

Skolkovo
Institute of Science
and Technology

СКОЛКОВСКИЙ ИНСТИТУТ НАУКИ И ТЕХНОЛОГИЙ

Skoltech



Skoltech

a top world young
institute of science
and technology
in the center of Skolkovo
Innovation Center

Moscow
International
Medical Cluster
Hadassah
Medical
Moscow
(Israel)

Renova
R&D Center
Laboratories
of Skoltech
Center for
Petroleum
Science and
Engineering

Skolkovo
International
Gymnasium
Kindergarten,
Primary School,
Middle School,
High School

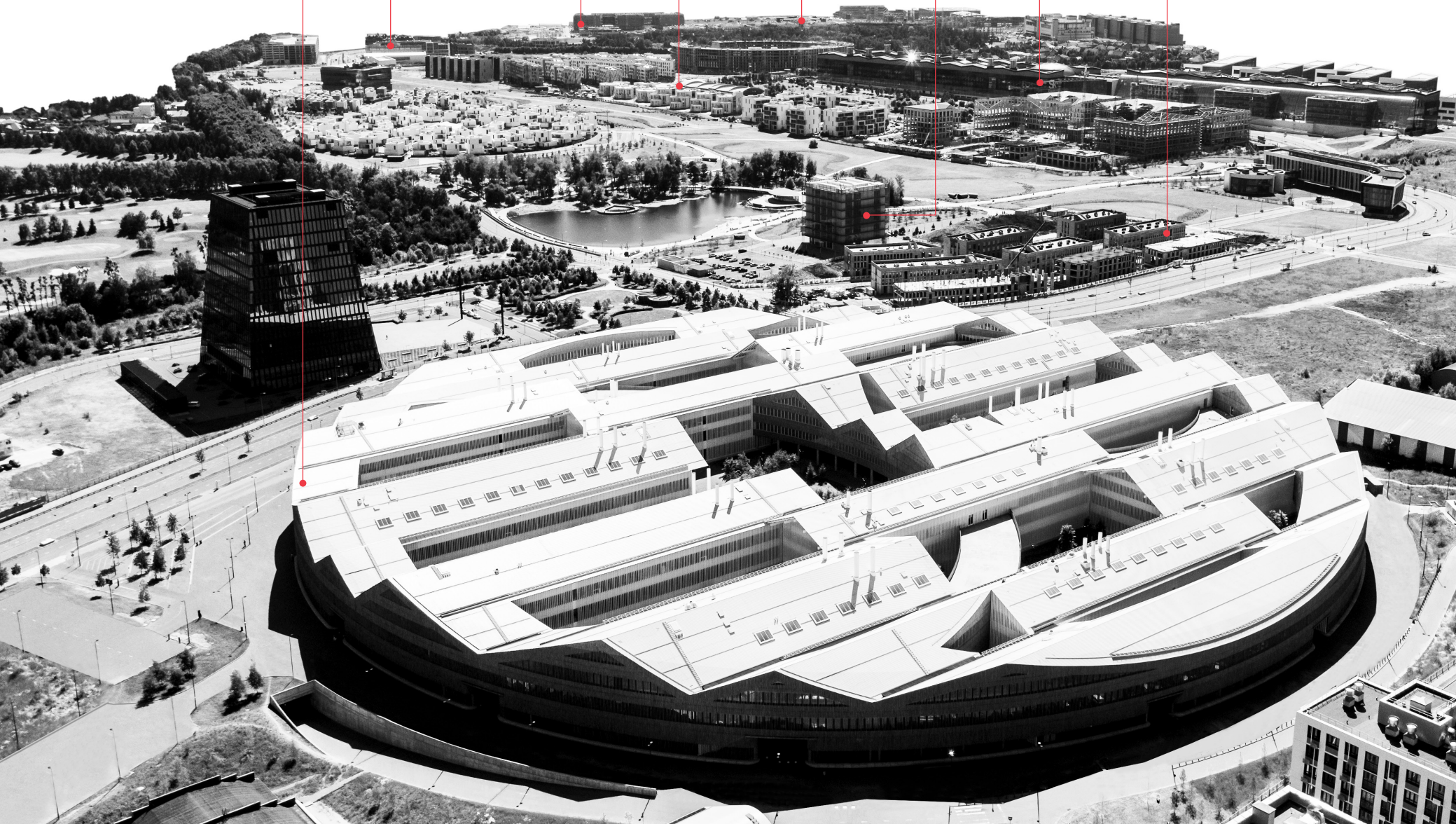
Mendelev
Quarter
Laboratories
of Skoltech
Center for Energy
Science and
Technologies,
Digital
Engineering Center,
Photonic Science
and Engineering
Center

