

**cafy**

[www.narfu.ru](http://www.narfu.ru)



# Northern Arctic Federal University



Arkhangelsk

Moscow

# Welcome to Arkhangelsk

European North of Russia

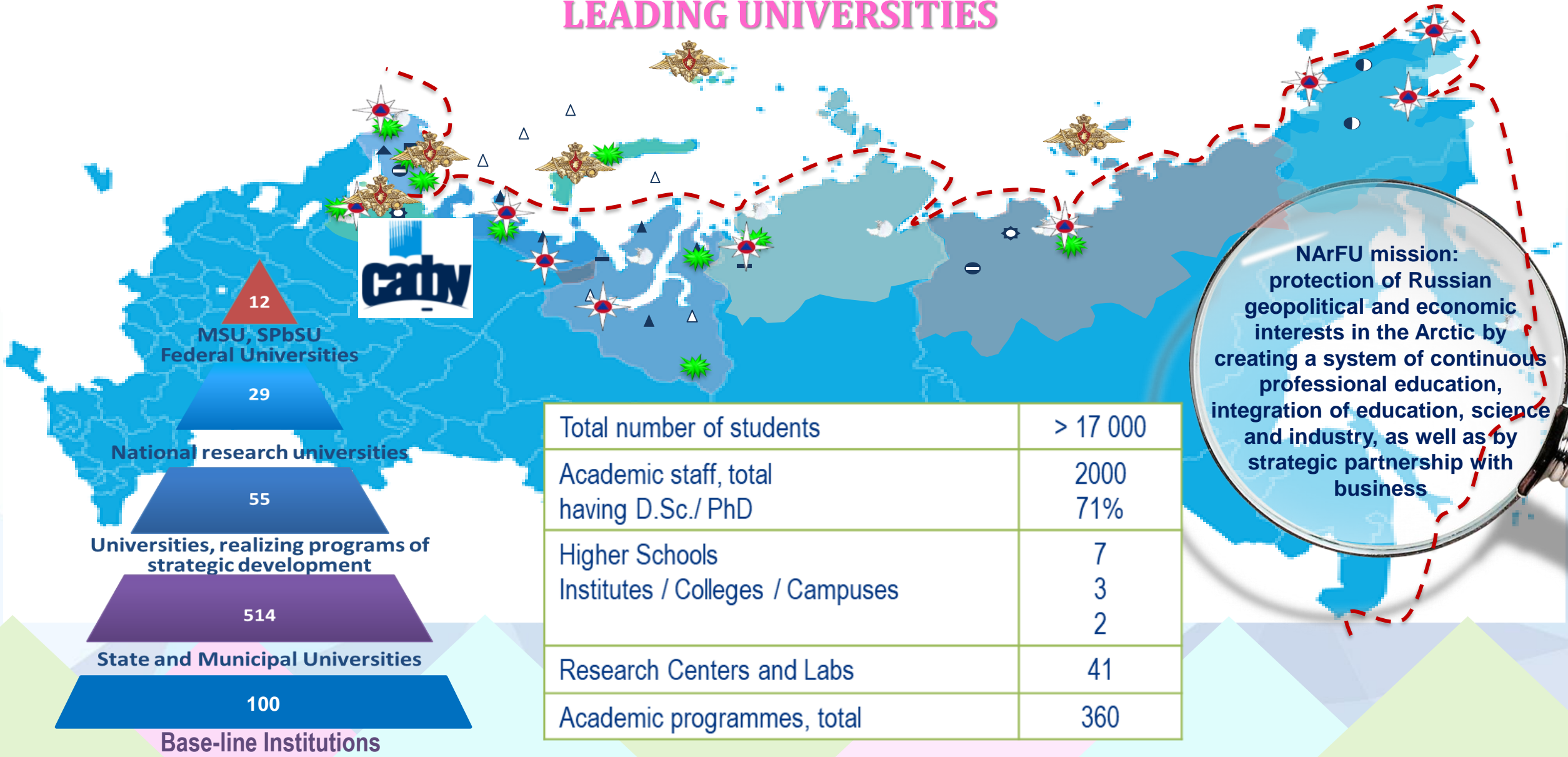
1.5 hours flight from Moscow

Arkhangelsk: the first Russian seaport (1584)

Major industries: forestry, machine-building industry, ship-building industry, pulp and paper industry, mining, fishing, tourism etc.



