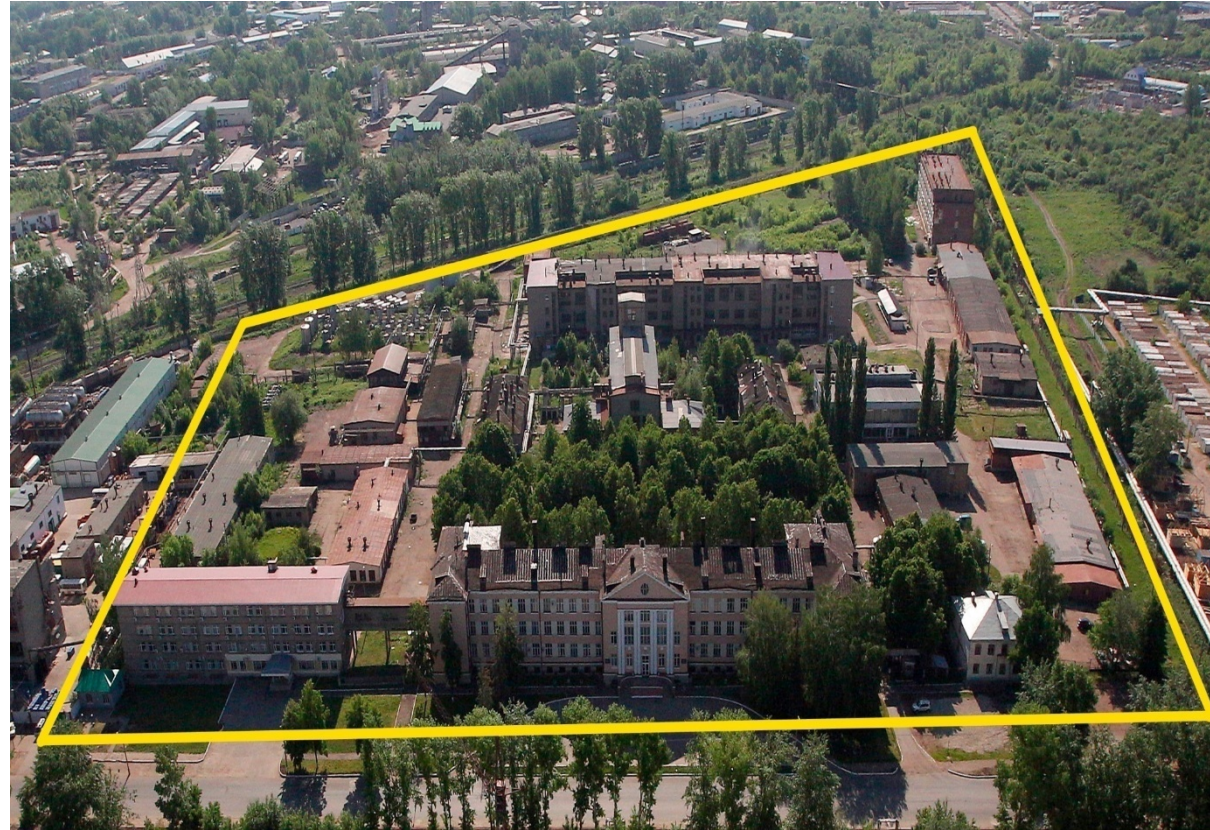


# KEY AREAS OF ACTIVITY OF THE INSTITUTE

2020

- Area 12 Ha,
- more than 30 buildings and structures,
- laboratory base,
- design base,
- pilot base,
- experimental production
- 350 staff, including 7 doctors and 53 candidates



## Key areas of activity of the Institute

Complex engineering in the field of oil refining, petrochemicals and wastewater treatment