HyperCube
educational
startups

Skolkovo
Technopark
Teaching
laboratory
of Skoltech
Center
for Molecular
and Cellular
Biology


Skoltech
dormitory
(end of
construction
in 2023)

Skolkovo
Educational
Hub
Skoltech,
Moscow School
of Management,
New Economic
School



content

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created
to create
world leading
institute
of science
and technology

Founded in 2011 as a new model university in Russia, Skoltech is a world-leading institute of science and technology with aspiration to impact economy and society development by academic and technology excellence and entrepreneurial spirit.

Today, Skoltech is a home for talents investigating promising areas of global science and technology – Artificial Intelligence, Telecommunications, Life Sciences and Health, Cutting-edge Engineering and Advanced Materials, Energy Efficiency and ESG, Photonics, and Advanced Studies.

As research intense institute, Skoltech demonstrated globally visible results, twice appearing among top-100 world's young universities of the prestigious Nature Index ranking.

Rich and encouraging student-centered environment enable MSc and PhD programs to educate next generations of leaders in science, technology and business. More than 1600 of talented and ambitious alumni are successfully employed in high-tech companies, became entrepreneurs, or continue for academic career.

Skoltech is a trusted partner for industry players in Russia and beyond, provides reliable technological expertise to governmental authorities. The Project Centers – specializing in Wireless Technologies and IoT, Artificial Intelligence, Agro technologies, Energy Transition and ESG – are driven to contribute accumulated intellectual potential to technology capacities in Russia.

More than 125 enterprises are established by Skoltech faculty, students and alumni in Russia and abroad. More than 75 companies have been awarded with Skolkovo residency. Marked with prestigious Prix Versailles Award, unique campus cultivates strong and active interaction between innovation, research, teaching and learning, making stronger the community of faculty, students and staff, which now exceeds 2200 people.



mission

Skoltech facilitates economy and society development by academic and technology excellence and entrepreneurial spirit.

vision

Skoltech is the central element of the system of national institutes for development re-creating foundation for high-tech industry, by leveraging the boost in problem-based research and entrepreneurship in science-intensive areas.

Skoltech fosters research in areas of crucial importance for Russia and the world, promotes entrepreneurship, while training science, technology and business leaders capable of working in a rapidly changing landscape.

fact and figures in brief

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2011

Year
of foundation

6

Target
Domains

14

Research
Centers

>600

Academic
personnel

42

nationalities in MSc
and PhD student cohort

>1600

Alumni in Russia
and abroad

#1

In Computer
Science in Russia

Guide2Research

#65

Among top-100
world young
universities

Nature Index ranking

#21

Among rapidly
growing world
young universities

Nature Index ranking

>2.2 bln
Rub

Sponsored
research funding
for 2022

>125

Skoltech
associated
startups

>150

Active IP
portfolio

134 000 sq. m.

Best-in-class campus in the heart
of Skolkovo Innovation Center

Data as of September, 2022.



research
and technology
excellence,
entrepreneurship

created

to create

**research novelty
and technologies
stimulating
economy
development**

Skoltech conducts research which addresses major challenges facing society and the world, striving to achieve academic excellence and global recognition. In pursuing technology excellence, Skoltech works closely with industry to boost capacities required for economy development.

40 000

sq.m
Research facilities

72%

Output
in top-25%
journals

1.3 bln
Rub

Grant funding
2022-2024

2.7 bln
Rub

R&D funding

Skoltech research and technology program focuses on major challenges faced by society in Russia and the world. The broad but focused portfolio of curiosity-driven and problem-driven research themes lies in six target domains (chart further). Today Skoltech is known as a top world young university rapidly climbing up in international rankings: best computer science university in Russia (Guide2Research), # 65 among top world young leaders, # 35 in Physical Sciences, and #21 among rapidly rising universities in Nature Index Young universities ranking. The highest research results are reflected in the annual publication output. In 2021, almost 13% of papers appeared in Nature Index journals, more than 20 times Skoltech scholars have been speaking at the top Artificial Intelligence international conferences (A*). Leveraging faculty-to-

