



Export potential of the Belarusian State University

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Rector, academician of NAS of Belarus



Belarusian State University

The leading educational
center in Belarus.

Founded on

October 30, 1921





Rating of the Belarusian State University among the world best universities

- In September, 2014, the BSU for the first time entered **the top 500 best universities of the world** rating conducted by the **QS World University Rankings**.



It is also the first time when the QS Agency entitled the BSU to use the rating logo to emphasize high international reputation of the university on its website and in print media

Webometrics

QS

Scimago

University Ranking
by Academic
Performance
(URAP)

4 international
Colleges &
Universities (4icu)

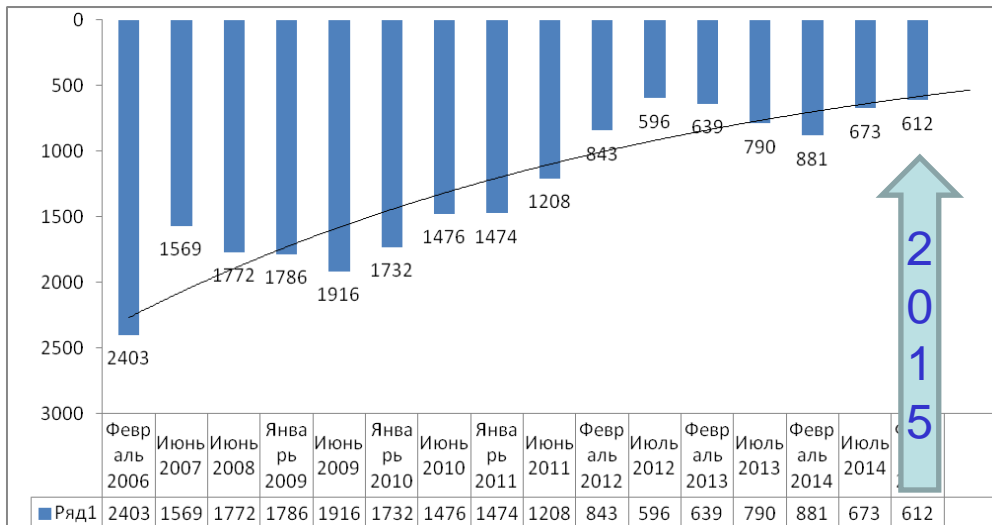


Rating of the Belarusian State University among the world best universities in 2015

According to the last edition of excellence rating of **Webometrics Ranking of World Universities** the **BSU** took the **612** place

(2% of the 30,000 universities of the world)

Russian universities that were ranked higher than the BSU are Lomonosov Moscow State University (129) and St. Petersburg State University (539).





BSU Today

- 26 faculties and educational institutions
- lyceum
- college
- 4 research institutes
- 3 national research centers
- 22 scientific centers
- 45 faculty research laboratories
- 3 scientific-experimental stations
- 3 museums
- 9 unitary enterprises



**51000 trainees
in 2014-2015
academic year**

Total BSU staff	8900
Teaching staff	3000
Scientific manpower and research engineers	1860
Doctors of Science	420
Candidates of Science (Ph. D.)	1860



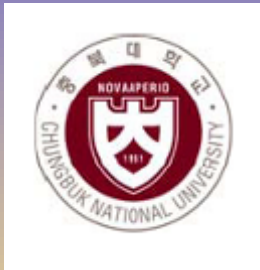
Faculties



- Mathematics and Mechanics
- Applied Mathematics and Informatics
- Radio Physics and Computer Technologies
- Physics
- Chemistry
- Biology
- Geography

- Economics
- Business and Management Technology
- History
- Philosophy and Social Sciences
- Law
- International Relations
- Journalism
- Philology
- Socio-cultural Communications
- Military
- Management and Social Technologies
- Theology

BSU International Cooperation



✓**360 cooperation treaties with universities from 54 different counties.**

✓**1000 employees and 400 students are sent on academic missions abroad annually.**

✓**Over 40 international projects.**
✓**12 joint programs with foreign universities.**