# NARFU IS ONE OF 10 FEDERAL UNIVERSITIES AND A MEMBER OF THE RUSSIAN ASSOCIATION OF LEADING UNIVERSITIES



12  
MSU, SPbSU  
Federal Universities

29  
National research universities

55  
Universities, realizing programs of  
strategic development

514  
State and Municipal Universities

100  
Base-line Institutions

Total number of students	> 17 000
Academic staff, total having D.Sc./ PhD	2000 71%
Higher Schools	7
Institutes / Colleges / Campuses	3 2
Research Centers and Labs	41
Academic programmes, total	360

**NARFU mission:**  
protection of Russian  
geopolitical and economic  
interests in the Arctic by  
creating a system of continuous  
professional education,  
integration of education, science  
and industry, as well as by  
strategic partnership with  
business



# NARFU INTERNATIONAL COOPERATION

**MISSION:** to become a leading international research and educational center of the Arctic exploration through personnel training and fostering research-based solutions in close cooperation with industry and international partners



**160+**  
partners from  
**60+** countries



**8**  
International  
network  
consortia



**6**  
joint  
international  
programmes



**70+**  
large-scope  
international  
projects



**900+**  
international students from  
**50+** countries

ANNUALLY

## INTERNATIONAL ACADEMIC MOBILITY:

**300+**  
students

**200+**  
lecturers  
and researchers

**50+**  
foreign  
visit lecturers

# NARFU HIGHER SCHOOLS

Higher School of Energy,  
Oil and Gas

Higher School  
of Information Technologies  
and Automated Systems

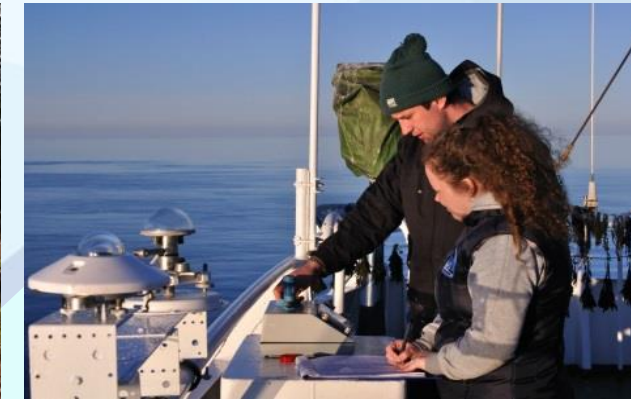
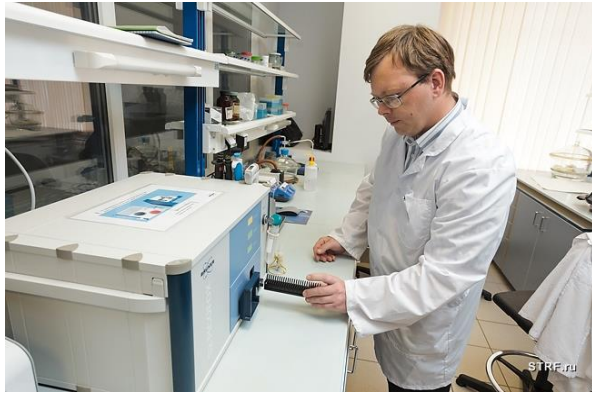
Higher School of Engineering

Higher School of Psychology,  
Pedagogy and Physical  
Education

Higher School of Natural Sciences  
and Technologies

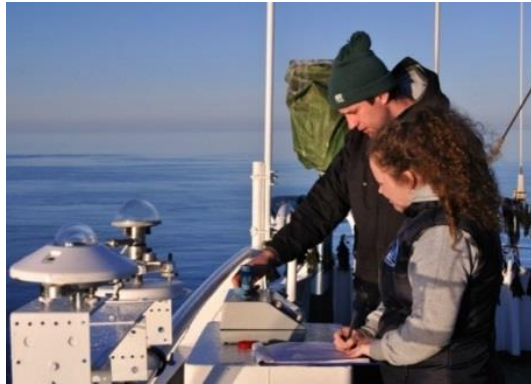
Higher School of Social Sciences,  
Humanities and International  
Communication

Higher School of Economics,  
Management and Law





# HIGHER SCHOOL OF NATURAL SCIENCES AND TECHNOLOGIES



Students -  
1077

Academic  
staff -154

D.Sc./ PhD -  
89%

- **Chemical Technology** (BSc, MSc, PhD)
- **Forestry** (BSc, MSc, Phd)
- **Fundamental and Applied Chemistry** (Specialist, PhD)
- **Ecology and Environmental Management** (MSc)
- **Biotechnologies** (BSc, MSc)
- **Biotechnical Systems and Technologies** (BSc)
- **Earth Sciences** (BSc, PhD )
- **Physics** (BSc, MSc, PhD )
- **Biology** (BSc, MSc. PhD)
- **Nanotechnologies and Microsystems Engineering** (BSc)
- **Landscape Architecture** (BSc, MSc)
- **Teacher Training** (double major: «Biology and Chemistry», «Biology and Geography») (BSc)

*English-taught program*

The programme is internationally accredited by the National Centre for Public Accreditation (NCPA) in accordance with the ESG ENQA



**Qualification:** Master

**Programme length:** 4 semesters (120 ECTS)

**Language:** English

MODULE 1: Projects and Research

MODULE 2: Basics.

Environmental Law and Spatial Data Analysis

MODULE 3: Environmental Monitoring

MODULE 4: Environmental Management and Nature Protection

MODULE 5: Risk Management

MODULE 6: Clean Production Technologies



The ERMA programme equips students with skills in risk management and data analysis enabling them to better predict and mitigate environmental hazards and risks.