faculty academic network with top world universities and research centers, 60% of papers are published with international peers. Skoltech serves as a national think & act tank utilizing unique expertise for large technology programs. Project Centers in Next Generation of Wireless Technologies, Internet of Things, AI optimized decisions to reduce carbon footprint, Agrotechnology, Energy Efficiency and ESG are focusing on driving technology results. Among notable achievements is a demonstration of a 5G network using Skoltech software and the first VoNR call in Russia, deployment of production line of cathode materials for lithium-ion batteries based on oxides of nickel, manganese and cobalt, design and implementation of the technology for production of honeycomb packs to the national aerospace industry.

Strong ties are in place with high-tech companies, locally and internationally: Gazprom Neft, Sber, Huawei, Bayer AG, Lukoil, Zarubezhneft, MTS, Yandex, CityAir, Russian Railways, Rosatom, Hyundai, IPG Photonics and others. On the governmental level, Skoltech is a key player in science and technology policy making, supporting national programs, such as development of production and usage of electro transport in Russia till 2030, roadmaps of the National Technology Initiative, development of mass spectrometry equipment in Russia. Faculty are regularly invited to government's task forces defining technology policy. The portfolio of sponsored research projects doubled over five years and today includes national level projects as creating Centers and laboratories in Deep Learning, AI, Multiscale Neurodynamics for Intelligent systems, Omics Technologies, Rational

development of liquid hydrocarbon resources, but also R&D programs with industry, grants awarded by national agencies. Professional training programs are designed for key industry players in areas of Electro Energy, ESG, Technologies in Aerospace, Agro, Machine Learning, Molecular Oncology, Reservoir Geochemistry, Enhanced Recovery, Geomechanics. The state-of-the art research infrastructure is a solid base for research. Over the past years, Skoltech deployed multiple laboratories and significantly invested in unique equipment. Shared facilities have been organized in the fields of genomics, bioimaging and spectroscopy, advanced atomic level imaging, advanced mass spectrometry, a fab lab for production, modification, repair and upgrading of products.

created to create competences in advanced areas of science and technology

Artificial Intelligence & Tele- communications

AI Technology

- Computational Intelligence
- Tensor Networks & Deep Learning
- Mobile Robotics
- Computer Vision
- Natural Language Processing
- Computational Imaging
- Intelligent Signal and Image Processing
- Multiscale Neurodynamics for Intelligent Systems
- Mathematical Foundations of AI
- Statistical Machine Learning
- AI & Supercomputing
- Medical Computer Vision
- Quantum algorithms for machine learning and optimisation
- AI for Materials Design

Next Generation Wireless & IoT

- 5G development
- 6G Research and Development
- Wireless technology perspective studies

Skoltech AI

- Data Fusion and 3D Computer Vision
- Physics-Informed ML
- Efficient DL for Green AI technologies
- ML for Industrial Predictive Analytics

Life Sciences & Health, Agro

Molecular & Cellular Biology

- Microbiology
- Metagenomics
- Functional and evolutionary virology, antiviral drugs
- Transcriptomics
- Biochemistry of nucleic acids
- Cell Biology
- Genetically encoded fluorescent probes: engineering and application in biomedical models
- Structural bioinformatics
- Immunology – Adaptive immunity
- Plant biology
- Genetics and Evolution
- Omics technologies and big data for personalized medicine and health
- Mass spectrometry molecular technologies in medicine and environmental research

Neurobiology & Brain Rehabilitation

- Brain-computer interfaces
- Neuromodulation
- Brain metabolism
- Biomaterials
- Small molecules
- Computational neurobiology
- Computational neuroimaging

Agro Technologies

- Envirotyping and Digitalization of Agriculture
- Crop improvement
- Livestock improvement

Cutting-Edge Engineering, Adv. Materials

Digital Engineering

- Product Development and Systems engineering
- Systems Modeling
- Robotics
- Space Systems

Petroleum Science & Engineering

- Enhanced Hydrocarbon Recovery (chemical, gas and thermal methods)
- Geomechanics, hydraulic fracturing
- Petrophysics and geochemistry of unconventional reservoirs
- Geocryology (gas hydrates, permafrost)
- Advanced Reservoir Modelling
- Machine learning in oil and gas industry
- Climate changes, environment protection, energy transition in oil and gas industry
- Nuclear waste disposal in geological formations