✓**Membership in 8 International University Associations.**

✓**4 international centers in BSU.**

Geography of R&D outlets

USD 2 mln. annually



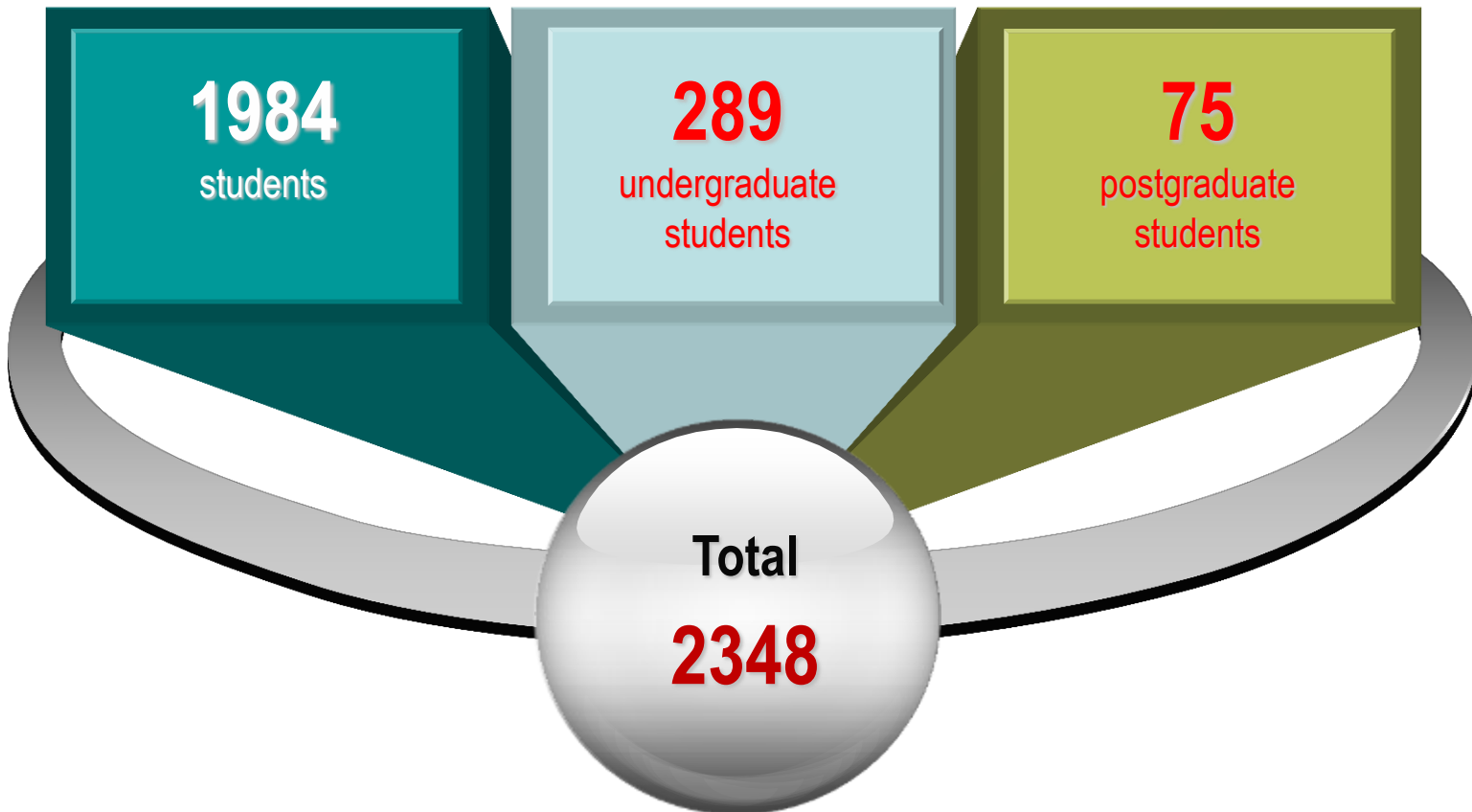
1. Austria
2. Armenia
3. Belgium
4. Brazil
5. Great Britain
6. Netherlands
7. Germany
8. Denmark
9. Israel
10. India
11. Indonesia
12. Spain
13. Kazakhstan
14. China
15. Cyprus
16. Korea
17. Latvia
18. Lithuania
19. Nigeria
20. Poland
21. Russia
22. Serbia
23. Slovakia
24. United States
25. Turkey
26. Taiwan
27. Ukraine
28. France
29. Czech Republic
30. Switzerland
31. Sweden
32. Estonia
33. South Africa
34. Japan



