalyst production.
- Testing industrial catalysts; licensing technologies.

Participants

Science: Boreskov Institute of Catalysis, Institute of Petroleum Chemistry, Institute for Problems of Chemical and Energetic Technologies
Industry: Gazprom Neft PJSC, SIBUR Holding, NPK Sintez Ltd, Katalizator JSC, LLC SPKB Energia

Economic numbers

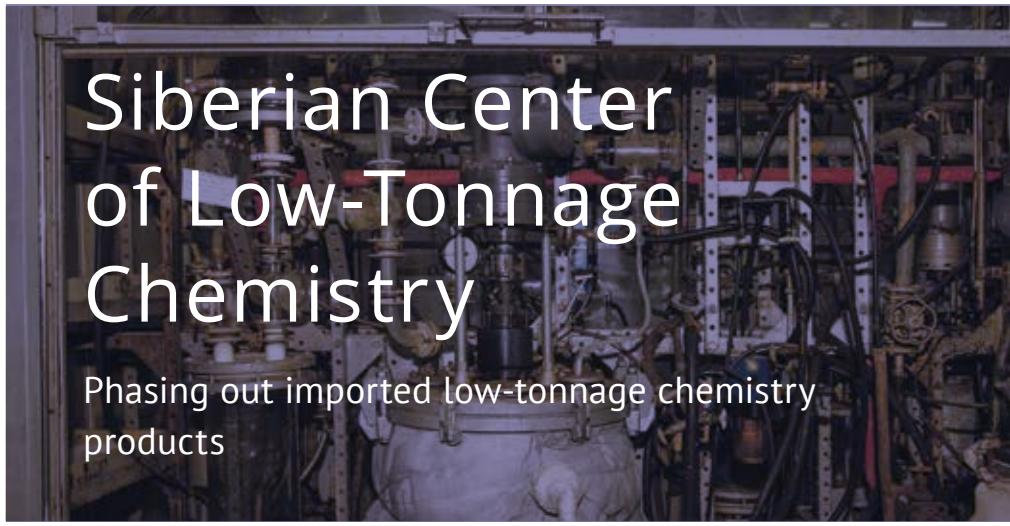
Additional tax revenues will be more than RUB 150 billion until 2030, or 50+ rubles per 1 ruble invested. The total economic effect will be RUB 240 billion or RUB 70 rubles per 1 ruble invested.

Industrial partners

GAZPROM NEFT
SIBUR
СКТБ КАТАЛИЗАТОР
ENERGIA

Siberian Center of Low-Tonnage Chemistry

Full-cycle R&D and technological work for synthesizing substances and materials



Phasing out imported low-tonnage chemistry products

Contacts
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Highlights

The Center will comprise an analytical center, a team of chemical engineers, a toxicological pharmacological laboratory, production facilities, and a patent department. This will enable us to conduct a full cycle of R&D works in a single place, to produce and test pilot batches of new and already known substances and materials, and to transfer the results to the industry.

Ready for collaboration

- Development of chemicals production technologies for interested companies
- Production of experimental and pilot batches of chemical products for developing technologies and their further testing
- Development of primary technological documentation
- Running high-temperature and high-pressure processes in the autoclave facility
- Development of innovative products for the agricultural and pharmaceutical industries

Research outlines

The institute carries out research for developing

- technologies of the synthesis of new functionally oriented organic compounds;
- technologies of the complex processing of secondary materials of coniferous plants generating preparations for the agricultural, food and cosmetic industries;
- biodegradable polymers for osteosynthesis;
- composite glue for surgeries;
- new polymer stabilizers;
- hydraulic fire-resistant liquids and technologies for their production on the basis of domestic raw materials.

Participants

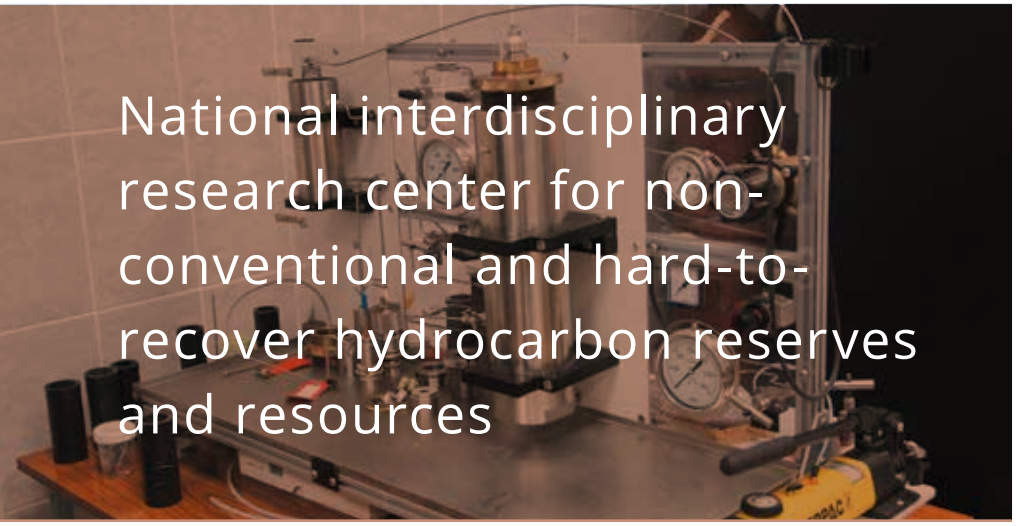
Novosibirsk Institute of Organic Chemistry,
Boreskov Institute of Catalysis

Advanced technologies and industrial applications

- Making high-tech products for military and civilian purposes from non-renewable and renewable materials: catalysts, reagents for oil mining, additives for motor fuels and lubricants, nitroxide and triarylmethyl radicals, polymer stabilizers, chemicals, solvents, to mention a few.
- Making high-tech products for agriculture, forestry, and animal husbandry.
- Development of GMP-certified pharmaceutical products.

Industrial partners

Schlumberger
SUKHOI НАЗ им. В.П. Чкалова
GAZPROM NEFT
ROSNEFT
Takeda
Evalar



National interdisciplinary research center for non-conventional and hard-to-recover hydrocarbon reserves and resources

Efficient hydrocarbon recovery technology will ensure the operational stability of Russia's oil and gas industry, contributing to RF budget sustainability

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Highlights

Our interdisciplinary shared research center will provide researchers with tools and equipment to run a full range of research in nonconventional elastically yielding oil- /gas reservoirs of the unique Bazhenov Formation, including such aspects as geology, lithology, geochemistry, hydrogeology, petrophysical and geomechanical processes occurring in oil-and-gas-bearing formations, petroleum chemistry, and physicomathematical modeling. All activities will be furnished with cutting-edge research methodologies and techniques, to achieve world-class performance and results.

Achievements in fundamental research

- Theoretical substantiation of research techniques for a comprehensive study of elastically yielding reservoirs of the Bazhenov Formation.
- Integration of geophysical and geochemical research methods as innovative solutions into oil and gas field prospecting.
- Innovative methods for experiments on unique test facilities; new mathematical models for reservoir management optimization using pressure maintenance.