Materials Technologies

- Large-sized structures of polymer composite materials for the transport infrastructure of the Arctic zone
- Coating technology for nuclear waste management
- Additive manufacturing of implants for translation into clinical practice

Energy Efficiency & ESG

Energy Science & Technology

- Energy storage and conversion
- Energy Systems
- Laboratory of Modern Energy Systems
- Skoltech-KAMAZ laboratory for automotive batteries
- Project Laboratory on sustainable hydrogen and ammonia

Energy Transition & ESG

- Carbon Capture, Utilization and Storage
- Decarbonization of industry
- ESG Risks Assessment in Economy
- AI for ESG applications

Photonics

Photonic Science and Engineering

- Biophotonics
- Liquid Light Computing
- Nanomaterials
- Photonic Circuits and Systems

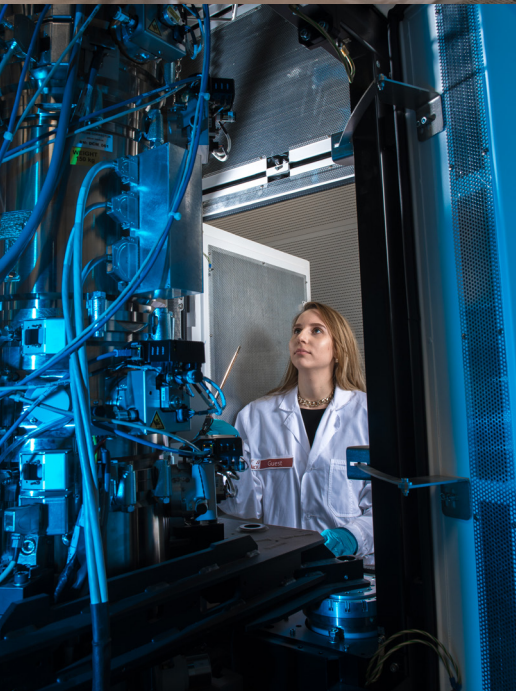
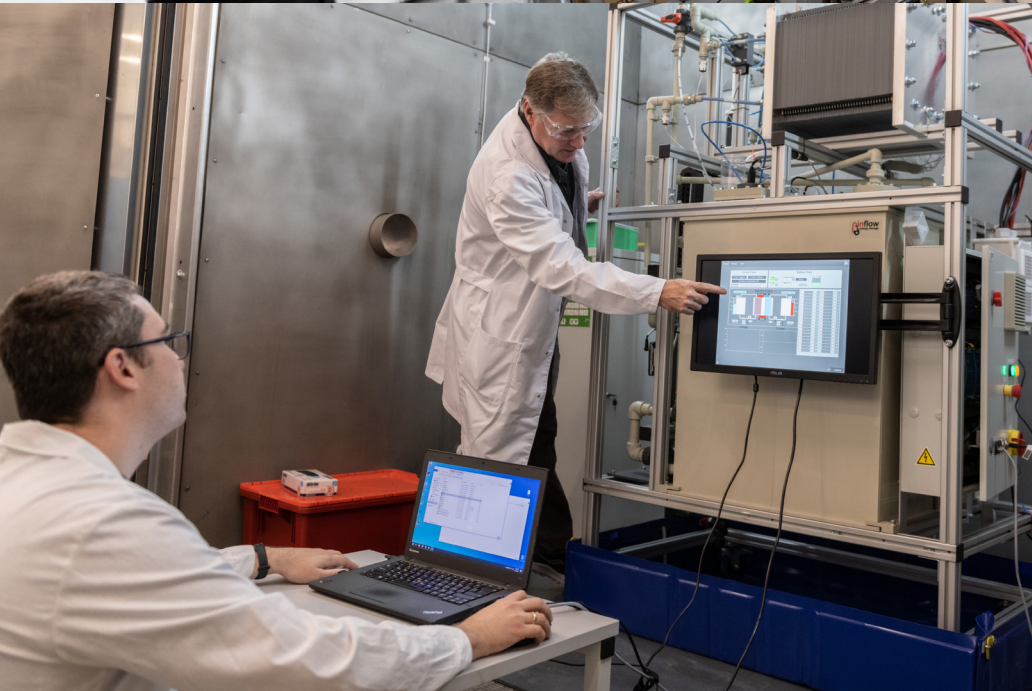
Engineering Physics