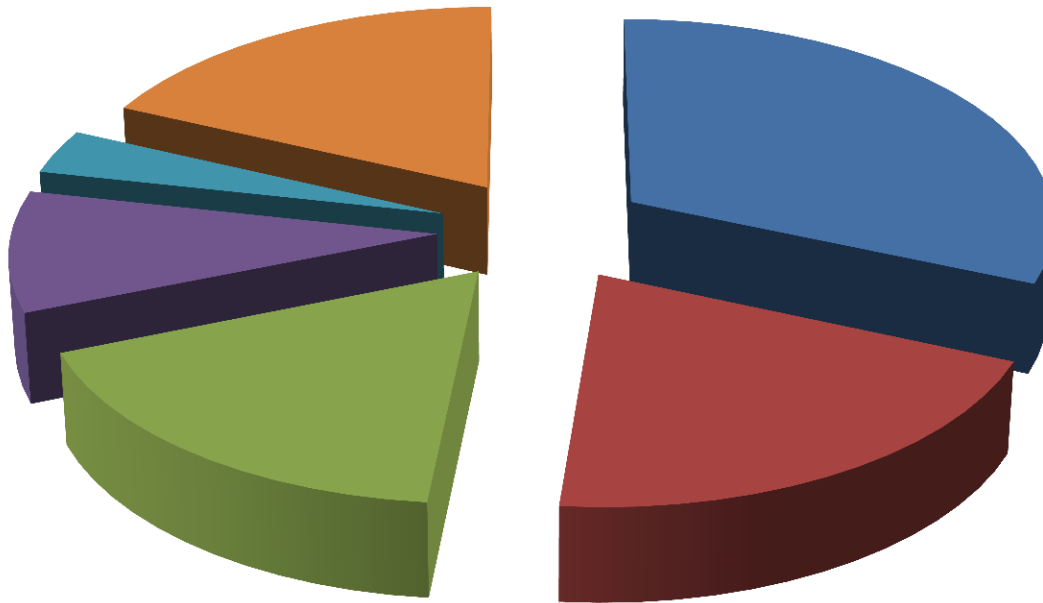
BSU EDUCATIONAL SERVICES EXPORT



Foreign Citizens in BSU 2014/2015



THE PERCENTAGE OF FOREIGN STUDENTS AT DIFFERENT FACULTIES OF BSU



- Faculty of Economics
- Faculty of International Relations
- Faculty of Philology
- Faculty of Law
- Faculty of Geography
- Other Faculties



The key share of export of BSU education services falls on the following countries:

