



**Belarusian State University
of Informatics and Radioelectronics**

R&D Department

Announcement

International exhibition-convention

“High Technologies. Innovations. Investments” (HI-TECH 2022)

April 26 – 28, 2022

Saint Petersburg, Russia

Convention and Exhibition Centre «EXPOFORUM»

Petersburg highway, 64/1

About the exhibition:

The international exhibition of innovations “HI-TECH 2022” is one of the main events in Russia in the sphere of high technologies promotion, that facilitates effective cooperation between scientific organizations and investors. The exhibition is held together with the St. Petersburg Technical Fair at the intersection of professional cooperation of industry specialists and opens up new business possibilities to all participants. Traditionally, the main exhibitors are state research centers, research institutes, universities, industrial enterprises, technoparks, and regional expositions. In the frames of the exhibition a competition on “the Best Innovative Project and the Best Scientific and Technical Development of the Year” will be held.

Thematic sections of the exhibition:

- additive technologies;
- wireless technologies;
- biotechnologies: genetic engineering and gene therapy, microbiology, and pharmacology;
- industrial information technologies;
- nanomaterials and nanotechnologies;
- industrial robotics;
- security systems: biometrics, sensors, detectors, electronic analyzers, and surveillance systems;
- machine vision technology;
- engineering personnel training and development technologies: methodology and technology of education, as well as educational programs;
- smart / digital production;
- eco-friendly technologies and alternative energy;
- automation of industrial enterprises;

- innovative materials: plastics, composites, polymers, rubbers;
- VR/AR-technologies at production.

At the exhibition BSUIR will introduce:

SERS-active substrates for high-precision analysis of liquid and gas media by means of Raman spectroscopy

This is a nanocomposite material that consists of surface-modified silicon or polymer, coated with a nanostructured film made of noble metals (porous films, nanoparticles, nanocavities, dendrites). It can be used with portable or ground based Raman spectroscopy device of any producer. The area of the SERS-active zone varies in the frames from 0,01 cm² to 1 cm², and the surface of the substrate is from 0,5 cm² to 9 cm².



Application areas: detection and study of the chemical compound structure in submolar concentrations, which are part of liquid and gaseous environments, for solving problems arising in materials science, medical theranostics, pharmaceutical analysis, forensic examination, environmental monitoring, etc.

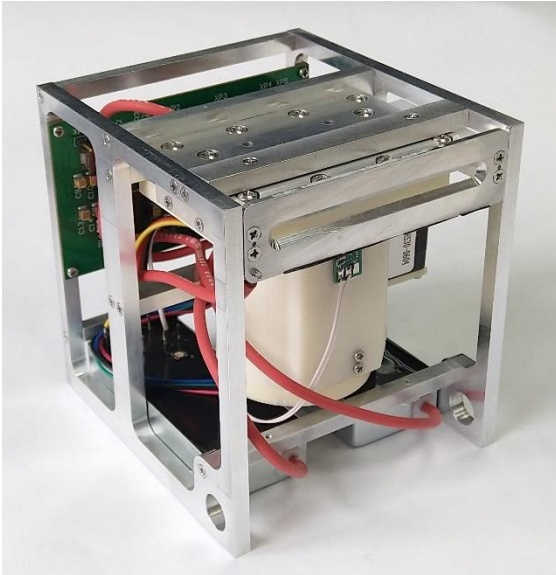
Advantages:

- improved the detection limit by 3–6 orders of magnitude up to the implementation of the possibility of detecting single molecules,
- increased the reproducibility of the analysis results of macromolecular compounds (polymers) and complex composition environments
- increased the morphological and chemical characteristic stability of SERS-active nanostructures,
- ensured the presence of an inactive region for a comparative analysis of the Raman and SERS spectra,
- shelf life is up to 36 months,
- implemented the compatibility of operations for manufacturing SERS-active substrates with technologies for manufacturing microelectronic devices and micro-optoelectromechanical systems.

About the developer

Electrostatic jet micromotor

The motor is designed for moving, maneuvering, and maintaining the altitude of low Earth orbit of small spacecrafts of the CubeSat format with dimensions of 3-9U.



Advantages:

- the use of the microelectromechanical system technology for the manufacture of the micromotor emitter (the most important part of it, that is responsible for the formation of thrust) allows to simplify the design and manufacturing method;
- the use of ionic liquid as a fuel allows to reduce the operating temperature of the device in comparison with the analogues operating on liquid metals, and to reduce the power consumption of the engine thermal stabilization system.

About the developer

Services for instrumentation and technological modeling and design of integrated circuits

The University provides a range of services for the electronic industry:

1. Development of the manufacturing process and optimization of designing of the performance characteristics of power electronic devices.
2. Development and industrial production of customized analog, digital, and mixed integrated circuits.
3. Development of compact models for various types of semiconductor devices and sensors.

Advantages:

- original methods of calibration and verification of the parameters of technological process models, as well as charge carrier transportation models;
- special software that allows to adapt the results to the conditions of real production;
- best experience of practical interaction with electronic industry enterprises.

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