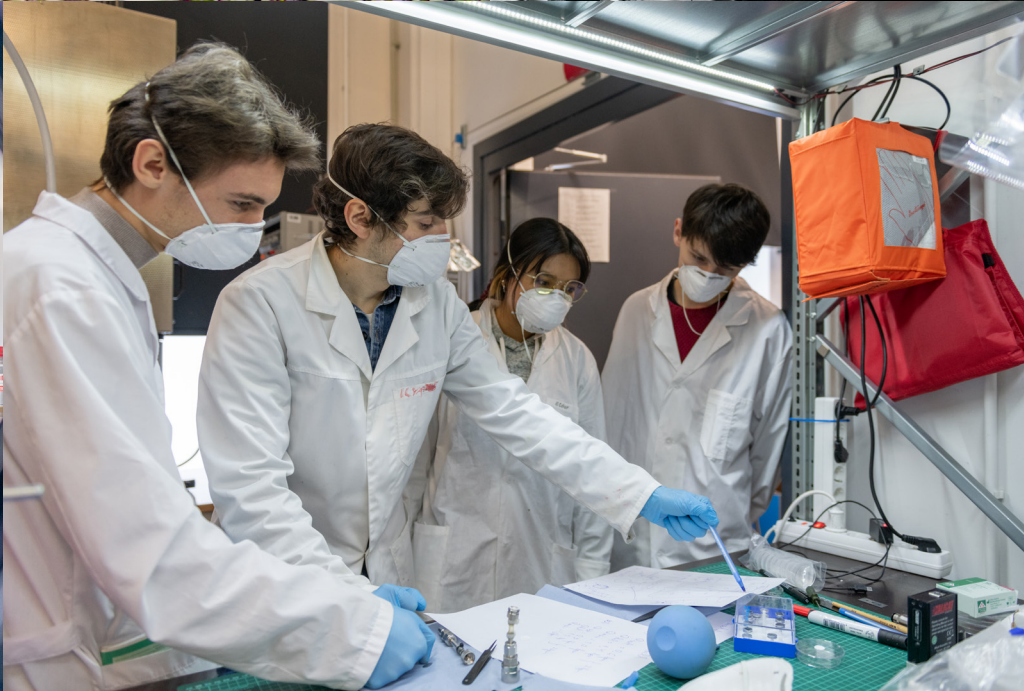
- Photonic integrated circuits and devices for applications in nano-optoelectronics, fiber sensors, and nano-biomedicine
- Quantum current standard
- Computer modeling of cerebral blood flow. Development of experimental microcirculatory model of the human brain to map out areas of specific interest and subsequent study of the hydrodynamics of a multiphase fluid in the microcirculatory system


Advanced Studies

Advanced Studies

- Algebraic and complex geometry
- Lie theory and generalizations
- Dynamical systems and differential equations
- Mathematical physics
- Probability and statistics
- Combinatorics and discrete mathematics
- Integrable Models







created
to create
new companies
in Skolkovo
and beyond

tech

76

Startups
received
Skolkovo status

>45%

Startups with Skolkovo
status founded by
students and alumni

250 mln
Rub

Investments
raised for
startups in 2021

The innovation domain is a solid ground for nascent entrepreneurs aspiring to become leaders in business. Skoltech fosters aspirational environment through E&I curricula, translational research, mentorship and programs to raise investments for Skoltech associated startups.

The Center for Entrepreneurship and Innovation, opened in 2011 with support of the Massachusetts Institute of Technology, work closely with students to foster entrepreneurial spirit and help them in building startups by ensuring a smooth transition from idea to impact. Unique curriculum is composed of disciplines and activities which makes the Startup Funnel, opened with a flagship Innovation Workshop boot camp. Variety of courses in technology entrepreneurship, finance, marketing, innovation management, operations management and supply chain are delivered. From the very beginning of Skoltech existence, the Center conducts a translational research

program. Aimed to bridge the gap between laboratory research and marketplace, drive innovation and entrepreneurship by obtaining marketing knowledge, the program supports project teams to establish proof of concept and advance technology towards commercialization, including identification of high potential markets, IP management, and startups establishment. Cooperation is in place with the Skolkovo ecosystem and academic, industrial, and financial partners beyond. Joint events with partners are regularly organized to promote Skoltech affiliated startups and share practices on deep tech, development institutes, and industrial cooperation.