2.5%

Korea

3.7%

Kazakhstan

12.7%

Russia

30.1%

Turkmenistan

33.5%

China

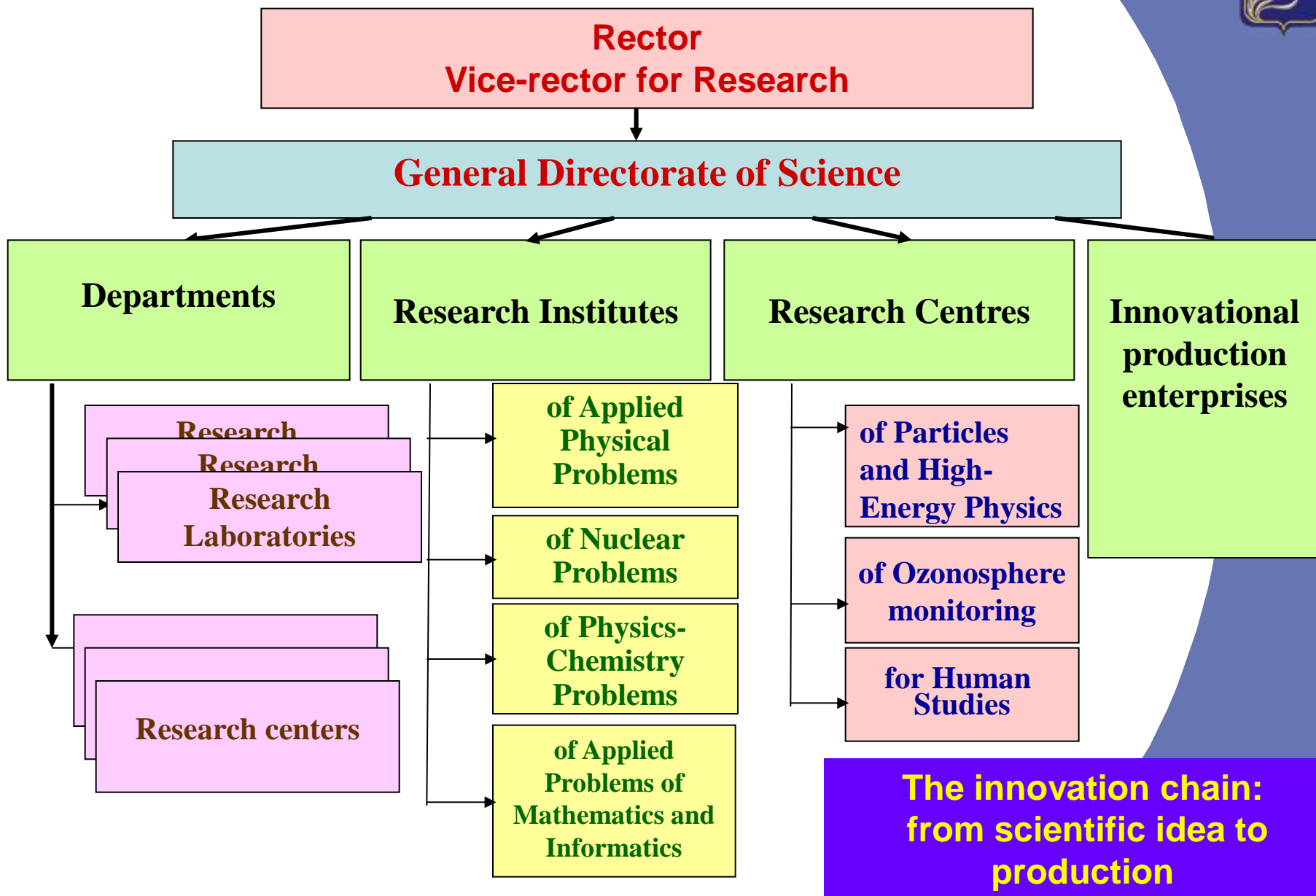


In BSU there are foreign citizens from 47 countries of the world

Research and Development



The infrastructure of the R&D sphere





Fundamental Research



- **Nanostructures and nanotechnologies**
- **Elementary particles and high-energy physics**
- **Laser technologies**
- **Space research**
- **Theory of differential and integral equations**
- **Complex systems mathematical modeling**
- **Research in the field of development of new materials and technologies**
- **Biotechnologies and generic engineering**
- **Concept of macroeconomic stabilization in Belarus**
- **Juvenile law**
- **Development of National Atlas of Belarus**

Basic R&D products of BSU



Hardware-software complexes, devices and equipment

- Hardware-software complexes
- Control instrumentation
- Medical devices
- High-end devices and integrated circuits
- Training devices, equipment, systems

Equipment and instrument Substances and materials

- Industrial substances
- Protective substances and materials
- Medical substances and reagents
- Biopreparations

Technologies

- Biotechnologies
- Industrial technologies
- Information high-end technologies
- Information training technologies



More than 1000 items
altogether

Spectrometric complex and

Video Spectral Complex are operating on the board of the International Space Station

The system is designed for registration of images and spectral characteristics of the reflected radiation of the earth's surfaces in visible and near-infrared wavelengths.

The system will allow to control the condition of the atmosphere above the cities, detect anthropogenic emissions of the industrial enterprises, monitor the distribution of dust and salt storms.