Advanced technologies and industrial applications

- Cutting-edge upstream and downstream technologies for unconventional hydrocarbon production from elastically yielding reservoirs.
- Software for numerical modeling of the processes of petroleum prospecting, exploration, production and refining.

Participants

Trofimuk Institute of Petroleum Geology and Geophysics, Lavrentiev Institute of Hydrodynamics, Kutateladze Institute of Thermophysics, Institute of Petroleum Chemistry, Institute of Strength Physics and Materials Science.

Industrials partners

GAZPROM NEFT
SURGUTNEFTEGAS
LUKOIL OIL COMPANY
ROSNEFT

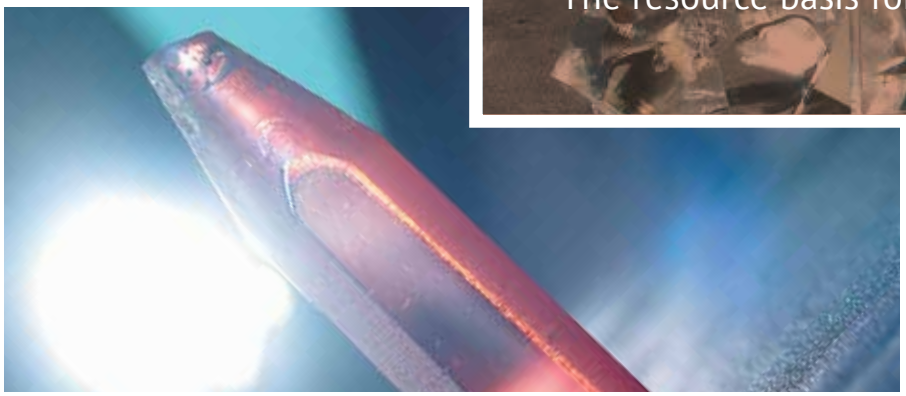
Ready for collaboration

- Test facilities for laboratory experiments on hydrocracking in elastically yielding reservoirs;
- Theoretical and experimental studies aimed at developing oil recovery techniques applicable to hard-to-recover oil reserves;
- Software engineering for mathematical modeling to manage hydraulic fracturing processes, and geophysical well logging techniques for use in prospecting for hard-to-recover oil reserves and for oil recovery from elastically yielding reservoirs;
- Developing innovative prospecting and exploration techniques and environmentally friendly technological solutions for hard-to-recover oil reservoir development; their integration into Russia's and world's markets.

Research Center for Mineral-Forming Systems

The resource basis for high technologies in Russia

The project is intended to supply strategic raw materials to Russia's innovative economy



Contacts
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kruk@igm.nsc.ru

Highlights

Putting together (1) the capabilities of experimental facilities for modeling mineral-forming processes in a wide range of temperatures (0–2500°C) and pressures (0–300 Pa), (2) the power of unique analytical equipment for non-destructive investigation of the composition, structure and properties of crystal materials with a high (up to 2 nm) spatial resolution, and (3) the skills of a highly qualified research group with all necessary competencies for addressing a broad range of fundamental and applied problems.

Research outlines

- Modeling natural processes in controlled conditions; the experimental studies of crystal growth for obtaining high-quality single-crystal materials with customized properties; the creation of Russia's original hardware components for photonics, microelectronics, and laser technologies.
- A comprehensive study of magma- and rock-formation processes; the creation of a fundamental scientific basis for the reproduction of domestic mineral resources for supplying to high-tech manufactures.

Advanced technologies and industrial applications

- The search for new crystal materials with customized properties for the needs of high-tech industries (photonics, microelectronics, laser technologies); the development of methods for growing crystals, processing materials, and end-product quality control.
- Methods for the regional and local prognosis of and the search for deposits of solid minerals (including of non-traditional types) of strategic importance in complex geological conditions for supplying raw materials to Russia's high-tech industry.

Participants

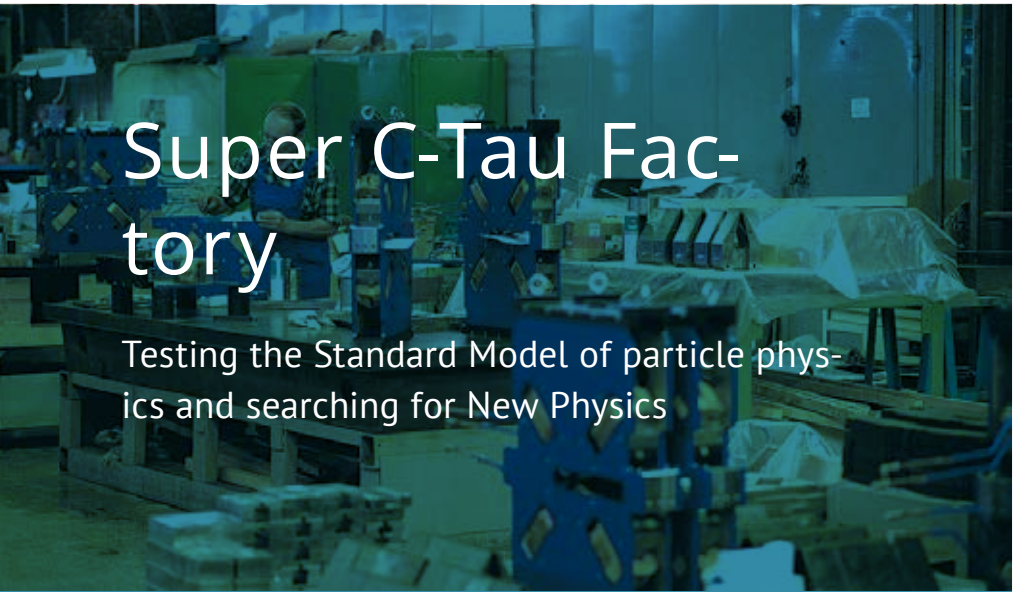
Sobolev Institute of Geology and Mineralogy, SB RAS

Economic numbers

The pay-off period of the project is seven years. By 2035, the production of the high-tech equipment based on crystal elements can increase by RUB 20¬–40 billion; the extraction of strategic metals and diamonds can increase by up to RUB 50 billion.

