

**DEVELOPMENT OF MOBILE ULTRASONIC SYSTEM
FOR INTENSIFICATION OF BIOCHEMICAL PROCESS**

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As it is known, piezoelectric transducers are most common in ultrasonic medical technology. Allowing to receive acoustic vibrations in the frequency range from several kHz to tens and hundreds of MHz, they are used in devices for ultrasonic therapy, in diagnostic devices used in medicine and veterinary medicine, in devices for ultrasonic stimulation of biotechnological processes.

The energy crisis, the increasing demand for products with improved and environmentally friendly qualities have necessitated the development of new technologies for extracting extractive substances from plant materials, which find their application in food industry, cosmetology, chemical industry, etc.

Some processes in biotechnology, such as extraction, suspension, filtration, and even preparation of mixtures, often take a long time to produce a quality product and can be intensified by ultrasound.

Of particular interest are extractive substances (oils), which are safe for the environment and do not have a harmful effect on human health, as it is evidenced by numerous works.

The authors are developing theoretical foundations for designing piezoelectric transducers and developing on this basis highly efficient multicomponent ultrasonic oscillatory systems of various physical natures for pharmaceutical and medical instrumentation.

In Fig. 1,*a* laboratory stand for intensification of chemical processes based on Langevin's radiator (Fig. 1,*b*) is presented.



Fig. 1. Laboratory stand (*a*) for intensification of chemical processes based on Langevin's radiator (*b*)

The work is carried out within the framework of scientific and technical project "Development of mobile highly efficient ultrasonic surgical instrument for military and civil medicine", which is conducted at the Department of Instrument Making, Mechatronics and Computerized Technologies.

Further research of the authors will be aimed at creating mobile small-sized ultrasonic systems for intensification of chemical processes in pharmaceuticals based on piezoelectric radiators.