Carrying out physical and chemical analyses of all types of petroleum products

Prototyping of petrochemical products

Production of petrochemical products

## Engineering center competence

- The study of raw materials for the selection of optimal processing technology
- Technological audit of all oil refinery units
- Development of proprietary technologies to increase processing efficiency
- Granting own licenses
- Conceptual preliminary research and master development plans
- Computer aided design, project data management (PDM) and database management using the AVEVA PDMS and AVEVA NET Portal software products
- Process Engineering (PED)
- Turnkey construction of facilities
- Project Advisory Management (PMC) and customer training

## The main topics of work

- Research and complex schemes of oil and gas condensate processing
- Preparation of oil for transportation and processing
- Preparation and processing of associated petroleum gas
- Low-tonnage oil and gas condensate processing complexes
- Rectification of oil, oil products and gas condensates
- Catalytic processes for the production of motor fuels
- Processing of oil residues (delayed coking, visbreaking, thermal cracking, deasphaltization, demetallization)
- Production of oil bitumen, pitches, sintering additives
- Calcination of petroleum coke
- Production of oils and lubricants
- Gas purification processes, processing of hydrogen sulfide into elemental sulfur
- Water supply, sanitation and treatment of waste water and gas emissions
- Oil sludge and waste oil processing
- Production of corrosion inhibitors and ASPS, lubricating and drilling additives, additives and modifiers for road bitumen, bitumen mastics, emulsions and compositions
- Automation of technological processes and enterprises

The analytical center is equipped with modern equipment, the capabilities of which cover all basic methods of physical and chemical analysis

Accreditation to more than 80 types of analyses:

Complete physical and chemical analysis of a wide range of refined products:

- all types of fuels
- oils
- oil slimes
- spent oil products
- oil refining gases
- cooling liquids
- bitumens
- bitumen additives
- mastics
- surface and wastewater

## OPPORTUNITIES:

- 50 laboratories located on the area of 10 thousand sq meters
- 270 units of the hi-tech equipment
- More than 300 highly skilled engineers and designers
- Possibility of carrying out unique research and development

## TYPES OF ACTIVITY:

- Physical and chemical analysis of raw materials and pilot models of products
- Practices of prototypes of new products
- Probes and development of pilot models of processes, technologies and petrochemical products
- Experimental and pilot run for carrying out chemical syntheses of research and pilot level



# Production of petrochemical products

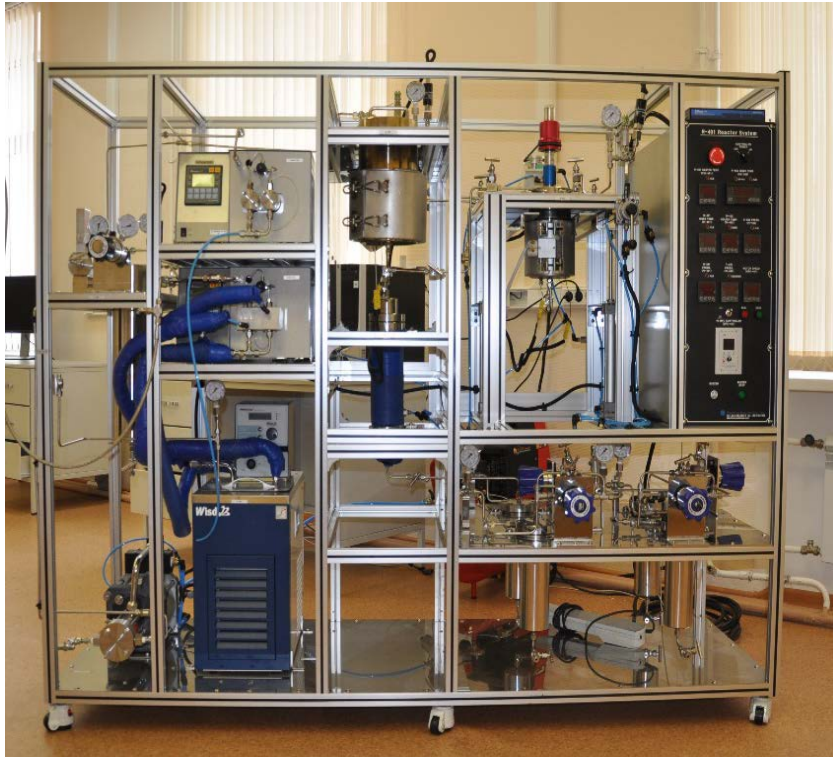
- Own branch line
- Capacity fleet 1,000 cubic meters. m
- Production and storage premises 12 thousand sq.m.
- Current production capacity of 5 thousand tons per year