Industrial partners

ALROSA
АЛМАЗЫ АНАБАРА
ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО
Simex ANALYTICAL EQUIPMENT
IPG IRE-POLUS
NORNICKEL

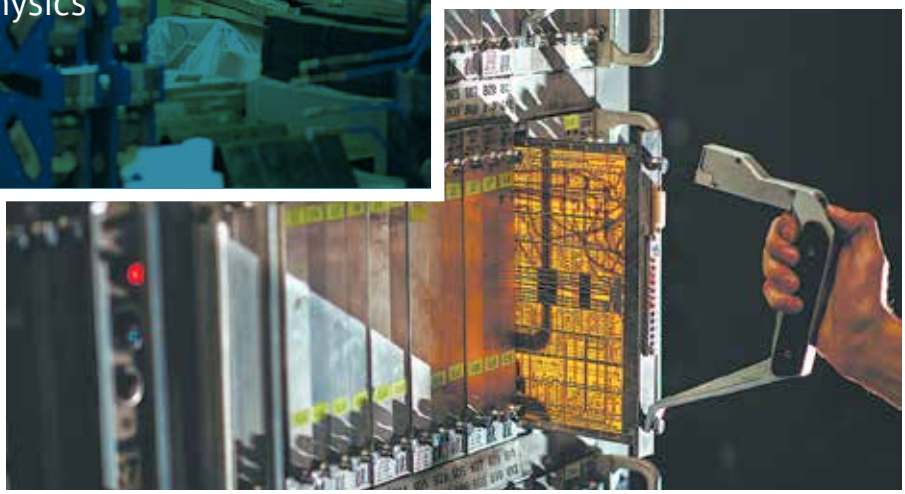


Super C-Tau Factory

Testing the Standard Model of particle physics and searching for New Physics

Luminosity up to 100 times higher than that in its China's peer

Eight participating countries



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Highlights

Six colliders operate in the world, and two of them are in Novosibirsk. The Super C-Tau Factory will feature a luminosity 100 times higher than that featured by BEPC-II (China), which will allow studying the processes with charmed quarks and tau leptons in much more detail. China is building a Super C-Tau Factory, too: competition promotes an active and complementary development of the projects. The Super C-Tau Factory is highly likely to reveal and observe particles and processes never seen before.

Research outlines

Testing the Standard Model of particle physics at a new level of precision and searching for phenomena fitting in with New Physics: lepton universality, MR-disturbance in D-mesons, exotic states of quarks and gluons, lepton number nonconservation and more.

Advanced technologies and industrial applications

- Accelerating technologies for creating high-intensity particle beams.
- Detecting technologies.
- Technologies of the high-performance processing and analysis of big data.

Participants

BINP (initiator), BIC, IM, INR RAS, NSU, NSTU, NRC "Kurchatov Institute", JINR, TPU, LPI, DESY (Germany), INFN (Italy), LAL (France), University of Giessen (Germany), University of Ljubljana (Slovenia), University of Rome Tor Vergata (Italy), Weizmann Institute of Science (Israel).

Expected results

The studies of the fundamental properties of matter and the development of new technologies necessary for the project will bring significant economic benefits to various fields.

Industrial partners

TYAZHSTANKOHYDROPRESS
RUSSIAN FEDERATION

ROSATOM

SUKHOI
НАЗ им. В.П. Чкалова

Boron Neutron Capture Therapy-Based Anti-Cancer Technology

Introduction of a unique technology capable of securing Russia's leadership in the fight against incurable cancers

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Highlights

Development and introduction of an anti-cancer medical technology based on boron neutron capture therapy (BNCT) using an accelerator as a source of neutrons; the construction of a pilot BNCT center. As this area is unique for Russia's healthcare, the Center may become a dominant company and eventually Russia's leading facility of the kind. A new stage- and tumor type-specific method of therapy for incurable patients will be developed. There are no other centers like this out there, whether in Russia or elsewhere.

Research outlines

- Creating a small-size neutron accelerating generator for use in clinics.
- Developing a medical technology for BNCT-based cancer treatment.
- Developing effective vectors for delivery of 10B-based drugs molecules to tumor cells.
- Organizing training in nuclear medicine in the premises of the Novosibirsk State University.

Advanced technologies and industrial applications

The project will result in a ready-to-use product, fit for rollout in Russia and outside, which would include: a project of a typical BNCT center, a unique generator of neutrons to suit it, an original 10B-based drug for BNCT, and a highly efficient vector for its delivery to tumor cells. We will also organize training for medical workers and physicists in this field.

Participants

Novosibirsk State Universuty, Meshalkin National Medical Research Center, BINP

Industrial partners

TOMSK NATIONAL RESEARCH MEDICAL CENTER THE RUSSIAN ACADEMY OF SCIENCES

筑波大学 University of Tsukuba

INEOS

Ready for collaboration

- Use of infrastructure for preclinical and clinical studies in different types of tumors.
- Joint projects devoted to the improvement of an accelerator-based source of neutrons and a neutron-producing target.
- Testing new 10B-based drugs for BNCT.
- Training, work placements and updating skills in nuclear medicine.

Siberian Agrarian Research and Technology Center

Scientific basis for cutting-edge agrobiotechnologies

Twenty-two new types of feed and feed supplements, thirty-eight types of pharmaceuticals and biological preparations (1.2 million active doses)

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Highlights

The Center is an integration project, which embraces all fields of the agricultural industry – from the strategy of natural resource management to the technologies of processing agricultural products, supplying machines and equipment, consulting and informational support to production modernization efforts.

Research outlines

- Effective biotechnologies of creating new forms of cultivated plants and source material for selection for high productivity and resistance to unfavorable environmental factors.
- Systems of agroecological monitoring and phytosanitary prediction with the use of information technologies.
- Creation of highly productive varieties of agricultural crops, farm animal breeds, and drugs for veterinary medicine.

Advanced technologies and industrial applications

In crop research:
- development and use of biotechnology-based breeding methods for creating new varieties of agricultural crops;
- creation of feeding and grain crop varieties; the development of technologies for feed production; provision of the industry with seeds.

In farm animal breeding and veterinary medicine:
- development of new cattle, pig and fish breeds; the development of diagnostic test kits;
- development of feed allowances and supplements, pharmaceuticals and biological preparations.

Participants

Siberian Federal Research Center of Agro-biotechnologies RAS, FRC Institute of Cytology and Genetics, NSU, Novosibirsk State Agrarian University

Economic numbers

The total economic benefit from utilizing feeds to be obtained will be RUB 1 billion per year; from utilizing new varieties, RUB 1.5–2 billion annually.

Industrial partners

СИБАГРОПРИБОР
ВНЕШНЕТОРГОВАЯ ПРОИЗВОДСТВЕННАЯ КОМПАНИЯ

БИОМЕР
НАУЧНО-ПРОИЗВОДСТВЕННОЕ ПРЕДПРИЯТИЕ

АГРОМАШ
работаем на результат

Infrastructure development project for the Meshalkin National Medical Research Center

State-of-the-art infrastructure for developments and test runs in the field of interventional and mini-invasive surgery

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Highlights

Combining R&D and production powers within a single complex will enable the development of a wide range of items (devices for interventional surgery, implants for cardiovascular surgery, pacemakers and implantable cardioverter defibrillators) and providing diagnostic and high-tech medicine services using cell technologies, which is of great importance for phasing out imports and for exporting medical products and services.

Research outlines

- Liquid biopsies in lung cancer: the search for extracellular micro-RNA-oncomarkers and the development of diagnostic systems.
- Modulation of the autonomous neural system of patients with cardiac rhythm disorder.
- Role of monocyte subpopulations in the pathogenesis of atherosclerosis.
- Development of approaches to the modulation of HIF-dependent angiogenesis.
- Development of protocols for obtaining biopacemakers based on the cardiac differentiation of induced pluripotent stem cells.

Advanced technologies and industrial applications

- Bioprostheses and valve-containing conduits for mini-invasive implantation for correction of valve cardiac defects.
- A complex technology of the production and modification of allogenic valve prostheses for humans.
- A combined transcatheter system for intravascular thrombectomy when treating acute ischemic stroke.
- Products and services in the field of high-tech medical aid (cardiology, neurology, oncology) requiring an innovative product replacement within 2–5 years.

