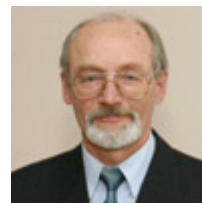


SibFU scientists developed a device for monitoring the work of the human heart

Scientists at Siberian Federal University have developed a cardiac monitor that allows of a lengthy and continuous monitoring of the functioning of the cardiovascular and circulatory system and lungs and also makes a prompt detection of heart diseases like arrhythmia possible. [TASS Science](#) portal has published an article about the scientists' findings.

“A sensor weighing less than one hundred grams is mounted in the heart area by standard single use electrodes, and all the data it collects is transferred to a smartphone or a tablet via Bluetooth. Unlike cardiac sensors that are widely used nowadays and transmit only ECG data, our development makes it possible to monitor the condition of the electrical conduction system and neuromuscular system of the heart, and the vascular and circulatory systems of the whole body, to check, for example, how blood circulates in the brain, arms, and legs. Additionally, we can assess how bronchial tubes and lungs function in general” says the research author, Professor of The Department of Instrumentation and Nanoelectronics at SibFU **Gennadiy Aldonin**.



SibFU scientists' monitor analyses ECG data, phonocardiograms, the functioning of blood vessels and other biosystems of the body thanks to special algorithms based on the theory of self-organisation (or synergetics). According to Aldonin, the scientists named the newly found method “wavelet-introscopy” meaning non-invasive manner of visualization of the functioning of body systems.

The scientists received two grants aimed at the development of the software solution from The Government of Krasnoyarsk krai summing up to 2.5 million rubles. At the moment the Scientific production enterprise “Radiosvyaz” is overhauling the monitor and getting it ready for mass production. Department employees themselves are the first examinees that help testing the device.

Gennadiy Aldonin says he himself detected having a sporadically appearing arrhythmia.

“A sensor like ours is going to be useful in the long run for all Russians aged 40 and older and maybe even at the earlier age due to how careless we are with our health. And deaths caused by cardiovascular diseases are still one of the main causes for premature mortality in the country. We'll try making it as comfortable and affordable as possible. We estimate that the cost of the final product (the sensor and the smartphone application) is going to be several thousand of rubles” Aldonin notes.

Aldonin says SibFU scientists plan to expand monitor capabilities and adapt it for people with diabetes, for example.

“In our following research we want to use the blood viscosity to monitor the blood sugar levels of patients having diabetes and to monitor prothrombins of patients prone to thrombus formation which is one of the causes of stroke. Speaking of further plans, we want to replace tomography scanners and glucose meters with our monitor because it's cheap, tiny, comfortable and is capable of monitoring the functional status of human body” Aldonin explains.

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