



**Belarusian State University
of Informatics and Radioelectronics**

R&D Department

Announcement

BSUIR at the exhibition of the XI Forum of Regions of Belarus and Russia

June 27 – 30, 2024

Belarus, Vitebsk,

Frunze Park, 1

(Vitebsk concert hall)

The organizers of the Forum are the Council of the Republic of the National Assembly of the Republic of Belarus and the Federation Council of the Federal Assembly of the Russian Federation.

As part of the forum, an exhibition of achievements of the national economy of the regions of Russia and Belarus will be held, in which BSUIR would participate.

At the exhibition BSUIR will present:

Microwave control and measuring equipment

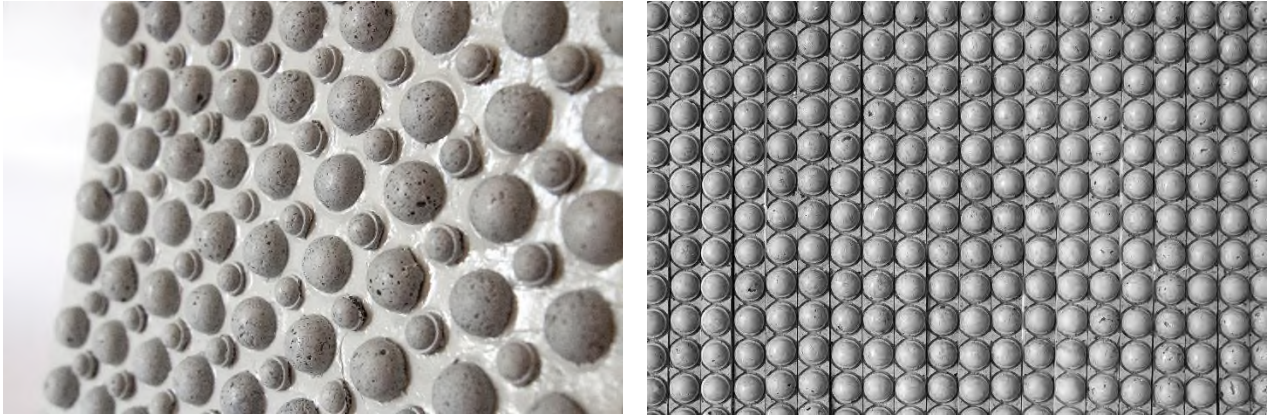
BSUIR has developed a line of devices in the frequency range from 0.01 to 220 GHz. These devices are used for verification and calibration of microwave measuring devices, in the development and production of advanced systems for high-speed information transmission, radar, navigation, and communications, in which accuracy, stability and security of operation are ensured.

The equipment is part of the national standards for unit of power and attenuation of electromagnetic oscillations in the frequency range from 37.5 to 178.4 GHz, which are being developed by BSUIR within the framework of the State Scientific and Technical Program "National standards and high-tech research equipment".

In 2023, the Г4-MBM-37 signal generator and the MK-MBM-118 calorimeter won the "Best Innovative Project and Best Scientific and Technical Development of the Year" competition held as part of the International Exhibition of High Technologies and Innovations "HI-TECH'2023" (St. Petersburg, Russian Federation).

About the developer

Absorbers of electromagnetic radiation in the microwave range



They are final panels intended for installation on walls or partition frames of shielded rooms. The presence of geometric inhomogeneities on the surface ensures the scattering of electromagnetic waves interacting with it.

The panel has a two-layer structure. The bottom layer is made on the basis of a conductive film material, the top layer is made on the basis of powdered activated carbon and a polymer binder.

The rounded shape of the geometric surface inhomogeneities determines the strength of the absorbers and low material consumption compared to analogues.

Advantages:

- High mechanical strength.
- Flexibility.
- The presence of geometric surface inhomogeneities ensures greater dispersion of electromagnetic radiation.
- High degree of fire resistance.
- Reduced mass per unit area.
- Does not contain substances toxic to humans.
- The cost of the finished product is reduced due to the availability of materials.
- Reflection coefficient of electromagnetic radiation in the microwave range: up to –20 dB;
- Transmission coefficient of electromagnetic radiation in the microwave range: up to –40 dB.

About the developer

Electrostatic jet micromotor for nanosatellites



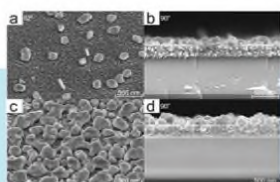
The micromotor was developed jointly with ITMO University (Russia) within the framework of the Union State Program "Technology-SG". Designed to move, maneuver and maintain the altitude of low Earth orbit for small spacecraft of the CubeSat format.

A special feature of the micromotor is the use of MEMS technology for the manufacture of its components, as well as ionic liquid as fuel, which allows to reduce the requirements for operating temperature, simplify the assembly and operation of the device, as well as increase its safety.

Patent No. 23445 "Method for manufacturing ionic source for jet electrostatic micromotor", registered in the State register of inventions of the Republic Belarus 30.06.2021.

About the developer

Photonic sensors operating on the effect of surface - enhanced Raman scattering of light



A line of photonic sensors has been developed that, depending on the morphology of the sensitive area, make it possible to detect and study the structure of molecules, including biomarkers of diseases, and with high accuracy analyze biological fluids and sanitary-epidemiological washings using Raman spectroscopy.



The advantages lie in the technological features of the formation of sensitive micro- and nanostructured areas, which provide the possibility of manufacturing sensors that are maximally adapted to customer requirements, including flexible ones, and activated immediately before research/analysis.

About the developer

Kit for studying quantum size effects in nanostructures of silicon and metals



Обучающий набор прошел апробацию студентами при выполнении лабораторной работы по дисциплине «Гибридные наноструктуры» на кафедре микро- и нанoeлектроники БГУИР и школьниками 10 и 11 классов при работе над исследовательскими проектами.

The developed set includes:

- samples of nanostructured silicon exhibiting photoluminescence due to quantum size effects;
- radiation sources for excitation of photoluminescence;
- optical filters;
- electrolytes for the formation of metal nanostructures on silicon.

The set is intended to familiarize talented youth in centers for gifted children with the effects characteristic of nanomaterials and an introduction to nanotechnology.

[About the developer](#)