Participants

Meshalkin National Medical Research Center

Economic numbers

Sales in excess of RUB 5 billion per year. 500 new jobs. An increase in budget incomes by more than RUB 300 million per year.

Industrial partners

Angioline interventional device

ЗЕЛЕНАЯ ДОЛИНА парк
Биомедицинские индустриальные технологии

Introduction of efficient prophylactic and medicinal preparations based on recombinant viruses into healthcare practice

Supplying recombinant viruses-based medicines to RF people and contributing to world market saturation

Contacts
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Highlights

Production of Russia's new-generation vaccines based on live recombinant viruses and of anticancer preparations with the use of modified oncolytic viruses requires a combination of exclusive conditions of biological safety and GMP compliance.
The State Research Center for Virology and Biotechnology VECTOR has a lifetime license for using causative agents of human infectious diseases and a long history of handling hazard group 1-4 viruses, for creating prophylactic and medicinal preparations.

Research outlines

- Genetic engineering, including the creation of carrier viruses for gene editing and of preparations for gene-directed therapy.
- Development and testing of unique prophylactic and medicinal preparations based on recombinant viruses employing the latest knowledge in molecular biology.

Advanced technologies and industrial applications

- New high-potency and safe 2nd generation vaccines for human infectious diseases.
- Unique new-generation anticancer preparations.
- Preparations based on bacteriophages for treating diseases caused by antibiotic-resistant strains of bacteria.
- Cutting-edge virus-based products for delivery of corrected gene fragments for gene editing.
- Unique preparations for gene-directed enzyme pro-drug therapy.

Participants

SRC VB VECTOR, ICBFM, FRC ICG, NSU, NSAU, NSMU

Economic numbers

Income from selling vaccines is up to RUB 500 million per year, 1 million doses to be sold annually. Russia's top-10 vaccine manufacturers. Selling anticancer preparations based on oncolytic viruses for more than RUB 2.5 billion.

Industrial partners

Вектор-БиАльгам

NANOLEK

ФОРТ

Eurasian Center of Multisystem Pathology

New means of treating somatic diseases caused by infection

The full cycle of studies of somatic pathologies cause by infection: from idea to ready-to-use product

Contacts
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+7 (383) 703 28 88
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Highlights

This Center is for studying hazard group 3 and 4 pathogens, conducting pre-clinical trials and creating medicated products. A unique interdisciplinary basis for the development of medicines for rehabilitation of patients after past diseases with mixed aetiopathogenesis (viral-bacterial, fungal and somatic pathologies). Collaboration with the countries of the Asia Pacific region to address problems with zoonotic infections, to study mechanisms underlying the efficiency of traditional medicine. Low-tonnage pilot manufacturing.

Research outlines

- Studying (1) the basics of the pathogenesis of infectious diseases with their agents infesting cells and (1) the agents' role in the aetiopathogenesis of somatic diseases.
- Development of new prophylactic and medicinal preparations with targeted drug delivery.
- Development of innovative technologies of diagnostics, prevention, treatment and rehabilitation of socially important diseases and comorbid states on the basis of personalized medicine.
- Translation of innovative, genome, post-genome, cell, diagnostics, prophylactic and rehabilitation technologies into healthcare practice.

Advanced technologies and industrial applications

- New technologies of diagnostics, treatment, rehabilitation, and prevention of comorbid states, their translation into healthcare practice.
- Nanosized hybrid molecules stimulating the processes of reparative regeneration, prevention and treatment of socially important diseases.
- An innovative test-system (DNA diagnostic kits) for increasing the efficiency and safety of technologies and drug therapy of socially important diseases.

Participants

FRC for Basic and Translational Medicine, NSMU, NSU

Economic numbers

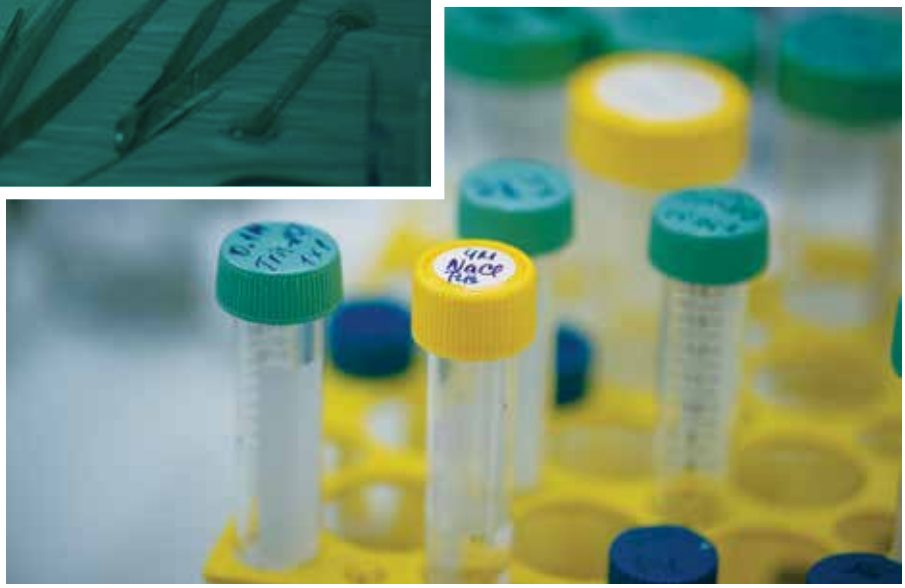
Income from R&D, pre-clinical trials, clinical trials and medical production is up to RUB 440 million per year. 200 new jobs created.

Industrial partners

ФНПЦ "АЛТАЙ"

Novosibirsk Medical Research and Education Facility of the SB RAS

The platform where fundamental science, clinical practice, and medical training meet



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Highlights

Establishing an international platform for conducting clinical studies; testing new pharmaceuticals, medical equipment, and biotechnologies; introducing and distributing technologies for health management based on the integration of achievements in biomedicine, fundamental research, new IT technologies into healthcare practice.

Research outlines

- Breakthrough solutions in fighting cancer.
- Unique diagnostic technologies based on human genome studies.
- Development of treatment methods for correcting DNA defects.

Advanced technologies and industrial applications

- Radiopharmaceuticals factory
- Proton therapy
- Gamma knife
- Targeted chemotherapy
- Radionuclide therapy
- Positron emission tomography scanner
- Cancer rehabilitation.

Participants

NSU, SB RAS, FRC BTM, RIFCI, ICBFM, FRC ICG, ROSSPA

Economic numbers

75 thousand patients per year.
Income from R&D worth RUB 3 billion.
Exported services worth $50 million per year.

Industrial partners

אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

Sk Сколково

Multifunctional Center of Communications for Science, Business and Education Communities

Preserving, studying and developing Russia's cultural and academic heritage

over 10
million items of scientific literature

Contacts
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Project description

Information depot for science, education and businesses. Information as a heritage, a tool and a service. Open space of access to information.
The Center includes:
- scientific research departments (laboratories of scientometrics, digital imaging, conservation and preservation of documents)
- communications space
- information and library space
- a literature depository up to modern requirements (reading rooms and book storage facilities).