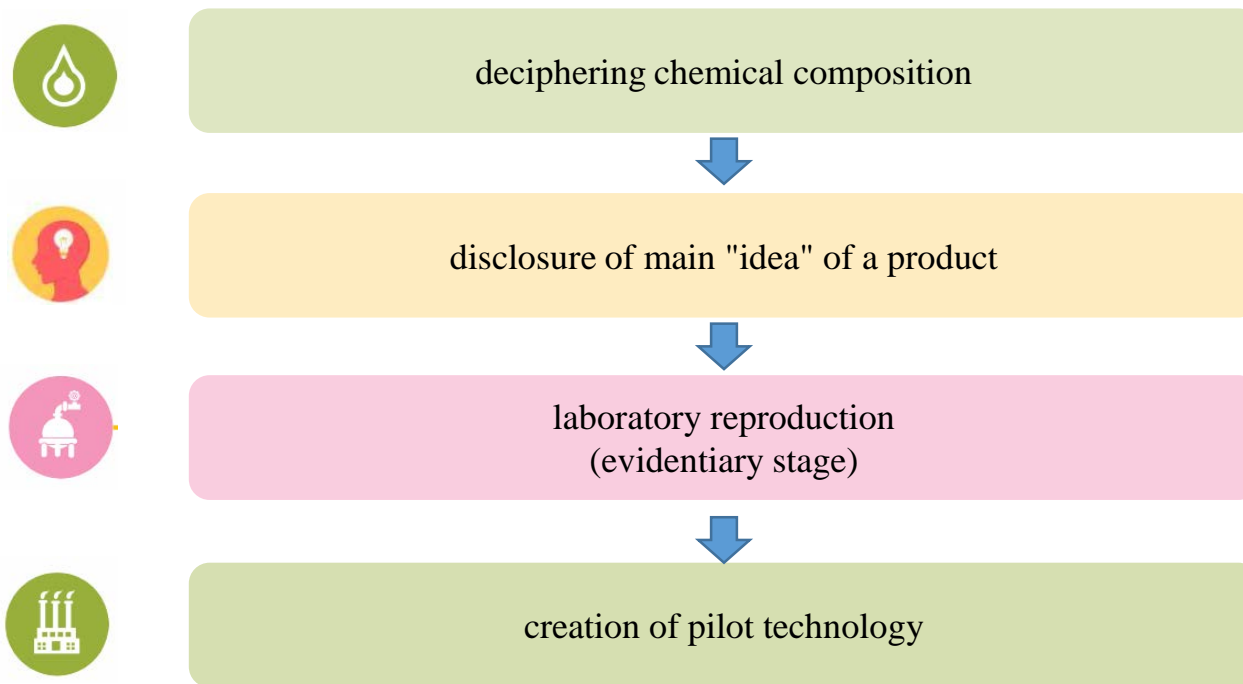


# Prototyping in petrochemical technologies

- 10 experimental pilot plants up to 2 litres
- Capacitive and flow type reactors



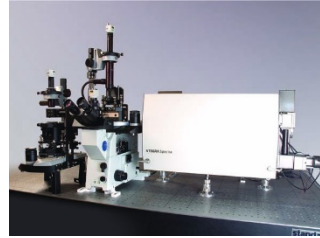
## PROTOTYPING STAGES



# Analytical providing physical and chemical methods of researches



System for a preparative chromatography of Sepacore Flash System



The automated scanning probe microscope Ntegra Spectra C



Nuclear magnetic resonance spectrometer of Bruker AVANCE III 400 MHz



Gas chromatomass-spectrometer of GCMS QP2010SE



Complex of the dielectric analysis Concept 50 Novocontrol



Optical issue spectrometer with inductive and coherent plasma ICPE-9000

**270 units of the unique hi-tech equipment**

# Examples of the developed prototypes



Packages of additives to engine oils (USA)