educating
leaders



**created
to create**
**next generation
of leaders
in science,
technology
and business**

Skoltech offers internationally recognized MSc and PhD degree programs based on the strong research component run by Centers for Research, Education and Innovation, Project Centers and Center for Entrepreneurship and Innovation. Holistic educational model is all about cutting-edge content and flexible curriculum, exchange of ideas with world class faculty having strong connections in academia and industry, access to state-of-the-art teaching and research facilities, broad student support program. Diverse opportunities of academic mobility and high-tech internships to large companies and Skolkovo startups are offered to help

students in gaining practical experience and shaping professional ties. Skoltech programs are taught in English as a global language of science and technology. All teaching and learning spaces are equipped with state-of-the-art technologies to deliver best experiences. The library, in addition to extensive collection of digital databases and printed materials, provide modern spaces for group projects and individual work, conferences and thematic lectures. A vibrant student life stretches far beyond classrooms and lectures. Some popular activities led by students include sports clubs and talent shows, cultural events and social responsibility projects.



Find out more
info about Skoltech
Master and PhD
programs, courses,
application
and admission

>130

Development
scholarships
awarded
annually

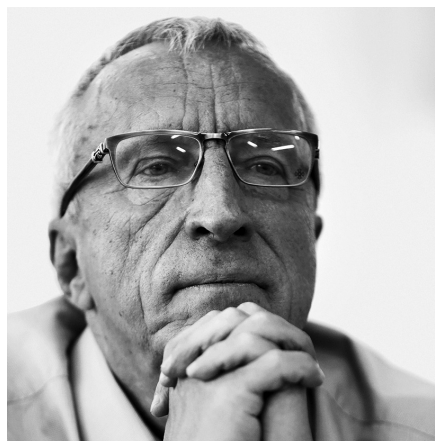
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Partners for
student industry
immersion
program

95%

graduates'
placement during
4 months after
graduation

Our way to retain young talents in Russia – provide them with opportunities to create own projects