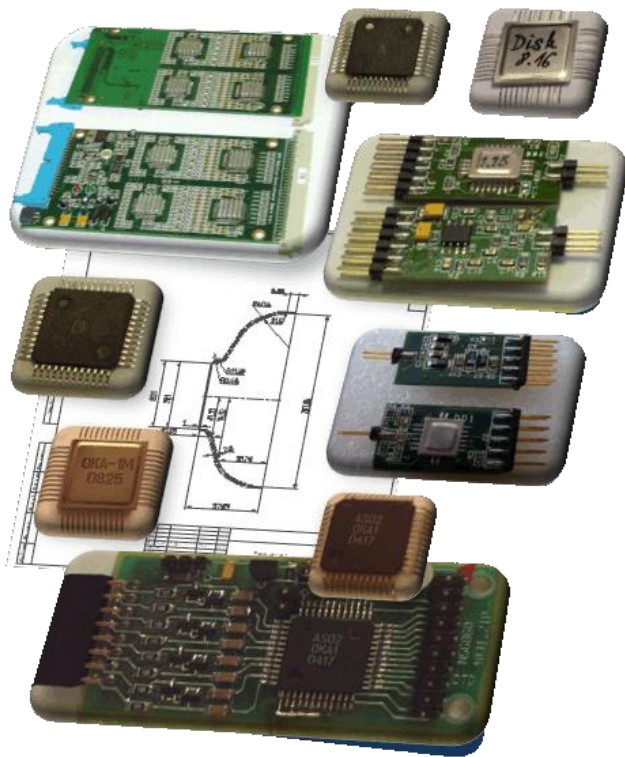


For geological, aeronomic researches of upper atmosphere including earthquakes forecasting.



Electronics for detectors used in High-Energy Physics

The winner of the International competition for the “Best innovative project and best scientific and technical development of the year” which was held in 2012 in St. Petersburg, Russia



Application in the International scientific projects:

- D0/Tevatron (USA)
- COMPASS/SPS (CERN)
- PANDA/FAIR (Germany)
- OKA/Y-70, Thermalization/Y-70 (Russia)
- ILC (DESY, Germany)
- PiBeta (PSI, Switzerland)
- NICA (JINR, Russia)

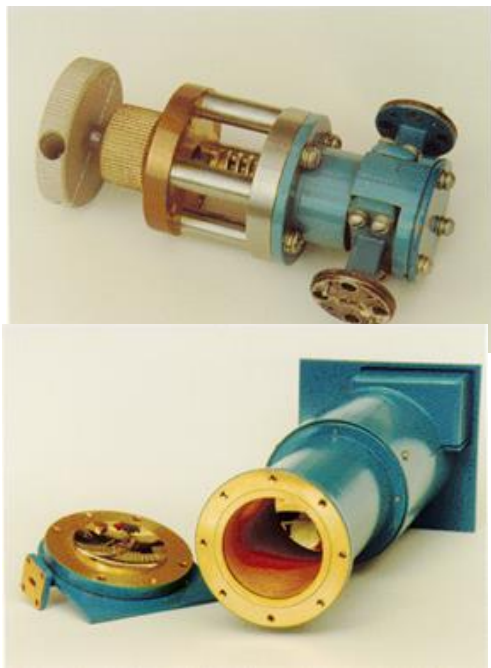


Microwave technologies and devices

High-Q microwave resonators
with eigen mode sparse
spectrum

Millimeter-wave frequency range
electronic tuning device

Microwave generators



*Microwave
technology
of presowing
treatment of
agricultural seeds
and soils,
for wood drying*



Measuring Multifunctional Devices for Radio-electronics

- Digital oscilloscopes
- Arbitrary waveform generators
- Multichannel logic analyzers/generators
- Digital acquisition systems
- Precision systems for time analysis
- Instruments for measuring and analysis:
 - **acoustic noise**
 - **vibration**
 - **surface roughness and circularity**



Training devices for physical experiments



AKTIV BSU

Software and hardware complexes and laboratory equipment to provide laboratory practicum in all sections of Physics in secondary and higher schools

Training technology
Computer-aided
experiment

50 facilities



*In July 2014, 425 sets of complexes were manufactured and delivered for experimental tour of the **International Contest on Physics** which was held on the basis of the Ministry of Education and Science of the Republic of Kazakhstan.*