Project objectives

- Storage and development of the library's collections
- Scientometrics: collecting information, evaluating scientific publication output
- Digital imaging of documents: creating and maintaining electronic resources
- Assessing the scientific value of documents
- Preservation and study of the academic, cultural and historical heritage
- Conservation and restoration of rare books
- Scientific research in humanities and social studies
- Patent consulting and examination
- Supplementary and post-graduate education
- Raising awareness of science.

Audience

Anyone in the Novosibirsk Region, including professors, students, and scientists from educational and research institutions of Siberia and the Russian Far East, and foreign organizations (Kazakhstan, Mongolia, China).

Expected figures

Annually:
- over 100 thousand digitized documents
- over 1.5 million visitors
- over 100 research, cultural and educational events.

Siberian Center for Conservation of Plant Diversity, Ecological and Botanical Education

Flora is a priceless fund for generations to come

Contacts
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Director of the Central
Siberian Botanical Garden
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Highlights

A unique multifunctional center for studying and preserving vegetation in Siberia:
- world-class research infrastructure;
- educational practices;
- addressing nature-preserving issues using advanced technologies for the preservation of plant diversity;
- innovative developments in biotechnologies, new functional foods, and ways towards comfortable urban environments.

Achievements in fundamental research

- Generation of knowledge in plant diversity.
- Preservation of natural gene pools by a variety of means, including ex-situ technologies.
- New methods of in-vitro plant propagation.
- New cultivars and forms. Highly productive lines of bio-producers.
- Functional foods based on plants not growing in Russia with a wide range of biologically active substances, vitamins and microelements.
- A comfortable environment.
- Ecological education to the community.

Advanced technologies and industrial applications

- Efficient biotechnological approaches to the propagation and conservation of the natural gene pool.
- Formation and preservation of garden squares, parks and forests in line with the priority development program “Novosibirsk, a green city”.
- Creation of a comfortable environment for people in Akademgorodok and Novosibirsk.

Ready for collaboration

- Experimental plantations and facilities for the joint study of plant diversity in North Asia.
- Competencies for domesticating wild-growing plant species for use in medicine, pharmacology, food industry and landscape gardening.
- Scope for producing precommercial and commercial batches of planting material for greening and landscaping.
- Scope for commercializing new functional foods made from little-known plants.

Participants

CSBG, NSU, NSPU, NSAU, TSU, FRC ICG, IPCET, BIC, secondary schools, lyceums, gymnasiums, and other organizations

Economic numbers

Budget effectiveness is no less than RUB 50 million after attaining the projected capacity.

Industrial partners

BEKTOP

БЕСТ

BEKTOP

Only 1/4,000,000th of the Earth's population knows how to make modern gadgets

"Discoverium"

A multidisciplinary museum facility of the Siberian Branch of the Russian Academy of Sciences with a scientific and educational center for schoolchildren and students

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Project description

The exhibition reflects the most important points in the development of science, technology and civilization on the whole, forming the notion of the key achievements of the world science and giving the opportunity to ponder on the interrelations of the technical, natural and humanitarian knowledge. Here one can get acquainted with the developments of scientists, play with multimedia and interactive objects, and conduct one's own experiments. The facility will become a place for assembling talents, researchers and experts, and having them communicate with schoolchildren and students.

Audience

Families with children; school groups; guests to Akademgorodok; educational institutions.

System partners:

- Centers of Youth Innovative Creativity, Fablabs.
- Intellectual communities: Tournament of Young Physicists, WorldSkills, Coworking community of National Technology Initiative.

Project objectives

- Creating a system of sci-tech education through the engagement of the youth in scientific and engineering activity, and the practical use of high technologies.
- Development and introduction of a new form of education for children and adults in the sphere of research.
- Raising awareness about scientific achievements, including those by the institute of the Siberian Branch of the Russian Academy of Sciences.
- To boost the attractiveness of the region for tourists; to boost regional tourism.
- Arranging for family time as intellectual feasts.
- To develop small businesses: the creation and rollout of showpieces; running hotel businesses.

Ready for collaboration

- Russia's largest scientific and educational tourism destination east of the Ural Mountains.
- Scope for arranging international educational exhibitions or displaying standalone showpieces.
- International work exchange, work placements.
- Additional education in the field of setting up Exploratorium-type interactive museums and effective scientific communication.

Target values

- Up to 300,000 visitors annually
- Income up to RUB 100 million per year
- Total area of 20,000 square meters;
- 2-3 new exhibitions per year.

Infrastructure Development Project for Academpark (Technopark of Novosibirsk Akademgorodok)

Technology entrepreneurship

100 thousand square meters of offices, laboratories, and pilot manufactories

Highlights

Academpark is an integrated technology hub with a unique technological and business infrastructure. Optimal conditions put in place for the successful launch of innovative start-up companies allows for an effective development of active high-tech enterprises.
Academpark is located in one of Russia's leading research centers, which promotes close cooperation with research institutes as well as engagement of highly qualified experts in the resident companies' projects and activities.

Project description

- Expanding production and technology infrastructure for science-based technology-intensive manufacturing.
- Mentoring projects related to the commercialization of Novosibirsk Scientific Centre's research.
- Engaging major national and international corporations.
- Creating R&D centers and engineering companies.
- Providing support and development opportunities for small- and medium-sized high-tech businesses to grow, to increase their production volumes and to export their high-tech products.

Infrastructure and support

The project includes the establishment of new specialized areas to accommodate pilot manufacturing, laboratories and offices for high-tech companies that represent Academpark's four clusters: IT, manufacturing & mechanical engineering, biomedicine, and new materials.
Academpark is expanding the range of services for innovative businesses. Among other forms of cooperation, the institutes of the Siberian Branch of the Russian Academy of Sciences will organize professional training for prospective workforce; assist enterprises in raising investments and building partnerships with large Russian and foreign corporations.

Industrial partners

PJSC "UEC-Saturn", JSC "Krastsvetmet", PAO "Severstal", PJSC "Gazprom Neft", Bayer AG, Primer Capital, ACS "Russian Railroads"

Economic numbers

Resident companies' annual turnover at new facilities: no less than RUB 15 billion.

Over 5,000 new jobs with high-tech companies

Annual tax revenues: about RUB 1.3 billion

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Initiator

Медицинский технопарк
инновационный медико-технологический центр

Innovation Medical-Technological Center (IMTC)

IMTC Public Company is the management company of the Medical Industrial Park, a pilot production site of the Ministry of Health of the Russian Federation operating as a state-private partnership under a federal concession.
The Medical Technopark provides a full cycle of innovative development and introduction of medical items or technologies, from an idea to an item or technology prototype, industrial manufacturing, registration and introduction into healthcare practice.