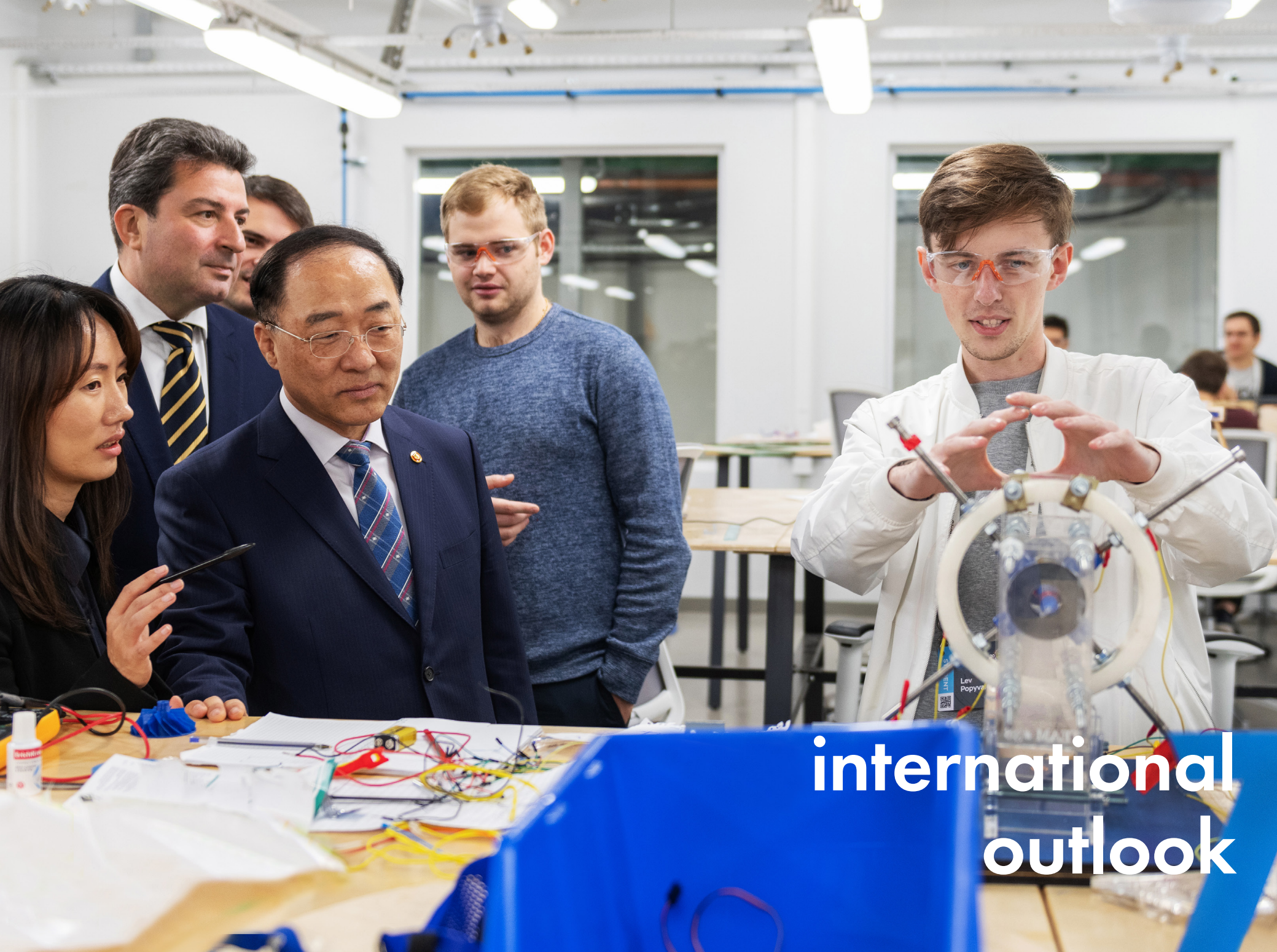


Skoltech goal is to establish a strong engineering school in new areas in Russia. To address this, we shaped excellent conditions allowing young scholars to pursue advanced research, which addresses key scientific and technological problems in Russia and in the world. We believe, that it is critically important to show young talents perspectives in advance, providing them with wide opportunities to start and develop own projects. This is a way to stop brain drain.

Alexander Kuleshov,
President







international
outlook

created to create global partnership network



Skoltech has an extensive global partnership network to support joint research, teaching and learning, academic mobility and cotutelle agreements, allowing to deliver dual degrees and collaboratively supervise students' research projects.



54
Institutional
partnerships

14
Cotutelle
agreements
in PhD studies

1035
Number
of international
institutes
and universities
whose scholars
co-author papers
with Skoltech



community
engagement



created
to create
diverse
community
of talents

>3800

Staff, students,
alumni

48

Home countries
of staff, students
and alumni

Skoltech aims to recruit and develop the most promising students and outstanding staff, to be a truly global university.

Today Skoltech is proud to have faculty, researchers and students from mostly all parts of the world. Our faculty – committed teachers, enthusiastic contributors to national technology development, inspiring entrepreneurs, national experts and members of international academic societies, proud holders

of prestigious awards for research and technology excellence. Our students publish top quality papers, receive national and international awards and fellowships. We engage with our highly-skilled alumni all over the world, inviting them to participate in a variety of programs to contribute to Skoltech.



created
to create
programs
for wider
community

Skoltech is committed giving back to society. Our scholars and students are engaged in a variety of activities to benefit with science outreach program to the Skolkovo Innovation Center and wider community. Multiple public lectures, research intense programs, scientific workshops are annually organized in venues in Moscow and beyond: Technosreda Festival, Science Festival "NAUKA0+", "N+1 Fest", Ural Biennale, FANK, and others. Online and offline activities for schoolkids involve more than 15000 participants: International Research School, Skolkovo Junior Challenge Olympiad, Saturdays of Moscow schools by Moscow Department of Education and Science, Letovo Summer Scholar Program, Children's University of the Polytechnic Museum and other. More than 100 delegations representing academia, industry, business, diplomatic missions and governmental authorities are hosted annually.





Skoltech



created to create sustainable future

In 2021, Skoltech Founders and Board of Trustees adopted the new strategy, organized around the core principle “Targeting Excellence Today to Impact Tomorrow”.