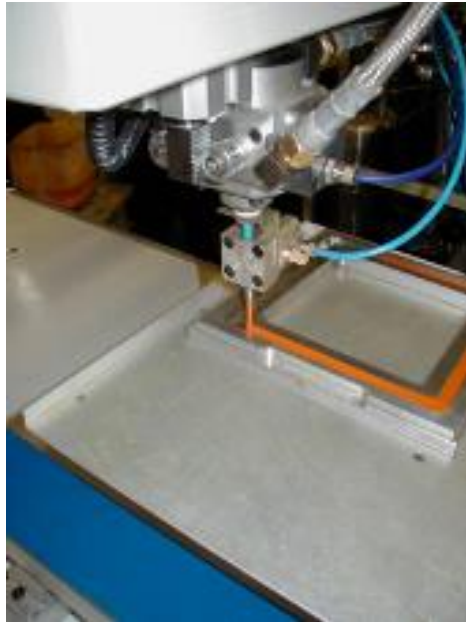
Switch-mode power supply for high-power installations (1-15 kilowatt) with a built-in microprocessor

- Line of switch-mode power supplies and high-current pulse generators of 1-15kW power were designed for power supply of various electrical installations and aggregates



Power supplies and generators have a built-in microprocessor and are equipped with a digital remote control system that allows the operator to control the operation of one power supply or the whole complex of power supplies and electrical installations of the consumer. The distance of remote work is 1 000 m and more.

Complex sets for production of various articles from foam polyurethane



- **Heat-insulated articles**
- **Filtering articles**
- **High-temperature condensing materials**
- **Sandwich panels**
- **etc.**



Heat-resistant materials based on phosphate binders

- The heat-resistant multifunctional phosphate composite materials were designed to operate at temperatures up to **1500° C**.
- The materials are nonflammable, non-toxic, non-waste and do not require any complicated equipment.
- An important advantage of the technology is low temperature of materials hardening (20-300 ° C).
- The use of these materials allowed to develop a series of textolites of low density (1.5-2.5 g / cm³) and high strength properties (ultimate compression and bending strengths is > 150 MPa).



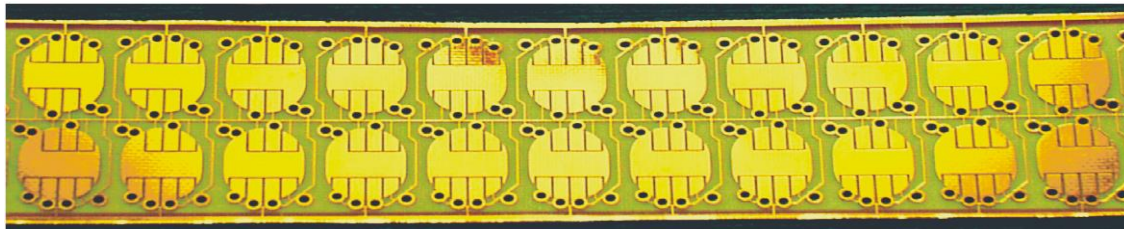
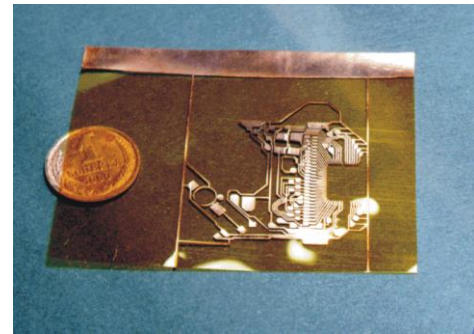
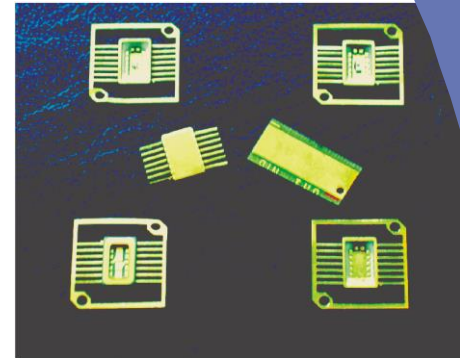
Some of the compounds were successfully used in constructions of the «Energia-Buran» space craft





Functional and decorative metallization

- Metallization of radio-engineering ceramics
- Process of thick-layer chemical copper plating
- Metallization of functional piezo-ceramics
- Aluminum nickel-plating
- Chemical sedimentation of gold coatings
- Black conducting and semiconducting coatings
- Electrochemical sedimentation of nickel-boron compounds instead of gold and silver
- etc.