The ERMA programme is **project-oriented** and makes extensive use of case studies typical of the Arctic area

# PROGRAMME CURRICULUM

## 05.04.06 ENVIRONMENTAL RISKS MANAGEMENT IN THE ARCTIC

1 year

2 year

1 semester

2 semester

3 semester

4 semester

### Research Module (15 ECTS):

- Academic Writing;
- Methodology and Methods of Scientific Research;
- Project Management;
- Educational practice: research seminar;
- Educational practice: project;

### General Module (15 ECTS):

- Computer technologies and statistical methods in ecology and environmental management;
- Spatial analysis;
- Environmental law system;
- Environmental law of the Russian Federation;
- International environmental law;

### Module: Environmental Monitoring (15 ECTS)

- Priority pollutants of the Arctic territories;
- Environmental pollution assessment;
- *Elective courses:* Environmental risks in the Arctic Region / Contemporary physico-chemical methods of environmental risk reduction;
- Internship, Practice for obtaining professional skills and professional experience;

### Module: Environmental management and nature protection (15 ECTS)

- Environmental management system;
- Enterprise environmental management system;
- *Elective courses:* Decision-Making in Environmental Safety / Sustainable development in the industry
- Scientific research practice

### Module: Risk Management (15 ECTS)

- *Elective courses:* Risk management / International experience in emergency preparedness and environmental protection in the Arctic;
- Scientific research practice;

### Module: Clean Production Technologies (15 ECTS)

- *Elective courses:* Standards in the sphere of environmental management and ecological certification / Environmental management of clean production in the Arctic;
- Scientific research practice

- Science research (Master's thesis)

**Total 120 ECTS**



# 05.04.06 ENVIRONMENTAL RISKS MANAGEMENT IN THE ARCTIC

The programme offers its students unique opportunities to apply for semester studies in UiT The Arctic University of Norway (Tromsø) and participation in NArFU Arctic marine expedition (on a competitive basis)



UiT

**Module F2:** International emergency preparedness and environmental protection in the High North (10 ECTS)

**Module G2:** Safety and risk analysis (10 ECTS)

**Module H:** Academic writing (10 ECTS)



**Arctic Floating University** is an annual scientific and education marine expedition, which brings together young people and researchers in order to study the Arctic. For scientists - it is a possibility to conduct research in the high-latitude Arctic. For students - it's a unique educational programme containing multidisciplinary course of lectures and practical training together with experienced researchers.



**Qualification:** Master

**Higher School of Information Technology and Automated systems**

**Duration:** 4 semesters (120 ECTS)

**Teaching language:** Russian

## ADMISSION REQUIREMENTS

- Relevant bachelor's degree or specialist diploma
- Knowledge of Russian (B2)

This course focuses on geographic information systems (GIS). GIS technologies have become an integral part of the forest industry, construction, health care, agriculture, transport industry, etc. Knowledge of the basics of GIS is the key to effective work in many areas, so graduates of the programs are in demand in the modern world.

### Main subjects / modules:

- Development and design of information systems
- Spatial data processing technologies
- Mathematical modeling of applied information processes
- Organization of research

### Research Fields:

- creation of methods for the automated identification of individual trees in aerial photographs based on computer vision (CV);
- creating a model for interpreting tree parameters based on Data Analysis and the Ontology apparatus;
- creation of intelligent methods for interpreting remote sensing data based on convolutional neural networks (CNN);
- software development for the implementation of the results into production



# 35.04.01 FORESTRY

## «SUSTAINABLE FOREST DEVELOPMENT»



**Qualification:** Master

Higher School of Natural Sciences and Technologies

**Duration:** 4 semesters (120 ECTS)

**Teaching language:** Russian

### ADMISSION REQUIREMENTS

→ Relevant Bachelor's Degree or Specialist Diploma

→ Russian proficiency (B2)

**Aim and mission:** Formation and development of competitive human capital in the form of a professional elite for the forest sector.

### Principal subjects /modules:

- Economics and forest management
- Organization and implementation of forestry activities
- Forest management design of specially protected natural areas
- Organization and conduct of forest management fieldwork
- Forest recreation
- Modern tending care technologies
- Methods of remote forest monitoring
- Information technology in forest management

# 18.04.01 CHEMICAL TECHNOLOGY «CHEMICAL TECHNOLOGY OF PULP AND PAPER PRODUCTION»



**Qualification:** Master

Higher School of Natural Sciences and Technologies

Duration: 4 semesters (120 ECTS)