In pursuing the Strategy goals, Skoltech prioritizes contribution to the national economy by serving as a national think & act tank, as well as striving to be the 1st choice university for the brightest talents.

The success of the Strategy in principle will be measured with four key indicators as outlined below. Today, in the challenging and dynamic environment, Skoltech stays committed to the Strategy targets.

Strategic governance

Governance and management

Global standing

Favorable environment and operational sustainability

Educating leaders

1st choice University in Russia

Culture to create

Distinctive baccalaureate

Fostering student success

Strong alumni support

Excellence making impact

World lever research centers

Intellectual core of the ecosystem

Cultivating entrepreneurial spirit and readiness

National Think Tank

Integrator of large scale programs

Community engagement

Targets 2025

100 bln. Rub

Skoltech economy (cum.)

150

Skoltech affiliated startups (cum.)

140

Papers in Nature Index and A* conferences (annually)

70%

Graduates involved in national innovation sector (annual graduation)

**world
class
campus**



created
to create
inspiring
vibrant campus
environment

Take a virtual
tour at our
Campus



Skoltech campus is a unique engineering and technical facility offering state-of-the-art labs, innovative teaching and learning spaces, spacy areas that bring together our community.

Skoltech stunning campus is located in the very heart of the Skolkovo Innovation Center, overlooking beautiful ecosystem city. The campus is famous for prestigious first prize Prix Versailles in the "University Campus"

category. The campus is loved by Skoltech staff and students for exceptional environment and high-quality facilities provided for research, teaching and learning, community building events.

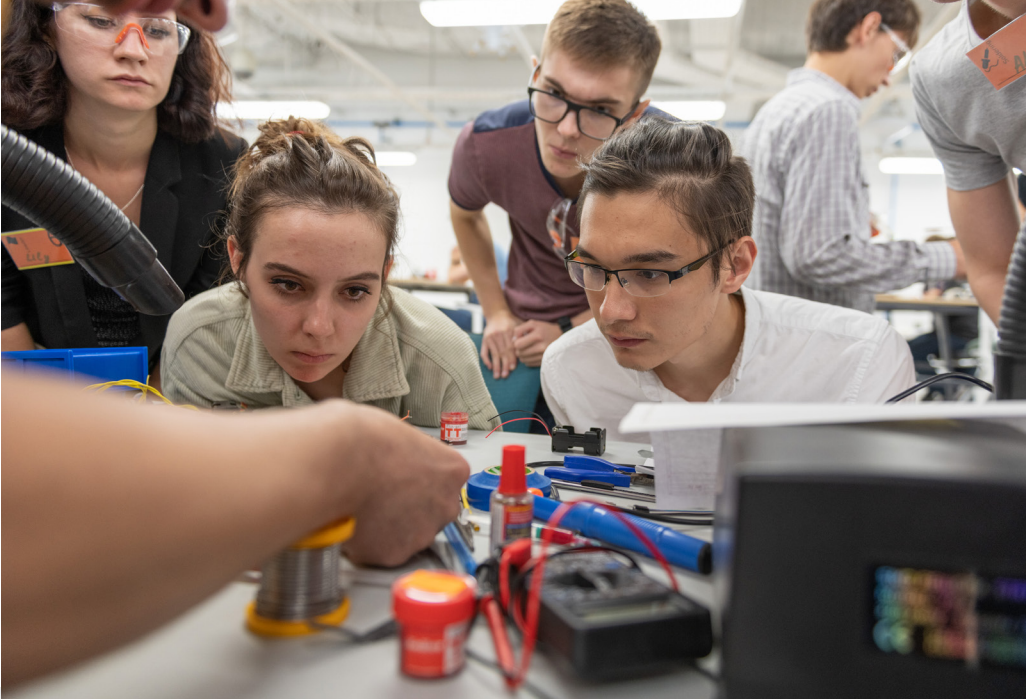




Skoltech leases conference spaces for conducting different kinds of business events. Among our clients are VEB.RF, Ward Howell, MSM, Accounting Chamber of the RF, Sberbank, Otkrytie Bank, Alfa-Bank, Tochka Bank, MTS, Beeline, Yandex, KIA, Adidas, Aeroflot, Ferrero, J7, Harper's Bazaar, InStyle.









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