Technology for production of hydrocellulose without carbon disulfide



The technological process of obtaining of a new type of hydrated cellulose fiber and structurally mixed fibers without the use of carbon disulfide was developed.

RUE “Khimvolokno” organized industrial production of the fibers GREENCELL.

The technology allows to reduce the amount of water consumption 100-fold and to eliminate totally the gaseous emissions into the atmosphere.



BY Patents

*BY 7401 (B01F7/24) and BY 7402 (B29C47/10)
348396 CCCP, MKU C 08 B 1/00.*

Medical diagnostic system



Spirometer MAS

is a device for patient's respiratory system condition assessment. It measures and calculates over 40 parameters of breath, interprets the results including pharmacology tests.



*According to the measurement accuracy, functionality and modern design "MAS-1" is inferior to none of the best world analogs. Currently in Belarus there are more than 1,000 successfully operating spirometers "MAS-1". The device **was certified in Russia** (2006), **Kazakhstan** (August 2010) and **Indonesia** (2012). In 2010, all modifications of the spirometer MAS-1 received a **CE marking** right certificate and a certificate of quality management system corresponding to the international quality standard ISO 13485:2012 of the **European standard of "Medical products"**.*



Antineoplastic drug **CISPLACEL**



The product has a combined effect on the basis of cellulose oxidation and is aimed at local chemotherapy of brain tumors including tumors in head and neck area.

- The product is haemostatic, has a prolonged citostatic action and is dissolved when implanted into organism in 20-30 days.
- It is designed for local chemotherapy of brain tumors including tumors in head and neck area by implantation into the bed of the eliminated tumor.
- The use of «Cisplacel» facilitates prolongation of brain glioma patients' (Grade III-IV) life expectancy in more than 2 times.



Purified recombinant human lactoferrin from transgenic goats milk



The product can be used for production of dairy products enriched with lactoferrin, dietary supplements, drugs, food additives, special compositions for athletes, cosmetics. Lyophilized powder of recombinant human lactoferrin from transgenic goats milk (purity > 95%)



By basic physical and chemical properties the product is identical to natural lactoferrin from breast milk.

It provides binding and transport of iron ions, has antibacterial, antiviral, anti-parasite, anti-tumor, anti-allergic, immune-modeling effects and has antioxidant properties.

Unlike natural lactoferrin from domestic animals milk it **has no allergenic activity**



NEW GENERATION FOOD



- Technological additives to improve flour quality
- Bakery and confectionary enrichment additives
- Vitamin-mineral premixes
- Gluten-free mixtures
- Cosmetology phytocomposition

About 50
phytoadditives
have been developed
and produced

Natural food additives

Functional ingredients:
food fibers, vitamins, mineral,
bifidobacterium substances,
amino acids