Teaching language: Russian

**ADMISSION REQUIREMENTS**

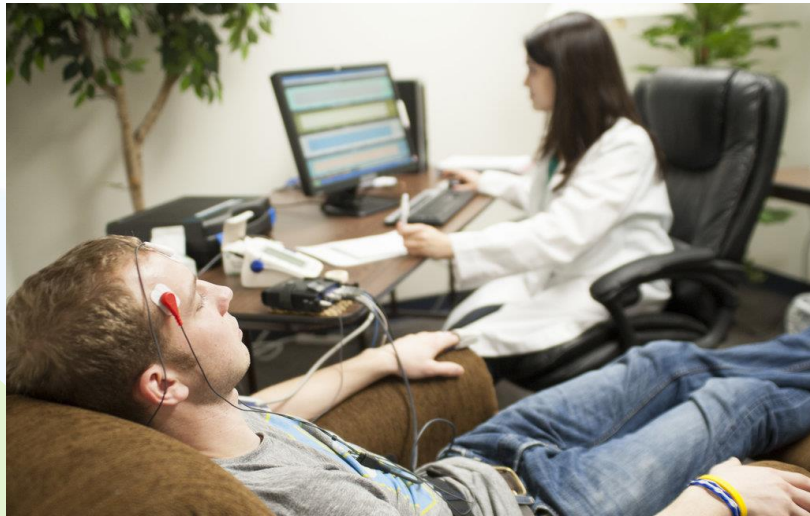
- Relevant Bachelor's Degree or Specialist Diploma
- Russian proficiency (B2)

**Aim and mission:** Training of specialists for scientific and research activities in the field of chemical technology of wood processing.

**Principal subjects /modules:**

- Mass transfer processes in systems involving a solid phase
- Theoretical and experimental methods in chemistry
- Technological and environmental problems in chemical technology
- Computer technology in science and education
- New composite materials in chemical technology
- Modeling of technological and natural systems
- Modern equipment for chemical production
- Theoretical and engineering fundamentals of pulp and paper production
- Adsorption technologies





**Qualification:** Master  
**Higher School of Natural Science and Technologies**  
**Duration:** 4 semesters (120 ECTS)  
**Teaching language:** Russian

## **ADMISSION REQUIREMENTS**

- Relevant Bachelor's Degree or Specialist Diploma
- Russian proficiency (B2)

## **Aim and mission:**

to provide training for highly qualified specialists with applied knowledge in the field of modern psychophysiology, professionally skilled in diagnostic and research methods, capable of independent practical activity. "Applied Psychophysiology" is an interdisciplinary master's program combining modern, applied and fundamental knowledge in physiology, psychology, pedagogy.



# 35.04.09 LANDSCAPE ARCHITECTURE

## «ENVIRONMENTAL DESIGN AND TECHNOLOGIES OF CREATION LANDSCAPE ARCHITECTURE OBJECTS»

**Qualification:** Master

**Higher School of Natural Science and Technologies**

**Duration:** 4 semesters (120 ECTS)

**Teaching language:** Russian

### ADMISSION REQUIREMENTS

- Relevant Bachelor's Degree or Specialist Diploma
- Russian proficiency (B2)

**Aim and mission:** Training of a competitive professional, leading scientific and industrial activities in the field of landscape design and operation of urban and suburban areas, capable of practical implementation of the acquired knowledge and further professional self-improvement and creative development

### Principal subjects /modules:

- General science module: Methodology and methods of scientific research; Landscaping of territories; Information technology in landscape architecture
- Formation and management of landscape architecture objects: Economics, organization and management of landscape architecture objects; Environmental design in an urbanized environment; Problems of formation of sustainable green spaces.
- Design of the urban environment: Design of the urban environment; Engineering biology, Soils and substrates in landscaping, etc.



# 19.04.01 BIOTECHNOLOGY

## «BIOTECHNOLOGY INDUSTRIAL BIOTECHNOLOGY AND BIOENGINEERING»



**The field of activity of graduates** are all industries related to the use of microorganisms and enzymes:

- food industry enterprises,
- production of bakery products,
- milk and dairy products,
- beer, wine and vodka products.

**Qualification:** Master

**Higher School of Natural Science and Technologies**

**Duration of study:** 4 semesters (120 ECTS)

**Teaching language:** Russian

### **ADMISSION REQUIREMENTS**

- Relevant bachelor's degree or specialist diploma
- Knowledge of Russian (B2)

### **Principal subjects /modules:**

- Genetic and cellular engineering in the food industry
- Information systems and the basics of bioinformatics
- Chemistry of raw materials and food ingredients
- Enzyme preparations in the food industry
- Design and equipment of food biotechnology enterprises
- Legislation in the field of food production and turnover
- Modern methods for the study of biologically active substances
- Food Biotechnology
- Basics of Nutrition
- Functional food
- Integrated processing of biological resources of the Arctic territories
- Resource-saving biotechnologies in the Arctic