Center of Engineering and Manufacturing of Innovative Medical Devices

Technology entrepreneurship

Projects

Medical Technopark
In 2010, a project was initiated for establishing the Medical Technopark consisting of:
- A center for prototyping medical items and technologies;
- A regional center for engineering;
- An innovative clinic for 139 beds, more than 4,000 surgeries per year, an outpatients and diagnostics facility for 200,000 visits annually;
- A center for education and business.
- All these objects are available in a completed building with an area of 13,200 square meters.

All these objects are available in a completed building with an area of 13,200 square meters.

Medical Industrial Park (MIP)
In December, 2015, the RF Ministry of Health and IMTC signed a concession agreement for creating a complex of competitive manufactures of medical items. In 2016, the first stage of MIP was put into operation, 2,100 sq. m; 100 new jobs created; more than 50,000 items, assemblies and components were produced and supplied to more than 150 Russia's hospitals, and prosthetic and orthopedic enterprises. The project is supported by investments from VEB, FER, FASIE, RUSNANO and others companies with the support from the Government of the Novosibirsk Region.
Over the Project time, within the framework of the complete cycle of innovative product or technology more than 40 new medical items and technologies have been developed and produced following a full cycle and introduced to the market.

The Project "Center for Engineering and Manufacture of Innovative Medical Devices"

The mission of the project is to create place in the Novosibirsk Region where the medical items and technologies developed under *Akademgorodok 2.0* could be brought to serial production and used in the healthcare system.
The project is part of the MIP's second stage. The operating infrastructural functional units will be expanded as far as:
- a center of competencies in medicine and healthcare;
- a center of competencies for bringing biomedical cell-based products to serial use by hospitals;
- a center for testing innovative medical items;
- a center of additive technologies for producing personalized implants and for the serial production of medical items.

Technologies in effect

Technologies for the production of medical items using approaches under the 5th and 6th technology modes:
- Implantable constructs for traumatology, orthopedics, and neurosurgery based on various materials;
- Hardware and software systems for the rehabilitation and treatment of patients; technical means for rehabilitation, including exowearables and exoskeletons;
- Implantable medical items with the use of additive technologies.

Partners

NIOC, IPSM, ISP and Institute of Oncology SB RAS, Baikov IMMS RAS, Serikbaev East Kazakhstan State Technical University (Kazakhstan), Government of Novosibirsk region, Ministry of Economic Development and Trade, Ministry of Health, Ministry of Industry and Trade.

Execution period

The total execution period is 2010–2025
The execution period under *Akademgorodok 2.0* is 2019–2021.

Expected economic numbers

Production volume of the project's total capacity is RUB 2.5–3 billion per year.
Operating earnings after reaching the total capacity is RUB 450 million per year.
The pay-off period is 5 years. Budget effectiveness is RUB 130 million per year.

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Industrial manufacture of graphene nanotubes, nanomodifiers and related materials

Technology entrepreneurship

TUBALL™ graphene nanotubes: new properties of materials

Initiator

OCSiAl is the world's largest manufacturer of graphene nanotubes, an innovative additive that improves the properties of the majority of known materials. Graphene nanotubes, often called single-wall carbon nanotubes, can be thought of as a rolled-up sheet of graphene. Their advantages compared with other additives are related to their exceptional properties, such as high conductivity, thermal resistance, durability and flexibility. OCSiAl produces graphene nanotubes under the TUBALL™ brand name. OCSiAl is a global company with more than 400 employees and 600 regular customers. The company is represented in Russia, Luxembourg, USA, South Korea, China, Hong Kong, Japan, Malaysia, Israel and India.

Project description

OCSiAl is the first company to have developed an industrial technology for the mass production of graphene nanotubes. The technology is based on research by renowned Novosibirsk physicist Mikhail PREDTECHENSKIY, Full Member of the Russian Academy of Sciences, who is also the Head of R&D and a co-founder of OCSiAl Group. The technology is noted for producing high-purity graphene nanotubes and for having unlimited scaling potential. The synthesized material can be sold at a low price and this method of producing graphene nanotubes is the first to have made their industrial use economically feasible.

Owing to its location in Novosibirsk Akademgorodok, the company's R&D center can continuously cooperate with a number of research institutions as well as with the Novosibirsk State University. In 2017, NSU with the support of OCSiAl launched the Department of Nanocomposites to train highly qualified specialists in this innovative materials science field.

The product

OCSiAl offers solutions based on graphene nanotubes for electrochemical power sources, elastomers, paints and coatings, composites and plastics. The line of TUBALL™ MATRIX pre-dispersed concentrates developed by OCSiAl simplifies nanotube handling, provides materials with conductivity and improves their mechanical properties. As little as 0.1% of TUBALL™ MATRIX dramatically changes the specific properties of the majority of known materials.

Scientific partners

Institute of Thermal Physics, Budker Institute of Nuclear Physics, Boreskov Institute of Catalysis, Lavrentiev Institute of Hydrodynamics, Nikolaev Institute of Inorganic Chemistry

Production capacity

OCSiAl is the world's largest manufacturer of graphene nanotubes, with an annual capacity of 65 tonnes, which will increase to 115 tonnes by 2022.

Customers

More than 2,700 companies all over the world develop TUBALL™-based technologies. 600 of them are our regular customers.

Mikhail VYDRIK. OCSiAl Vice-President
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Revolutionary Innovative Technologies for Urban Farming

Novosibirsk regional R&D center of modern urban agrotechnologies

Initiator

iFarm is developing a technology for vertical automated cultivation of fresh vegetables, greens and berries all year round, along with software for remote control of vertical farms. The company is a Skolkovo and an Academpark (Novosibirsk) resident, where it carries out its original research and experimental development for identifying optimal parameters for growing crops, for achieving the maximum high-quality yield. The company activities match the FoodNet roadmap "National Technology Initiative", of which the aim is to create "Food Factories".

Our project innovation is developing solutions for modern automated greenhouses as well as a digital parameters database for effective cultivation of various crops in closed ecosystems with a fully automated microclimate.

We develop and sell technologies for automated vertical farms growing greens, berries and vegetables. All year round. We have the technology for growing fresh, healthy foods. Everywhere. Anyplace in the world.

Project description

The research and development center of modern urban agricultural technologies of Novosibirsk region is located at greenhouse of Siberian Federal Research Centre of Agro- Biotechnology of the Russian Academy of Sciences with the full cycle of automated vertical farm creation, including consumables, such as: fertilizer sets, LED Phyto Lamps, mixing units, drip irrigation equipment and other components. The project is an initial step in the digitalization of Russian agriculture, which allows to move farming to a new technological level. The project implementation allows Russia to enter the new markets: design and engineering of automated greenhouses, digital modeling, industrial robots, company management information systems, Big Data.

The product

1. A vertical farm is a multi-tiered system for crop cultivation that may be placed anywhere indoors. The main difference from usual greenhouses is that it needs no sunlight or external air and uses 95% less water. The racks are installed quickly and use the planting area effectively. All the parameters are controlled via an IT platform. The IT solution reduces payroll expenses and allows using the technological maps of a large variety of unique crops by automation of all production and sales processes
2. Automated greenhouses (bio-vegetariums) store solar energy inside and have a fully automated growing system.
3. Fresh, healthy vegetables, greens and berries.

