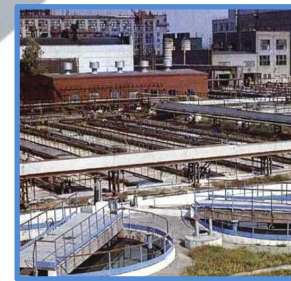
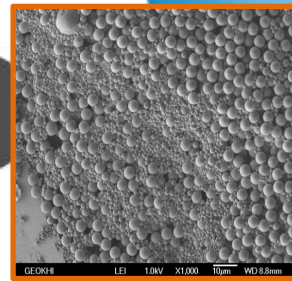
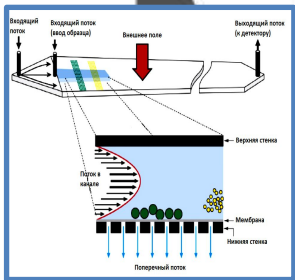


Laboratory of separation and pre-concentration in the chemical diagnostics of functional materials and environmental objects



Main Goals

- Developing new effective methods for separation of trace elements and nano/microparticles with the use of sorption processes and field-flow fractionation;
- Elaboration of combined methods for chemical diagnostics of functional materials and environmental samples.

ОСНОВНЫЕ ЦЕЛИ

- Развитие новых высокоэффективных методов разделения микроэлементов, микро- и наночастиц с использованием сорбционных процессов и проточного фракционирования в поперечном силовом поле;
- Разработка комбинированных методов химической диагностики функциональных дисперсных материалов и объектов окружающей среды

Equipment

(some representative items)

System for the fractionation and characterization of nano and microparticles

Agilent Technologies

planetary centrifuge equipped with a
ICP-MS spectrometer specially designed
les;




otometer

Inductively coupled plasma mass spectrometer ICP-MS Agilent 7900

thermo
S I E N

- applicable to the analysis of concentrated salt solutions (up to 25% TDS);
- a laser light-scattering detector (wide measurement range : 7 nm to 800 µm;
- working linear concentration range of detector: 11 orders of magnitude (from 0.1 ppm to 20%)

Institute for Analytical Instrumentation



Planetary centrifuge

- a spectrophotometer for on-line detection of particles in column effluent

SHIMADZU

Nanoparticle Size Analyzer



How it was before reconstruction
(Summer 2014)



During reconstruction
(Autumn 2014)





Virtual tour



Fractionation and Analysis group

International workshop

“Establishing and developing the laboratory of separation and pre-concentration of trace elements and nano/microparticles in NUST”

Professor Ilya Kuselman (National Physical Laboratory of Israel)

Quality risk management of analytical results and human errors



PhD Mikhail Ermolin

Field-flow fractionation of nano- and microparticles using rotating coiled columns



PhD Olga Dalnova

Sorption methods in the separation and pre-concentration of elements



PhD Vasilisa Baranovskaya

Separation and pre-concentration in combined methods of analysis



PhD Vasilii Karandashev

Application of mass spectrometry with inductively coupled plasma in combined methods of analysis



PhD Vasilii Baklykov

New possibilities of mass spectrometry with inductively coupled plasma developed by Agilent Technologies



Round table “Activities of international organizations in the field of analytical chemistry”

World-known scientists, representatives of Russia in the most important international organizations related to metrology and analytical chemistry gave their talks at the round table. Such a unique meeting was very useful for research scientists and students.



Staff (22 research scientists and engineers)

Head of the laboratory (leading scientist) – Professor (Doctor of Science) Petr S. Fedotov

2 Professors (Doctors of Science)

9 PhD (5 of them are younger than 35)

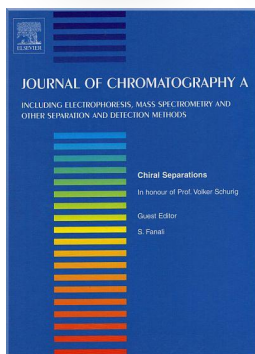
3 PhD students

3 undergraduate students

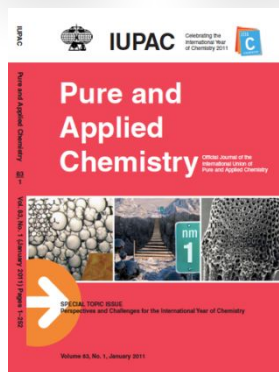
4 engineers



Publication activity



Impact factor 4.258



Impact factor 3.386



Impact factor 0.810



Impact factor 1.048



Impact factor 3.756

In 2014 we:

- ✓ published 8 articles in high rating chemical journals;
- ✓ sent 2 patent application;
- ✓ took part in 13 conferences with 27 reports