# PHD PROGRAMS

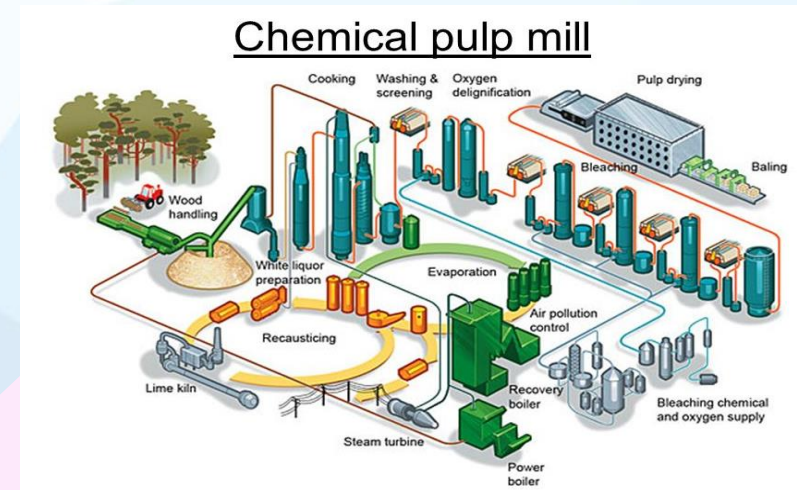
- Mathematics and Mechanics
- Physics and Astronomy
- Chemistry
- Earth Science
- Biological Science
- Construction Technology and Equipment
- Informatics and Computer Engineering
- Geology, Exploration and Mining
- Forestry
- Technologies, mechanical aids and power engineering equipment in agriculture, forestry and fishing industry
- Economics
- Law





# PULP AND PAPER AND WOOD CHEMICALS

- Development of resource-saving technologies for the integrated processing of plant materials to produce innovative products;
- Optimization of technological processes for the production of high-quality pulp and paper materials from wood, vegetable and secondary raw materials;
- Intensification of processes aimed at improving the environmental safety of the production of pulp, paper and cardboard;
- Analytical chemistry of plant polymers;
- Directional wood pyrolysis to obtain highly effective adsorbents;
- Development of new methods for extraction of extractive and biologically active substances from wood biomass and other plant materials.



# FORESTRY

## In the field of forest taxation, forest management, use and reproduction of forest resources:

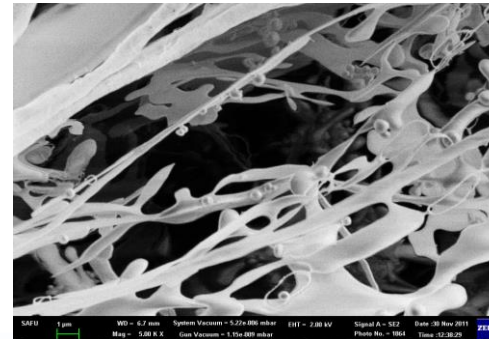
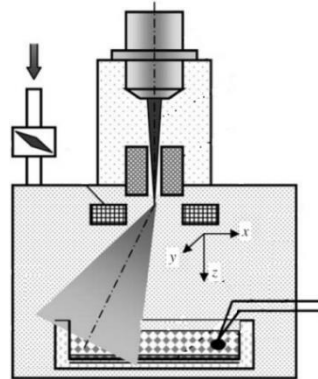
- study of remote methods of assessing forest resources for various purposes;
- study of the possibilities of using UAVs for monitoring and taxation of forests;
- assessment of the dynamics of forest plantations of specially protected natural areas;
- studying the features of the formation of forest stands after forestry activities;
- improving the regulatory framework for assessing forests based on studies of their condition and structure;
- patterns of growth, structure and productivity of artificial and natural plantations of the main forest-forming species in various conditions.

## In the field of forestry and artificial forest growing:

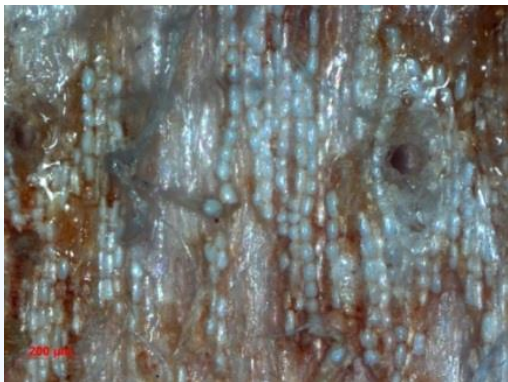
- study of the geographical features of the formation of forest stands of artificial and natural origin;
- agro-cultural landscape conservation issues for tourism development;
- succession processes of secondary and primary forest ecosystems, spatial heterogeneity of vegetation and soil cover, the formation of post-agrogenic and post-cutting forest biogeocenoses;
- structure and dynamics of carbon accumulation during the formation of natural and man-made disturbed forests of various genesis (post-agrogenic, post-cutting, post-fire);
- genetic and environmental studies of conifers (experiments with origin, modeling the impact of climate change on the growth and productivity of pine and spruce);
- influence of forestry equipment on the ground cover and soil;
- defectiveness of stands of the main forest-forming species and their commodity structure;
- patterns of formation of secondary generation forests;
- ecology, biology, distribution of rare plants, geographic aspects of comparison;
- introduction and acclimatization of tree and shrub species for gardening or industrial rearing.