Scientific partners

NSU, NSAU, Institute for Soil Science and Agrochemistry, Kutateladze Institute of Thermophysics of the SB RAS, Institute of Cytology and Genetics of the SB RAS, Siberian Research Institute for Plant Industry and Breeding.

Estimated project cost

850 million rubles

Execution period

2016–2025

Expected economic numbers

The city farmers' market is worth $60 billion, with an annual growth rate of up to 30%.

Руководитель: **Александр Викторович Лысковский**, директор ООО «Городские теплицы»
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CityAir

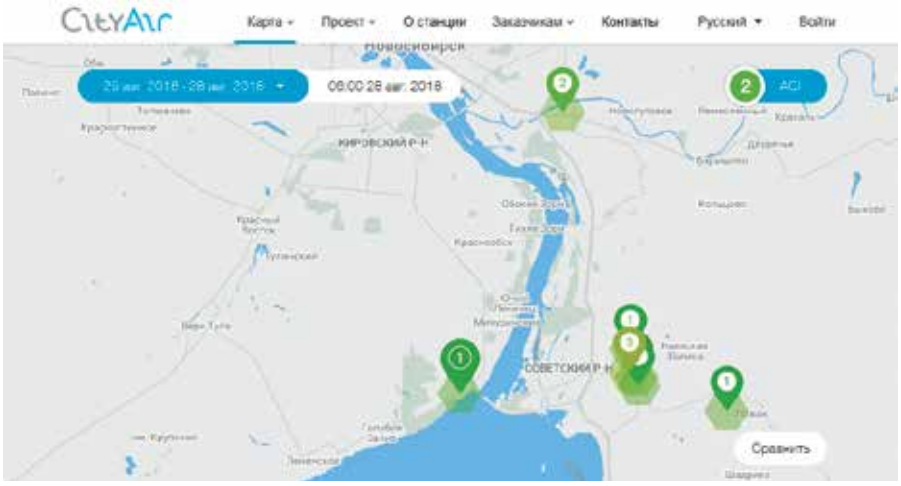
Technology entrepreneurship

Bringing real-time information about air quality to everyone

Initiator

The development of the CityAir platform was started in 2017 by Tion, an innovative company based in Russia, as a response to the concerns of the society and the government regarding ecological problems and the comfort of the modern urban environment. The key aspects of the proposed solution are:

- to design and manufacture low-cost measurement components for monitoring the concentrations of atmospheric pollutants based on the latest discoveries in the fields of chemical and optical sensors and advanced means of processing primary information;
- to develop an IT platform for collecting data from original stations and from third parties' monitoring networks, and to provide tools to enable visualization and analysis of the data for various groups of users;
- to implement models of pollutant dispersion for addressing direct and inverse problems for different types of boundary conditions for short-term forecasts of atmospheric air quality and for the estimation of the impact of various city-planning decisions on the environment;
- to promote complex innovative products for domestic and international markets.



Project description

A system of ecological monitoring deployed globally around the world. The project includes a network of stations measuring the concentrations of the main pollutants in the atmosphere and air quality forecast models integrated into a single service, which presents a true, unbiased information on air quality in all places people live on in or visit.

The product

Compact stations for measuring the concentrations of atmospheric pollutants; computer models for the forecast of the environmental situation; and tools for information analysis facilitating the dissemination of this information to different groups of users: urban populations, researchers, government institutions. All this transforms into a wide range of products for the B2B, B2C, and B2G markets.

Research partners

Voevodsky Institute of Chemical Kinetics and Combustion, SB RAS

Estimated project cost	Execution period	Planned annual net sales
USD 20 million	2018—2022	USD 1 million

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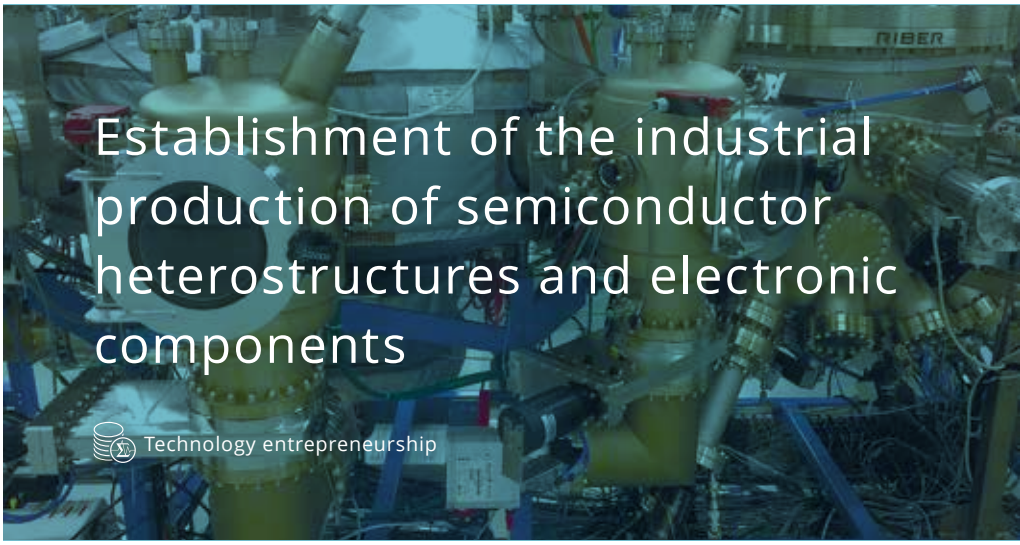
Superfast and powerful electronics is the basis of the digital economy



Establishment of the industrial production of semiconductor heterostructures and electronic components

Technology entrepreneurship

Initiator

JSC Ekran–Optical Systems is a Russian developer and manufacturer of Image Intensifier Tubes (IIT) and Photomultiplier Tubes (PMT) for night vision devices and for space, nuclear and medicine research. The basic information on the company:

- more than 55 years of experience in the development and manufacture of IIT and PMT;
- more than 400 employees including engineers, designers and technologists of the highest qualification;
- the share in the Russia's IIT and PMT export is more than 70%;
- more than 95% of the company's net sales comes from exporting its production;
- the company develops new technologies and materials in a close collaboration with the institutes of the Siberian Branch of the Russian Academy of Sciences.

Project description

The aim of the project is to create a high-tech and commercially profitable contract manufacturing of semiconductor heterostructures and semiconductor devices on their basis. Once the project has been executed, JSC Ekran–Optical Systems will have created the following technologies and industries:

1. Contract manufacturing of semiconductor heterostructures based on arsenides in the group III metals with a capacity of 10,000 epi wafers per year.
2. Contract manufacturing of semiconductor heterostructures based on nitrides in the group III metals with a capacity of 7,000 epi wafers per year.
3. Crystal manufacturing of semiconductor components for power electronics based on original gallium nitride heterostructures.

The participation of the Institute of Semiconductor Physics, SB RAS, is an important advantage of the project. The model of collaboration includes the signing of license agreements and direct transfer of ready-to-use technological solutions to the industry as well as a partnership in conducting targeted R&D for the development of new semiconductor materials.