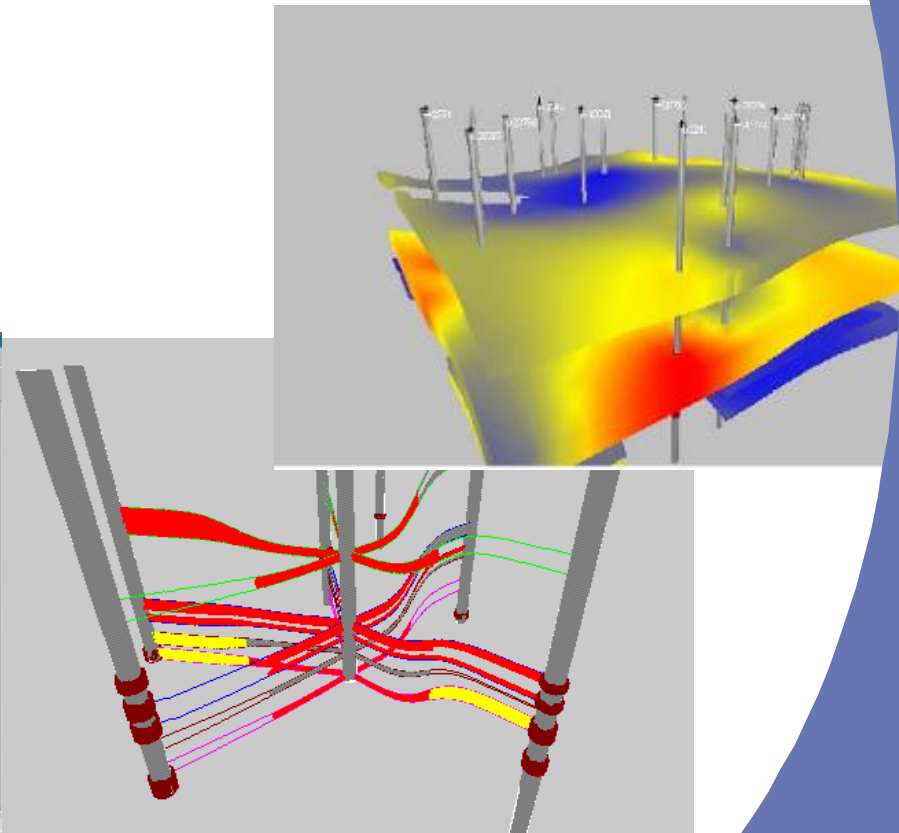
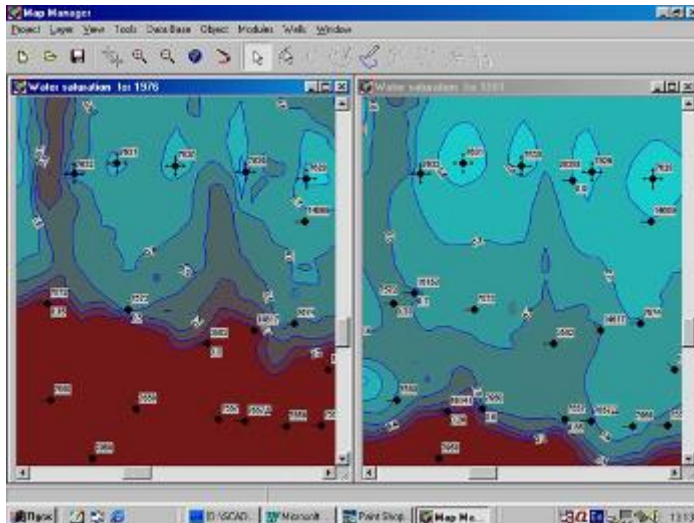


Geoinformation system MiningManager and Systems on its basis



The basic areas of applications:

- mining of solid mineral resources
- oil and gas mining
- 2/3D visualization
- digital cartography



Possible ways of cooperation

- **Scientific cooperation**
- **Joint production**
- **Joint patents**
- **License purchase**



Belarusian State University



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RESEARCH AND DEVELOPMENT
BELARUSIAN STATE UNIVERSITY

CURRENCY RATES 14.05.11

	buy	sell
USD	2000.00	1894.00
EUR	13740.00	13879.00
RUB	276.90	285.80

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Equipment and tools Hardware-software complexes, instruments and devices Substances and materials Information technology Industrial technology

NEWS

12.05.11 The 81st International Agricultural Fair NAMI 2011-2012

09.05.11 TIRU-2011: Contest results

Two BSU products - the "Electronic textbooks Complex" and the "Multi-functional Smart ID Cards" - were awarded with the exhibition special diplomas...

CURRENT PRODUCTS

AL NEW 9500

PORTABLE DIGITAL OCELELOGRAM B-520

COMPUTER MEASURING SYSTEM YOKNA-2

DEVICE FOR REMOTE MONITORING OF MOVEMENT OF THE MOBILE OBJECTS AGENT

LIQUID CRYSTAL C MEASURES AND LIX