## Low-temperature plasma treatment of plant materials

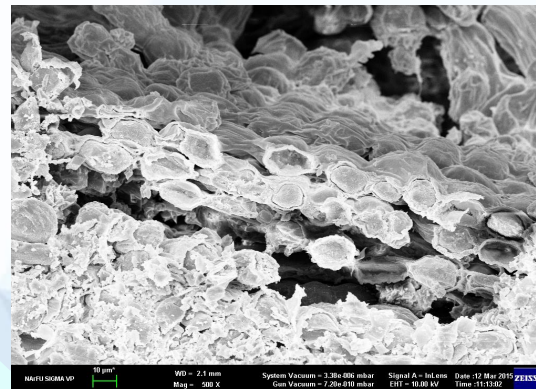
Study of the impact of low-enthalpy electron-beam plasma on wood and its components



## Study of higher plants' xylem and phloem formation mechanism



CELL ROWS  
(SPRUCEWOOD)



CELL ROWS  
(BIRCHWOOD)

A new sequence of fiber formation stages has been proposed

## Micropropagation of plants

- production of bioethanol, amino acids and other products of fine microbiological synthesis out of food and non-food commodities
- increasing the efficiency of northern berry processing via enzymatic technologies (pectinases) for juice industry
- processing of Arctic plant raw materials and hydrobionts (algae)
- production of beer, kvass and other fermentation industry products

- biochemical and microbiological analysis of local products
- development of a monitoring system for automatic express-analysis of microbiological populations on the basis of micromorphological indicators
- development of an automated method for assessing biological treatment on the basis of enzyme (dehydrogenase) activities of cell mass



# RESEARCH INFRASTRUCTURE



- Centre for Collective Use of Research Equipment «Arktika»
- Centre for Innovation “Modern Technologies for Northern Bioresource Processing”
- Arctic Biomonitoring Lab
- Centre for Arctic Remote Sensing
- NeuroScience Shared Use Centre
- Centre for Innovation “Arctic Oil and Gas Laboratory”
- Arctic Centre for Strategic Research
- Education and Research Centre of Energy Innovation
- Emergency Prevention and Modeling Lab
- Technology Centre of Shipbuilding and Arctic Marine Engineering
- Research Centre “Construction in Extreme Climate”

More information: [https://narfu.ru/en/research/research\\_facilities/](https://narfu.ru/en/research/research_facilities/)

## Mission:

Development of new environmentally friendly and economically efficient technologies for processing of renewable natural resources

## Laboratories:

- Laboratory for modeling and research of pulp and cardboard composition (unique CRS Reactor Engineering equipment for executing and research of pulp cooking, bleaching, stock-screening)
- Laboratory for analyzing macro- and microstructure of pulp-and-paper materials (spectrophotometer Elrepho)
- Laboratory for controlling and research of pulp, paper and cardboard properties (pull test machines, folding endurance and bursting testers, ultrasonic, Scott Bond delamination resistance tester)
- Laboratory for modeling the processes of fibre semi-finished products
- Laboratory of membrane and filtering materials
- Laboratory of complex processing of bioresources
- Laboratory of oxidizing methods of delignification
- Laboratory of microclonal propagation of plants
- Laboratory of biotechnology
- Laboratory of microscopic research of fibre semi-finished products
- Laboratory of organic synthesis

All the equipment provides the opportunity to meet the needs of the Russian and foreign standards and specifications. All the measurement data can additionally be analyzed by the means of software programmes developed by the staff and defended by a patent.

**More information:** [https://narfu.ru/science/SEC/north\\_biosources/laboratory/](https://narfu.ru/science/SEC/north_biosources/laboratory/)





# CENTRE FOR COLLECTIVE USE OF RESEARCH EQUIPMENT «ARKTIKA»



- Works on eco-monitoring of territories involved in the implementation of rocket and space activities
- Creation of new methods and means of monitoring the pollution of the territory
- Supercritical fluid technologies for extraction and research of antioxidants from plant materials

More information: [https://narfu.ru/en/research/cfc\\_arktika/](https://narfu.ru/en/research/cfc_arktika/)



# ARCTIC BIOMONITORING LAB

1. Assessment of **health risks** associated with human exposure to dangerous pollutants accumulated in food chains

2. Development of a model for assessing and forecasting the risks of adverse effects on human health associated with the transfer and **spread of dangerous contaminants through biological pathways.**

3. Development of guidelines for **national and regional systems of early detection** and monitoring of cross-border transfer of dangerous contaminants through biological pathways.

- Legal framework for Arctic biomonitoring, study of the best practices of other Arctic countries;
- Study of food-borne toxic substances in the Nenets, Yamal-Nenets and Chukotsky Autonomous Okrugs;
- Development of detoxification methods;
- Proposals for changes in legislation.