The product

Under the Project, JSC Ekran–Optical Systems will set up, within its own premises, an industrial-scale production of the following products:

1. Various types of III-V epi wafer (2"–6") based on gallium arsenide and gallium nitride, a basis for producing transistors and integrated chips of super-high frequen-cies as well as for elements for communication, space equipment, and lasers.
2. Electronic components for power electronics based on gallium nitride.

The project involves the development of a significant share of the domestic market for semiconductor heterostructures for microwave electronics, as well as exporting products.
The process of manufacturing heterostructures is based on the use of highly automated industrial plants for molecular beam epitaxy (MBE).

Research partners

R&D partner of the project – Institute of Semiconductor Physics of the Siberian Branch of the Russian Academy of Sciences.

Financial partner of the project

RATM Holding

Estimated project cost
RUB 2,900 million

Execution period
2018—2024

Planned annual net sales
RUB 2.7 billion

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National Platform for Industrial Automation

Technology entrepreneurship

Security and safety of crucial infrastructure

Initiator

The main production/services of the company "Modular Systems Tornado" is SCADA based on an original hardware and software system for the objects of various industries. The solutions offered by the company in the field of automation are of its own design, simple and unique. The company is a member of the non-commercial partnership of high-tech companies "SibAkademSoft", a resident of Academpark and an industrial partner of the Institute of Automation and Electrometry, SB RAS, and a number of other SB RAS research institutes. The company "Modular Systems Tornado" is a link between cutting-edge science and advanced industrial production.

Project description

The project is to address several important problems:

1. The need to decrease the dependence on the foreign importers of the systems and means of automation. In the majority of cases, foreign equipment is mounted even at crucially important and military significant objects. This situation puts the key industries of the Russian economy into a critical dependence the foreign importers.
2. The need to create the outrunning technologies of automation. Phasing out imports in favor of domestic products can be considered sufficient for filling in the gap in this area. It is necessary to set a mission for developing outrunning solutions in the field of automation.
3. The need to create a standard of integration. The solutions of different manufacturers are "private" and incompatible. The process of integration of subsystems is quite painstaking and expensive and sometimes simply impossible. Users stick to the manufacturer of a certain system, which complicates its modernization during its lifetime and increases the cost of ownership.

The product

Project objectives:

1. Creation of advanced, universal, safe, economical systems of automation, all components of which are developed and produced in Russia.
2. Creation of a single model of an automation object describing
   - all types and classes of objects;
   - standards of integration;
   - standards of safety of the system.
3. Development and manufacture/introduction of a universal scalable platform of automation of industrial production used in any field:
   - development of new-generation items;
   - development of an advanced computer platform;
   - development of materials for training specialists.

Research partners

Institute of Automation and Electrometry, Institute of Thermal Physics, NSU, NIPS.

Estimated cost of the project
RUB 850 million

Execution period
2016–2023

Economic numbers
Russian market volume:
RUB 90,000 million per year

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Investment Projects
of JSC Katalizator

Establishment of a World-Class Center of Applied Catalysis

Technology Entrepreneurship

Initiator

JSC Katalizator is one of Russia's largest manufacturers of catalysts. The company is a research and manufacturing facility capable of undertaking anything from the development of industrial catalysts and technologies of their industrial preparation to a large-scale manufacture and complex engineering maintenance of the supplied products, more than 90% of which are exported. The enterprise includes production sites in Novosibirsk and Novosibirsk region, Krasnoyarsk, and Ryazan region.
JSC Katalizator is a winner of the National Award "Gold Mercury" as the "Best Export Enterprise in Industrial Production"; it ranks second in the "National TechUp Rating" of the fast-growing companies and its products have been awarded with the "100 Best Goods of Russia" title.

Partners

Government of the Novosibirsk Region; Boreskov Institute of Catalysis, SB RAS; Novosibirsk State University.

Projects

National Center for Engineering and Catalyst Testing (NCECT)
The aim of the project is to create a unique center for concentrating competencies, to combine catalytic science and Russia's industry. The directions of the Center are:
• independent comparative tests of industrial catalysts with recommendations for choosing the best fitting catalyst
• engineering services for the optimization/modernization of manufacturing processes, for the improvement of technology modes
• testing new brands of catalysts on pilot stands and accelerating their industrial introduction
• training of qualified specialists.

Implementing the technological initiative "CET": Catalysts, Engineering, Technologyv
The project is a part of the Program of reindustrialization of the economy of the Novosibirsk Region. The aim of the project is to create a world-class center of applied catalysis for developing advanced catalysts and adsorbents, scaling the industrial technologies of their manufacture as well as developing high-tech engineering services for the industry using catalysts.
The essence of the project is a deep reconstruction of the office and laboratory building with the establishment of about 40 laboratories with the complete technical re-equipment of the research and engineering infrastructure to meet the world standards.

National Center for Engineering and Catalyst Testing (NCECT)

Estimated project cost
USD ~30.7 million inclusive of VAT, of which USD 7.7 million is paid by Katalizator JSC and USD 23 million, by other stockholders

Execution period
Starting in 2019, reaching sustainable economic numbers by 2025-2026

Planned annual net sales
can reach USD 15.4 million per year by 2030, up to USD 185,000 million per employee

implementation of technological initiative "CET": Catalysts, Engineering, Technologies

Estimated project cost
USD 14 million, which is paid by Katalizator JSC own funds

Execution period
2016—2024.
Planned payback year is 2019

Planned annual net sales
Tax revenues to the state budgets is near USD 20 million

Anatoliy SOBOLEV. Head of the Project. Development Director
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Environment for Life and Labor

The best place for thinking

Akademgorodok 2.0 is not only a world-class research, education and innovation center, but also the environment best suited for intellectual labor.

The development program for the Novosibirsk Scientific Center stipulates a thorough renewal of the historic image of Akademgorodok the way it was conceived: low-rise, cozy, with its own special atmosphere. The importance of creating a modern complex of housing and social infrastructure under Akademgorodok 2.0 was marked by Russia's President Vladimir Putin at the press-conference in December, 2018: "If there is a need to do something else for solving the social problems of the researchers, we will, of course, try our best to do that.
The Novosibirsk center for science, education and innovation should become a point of growth and a point of attraction, with everything for free creative work and an eventful comfortable life.

Akademgorodok population, in thousands of people

Net sales (in 2017 prices), in billion rubles

Akademgorodok area, in thousands of hectares

Visiting foreign experts and foreign students, in thousands

People engaged in research, education and innovation institutions, in thousands

Students in the Novosibirsk State University, thousands

1 Expanding and developing an area including today's Akademgorodok, Krasnoobsk (an agrarian science town), Koltsovo (a virology and biotechnology town) and adjacent sites.

2 Developing the road and transport system to harmonize the interests of pedestrians, drivers, bikers, and users of municipal transport.

3 A high density of the institutions of medical and social infrastructure.

Welcome to *Akademgorodok 2.0*!

4 Outrunning and rational housing construction; high-rise building complexes in the outskirts, low-rise in the environmentally attractive zones.

5 Reconstructing and modernizing all engineering objects and networks for future use.

6 Modernizing and creating objects specific for the science center: the House of Scientists, the University campus, interactive museums, historical-cultural re-enactments, to name a few.

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