Synthetic Cooling Liquid (SCL)  
It is applied to drawing of a copper wire  
(Germany)



Paint protector of electromagnetic radiation.  
It is applied to protection against electromagnetic radiation (Germany)

## Examples of the developed prototypes

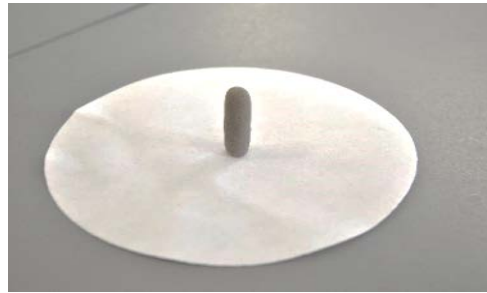


Mastic for pasting of rubber with a concrete surface.

It is applied to pasting and a waterproofing of seams of rings at construction of tunnels for the subway, prevents vibration destruction, keeping tightness of a surface (Austria)



## Examples of the developed prototypes



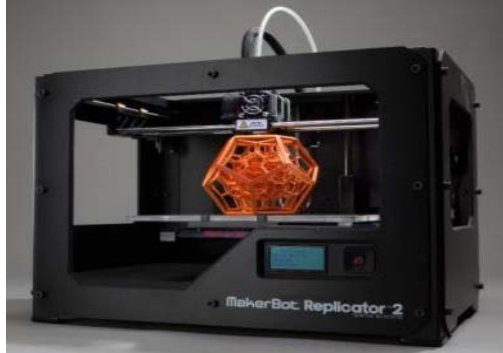
Kinetic sand for children's creativity (molding) and development of motility.  
Safe analog of plasticine (Sweden)



Disinfectant for application in agriculture  
(Germany)



# Examples of the developed prototypes



The photopolymeric, hardening under the influence of light liquid composition for 3D - the printer (Great Britain)



Photopolymer from domestic raw materials is applied in 3D - printers by production of different products on Ufa Engine Industrial Association

# Examples of the developed prototypes



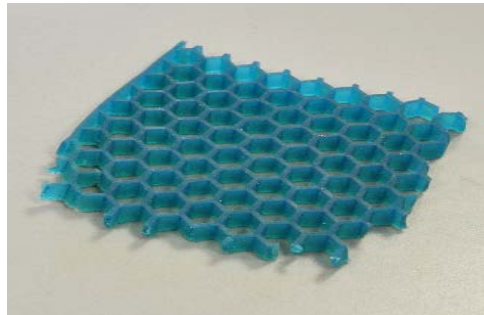
Development of a domestic analog of "strengtheners of soil" (USA)



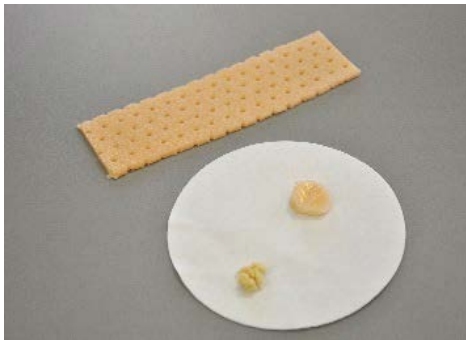
The structure represents an emulsion of polymer of the acrylic nature with block architecture

It is applied by preparation of "road pie" on roads of the highest category and also to preparation of dirt temporary roads expeditious (within a day) for the movement of tractors and other heavy machinery on almost impassable sections of roads

# Examples of the developed prototypes



"PU gel" for soft medical antidecubital mattresses (China)



The Bezgipsovy Turbocast orthosis for fixing of the injured parts of the body at fractures, stretchings and dislocations (Holland)