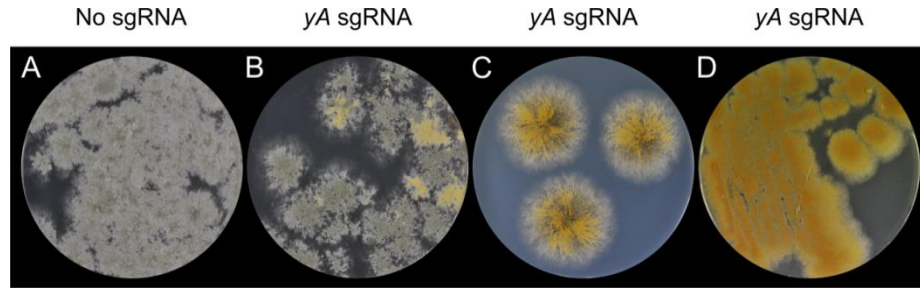
More information: <https://narfu.ru/biomonitoring/en/>

Promo-video: [https://youtu.be/\\_a5zYJZDJog](https://youtu.be/_a5zYJZDJog)

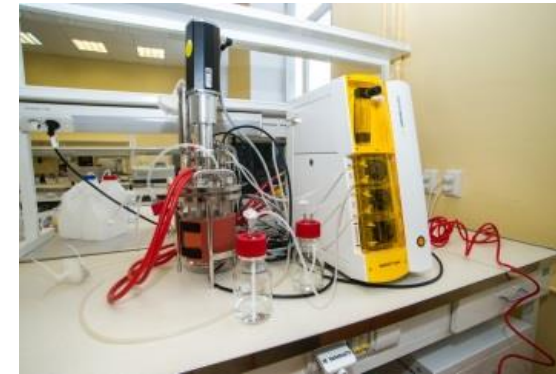


Research Supervisor –  
**Yngvar Thomassen**, Professor at  
National Institute of Occupational  
Health (Norway)

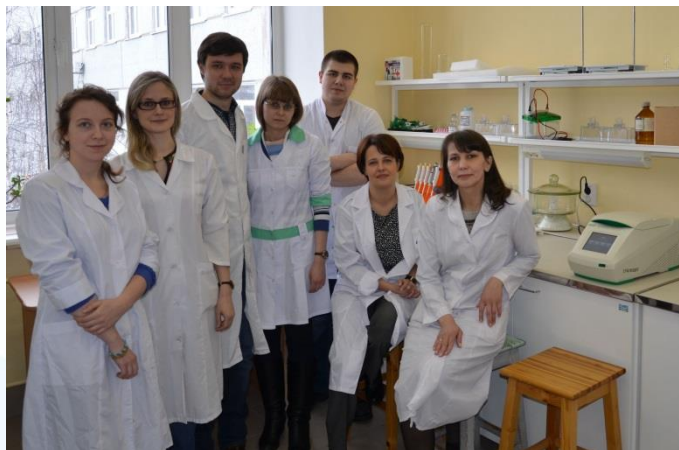




*Genetic transformation of microorganisms*

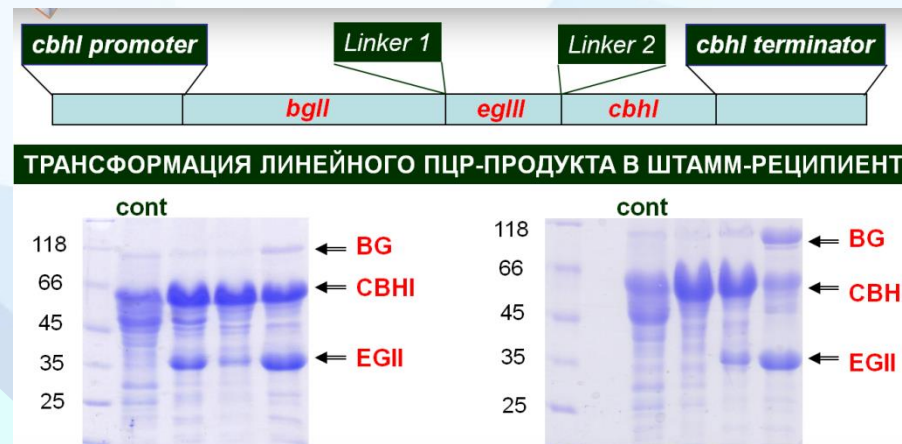


*Bioreactor*



*Molecular and Cell Biotechnology Lab*

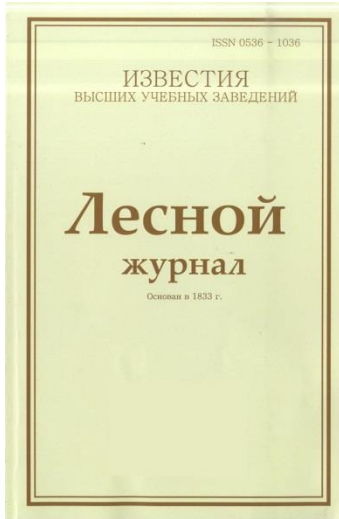
*Creating genetic structures in micromycetes for obtaining industrial enzymes*



*Protein identification*



## LESNOI ZHURNAL (FORESTRY JOURNAL)



Russia's oldest periodical on natural sciences and forestry.

Listed in the **Web of Science Core Collection**, Russian Science Citation Index, **Ulrich's Periodical's Directory**, J-Gate, **EBSCO**, AGRIS, Chemical Abstracts Service, **China National Knowledge Infrastructure**, Norwegian Centre for Research Data.

- 6 issues containing 120 articles annually
- Free publication.

### Contacts:

Chief Editor

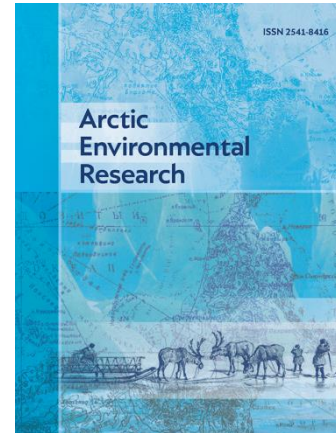
**Vladimir Melekhov**

Tel.: 8 (8182) 216149

E-mail: forest@narfu.ru

<http://lesnoizhurnal.ru/en/>

## ARCTIC ENVIRONMENTAL RESEARCH



Utilizes the *Pensoft* electronic editing system and is based on the *ARPHA* international platform.

Issued quarterly. Contains research outcomes in the following fields:

- Earth Sciences** (geology, geodesy and cartography, geoinformatics, geoecology, engineering geology, permafrost studies, etc.);
- Biological Sciences** (biogeography, botany, microbiology, zoology, genetics, ecology, hydrobiology, parasitology, mycology, soil science)

### Contacts:

Responsible Secretary

E-mail: vestnik@narfu.ru

<http://aer.narfu.ru/>

# PREPARATORY DEPARTMENT FOR INTERNATIONAL STUDENTS

## What to expect during the course:

- Intensive training in Russian language
- Preliminary training in basic subjects (mathematics, physics, chemistry, etc.)

**Language of instruction:** Russian

**Tuition fee:** 116 100 rubles/ 1575,57 USD

**Duration:** 10 months

## The integrated course includes:

- Studying in groups of up to 10 people;
- Experienced teaching staff and high-quality education;
- Individual approach to every student;
- Exciting excursions.





# RUSSIAN QUOTA SCHOLARSHIP



Russian Quota Scholarship via Russian Centre of Science and Culture (Rossotrudnichestvo) <http://rs.gov.ru/>

## 5 Steps to Applying:

More information:

[http://icd.edu.vn/372/thong-bao-tuyen-sinh-di-hoc-tai-lien-bang-nga-dien-hiep-dinh-nam-2021.html/BPF/vi-VN/CMS\\_Cat/Thong-Tin-Tuyen-Sinh/CMS\\_Detail/1922?zarsrc=30&utm\\_source=zalo&utm\\_medium=zalo&utm\\_campaign=zalo&fbclid=IwAR1H4I-ocHawtyqRDumxCyZwekKo\\_sPXVJUD\\_fm6EOIJXAJFLX\\_WzNeuxts](http://icd.edu.vn/372/thong-bao-tuyen-sinh-di-hoc-tai-lien-bang-nga-dien-hiep-dinh-nam-2021.html/BPF/vi-VN/CMS_Cat/Thong-Tin-Tuyen-Sinh/CMS_Detail/1922?zarsrc=30&utm_source=zalo&utm_medium=zalo&utm_campaign=zalo&fbclid=IwAR1H4I-ocHawtyqRDumxCyZwekKo_sPXVJUD_fm6EOIJXAJFLX_WzNeuxts)

1. **Sign up and submit an application form online**  
<https://education-in-russia.com/> (deadline: 15 March 2021)
  2. **Sign up and submit an application form online**  
<http://tuyensinh.vied.vn/> (deadline: 25 March 2021)
  2. Attach your scanned **documents**
  3. **Pass exams (portfolio)**
  4. **Choose NArFU** as 1st priority & wait till your application is approved
  5. Start your study at NArFU
- Quota includes:** free tuition, monthly scholarships



# INTERNATIONAL STUDENTS - SOCIAL LIFE



International Friendship Club



University Creativity Centre



Volunteer Centre



Media Centre for Journalism Development

Centre for Social and Psychological Support



Centre for Student Initiatives



University Museum

Medical Centre



# VIETNAMESE STUDENTS AT NARFU (2015-2020)





# NARFU CAMPUS AND SPORT FACILITIES

28 academic buildings

12 university dormitories

University Scientific Library

6 Sport Centres

Skiing Stadium

Swimming Pool







# WELCOME TO NArFU!



## Department of International Cooperation

- **E-mail:** [international@narfu.ru](mailto:international@narfu.ru)
- **Facebook:** [Northern Arctic Federal University – International office](#)
- **Website:** [www.narfu.ru](http://www.narfu.ru)
- **Тел.:** +7 (8182) 21 61 96, 21 89 27