

Dear friends,

There is a view that Russian science has grown irreversibly “old.” Materials published in this issue testify that it is too early to make such conclusions. Today, our youth is actively engaged in advanced research fields and gets firm support from the society and the state.

In 2010, prestigious academic prizes were awarded to a number of young researchers for their basic and applied investigations. The most important among them reveal universal laws in crystal structure, which help to determine the properties of a substance and its possible practical applications, and development of a breast cancer diagnostic platform, allowing a very early diagnosis of the tumor, while it consists of just a few cells.

Our journal has addressed more than once the issue of natural and man-made catastrophes. Their frequency, magnitude of the damage caused and especially the number of casualties and extent of material losses have increased manifold over the last decades. According to researchers, the reasons behind this situation are the growing population of the Earth and development of the world economy, degradation of the natural environment and climatic changes. Fighting hazards is becoming an indispensable part of the national sustainable development strategy. The focal points of this strategy are prediction of imminent threats, economically reasonable use of lands, and taking preventive action.

It goes without saying that people cannot stop or turn the course of natural evolutionary changes of the planet's climate but they should learn to forecast the coming catastrophes and mitigate their consequences. The research of natural conditions existing on the Earth in the far-away past unequivocally indicates that most global processes have been cyclic. Over hundreds of thousands of years, the periods of cooling succeeded the periods of warming, and vice versa. It cannot be ruled out that in the near future global warming will yield to yet another glacial period, which will pose new problems to mankind and new research challenges to science.

In April 2011, our country, as well as the whole world community, celebrated the half-century anniversary of the first piloted space flight. The 108 minutes spent by Yuri Gagarin on the Earth's orbit baptized the world into the age of man in space.

No wonder, the new issue of the journal focuses on the space exploration done by Siberian scientists. It is noteworthy that the Siberian Branch itself was set up in May 1957, five months before the Earth's first artificial satellite was



launched. As early as in the first years of the Branch's existence, several successful studies were carried out related to outer space investigation. The range of problems our scientists are facing today is as broad: from the creation of jet microactuators for miniature satellites to the technologies for building a spacecraft and production of semiconductor structures in the open space.

Nowadays, space has come closer to us and become easier to access – it is not by chance that among the most important research problems is the development of a strategy and techniques for monitoring orbital “garbage.” Regular flights to the International Space Station, development of space tourism, and hundreds of functional orbital satellites... Many of the things happening today have been predicted by the pioneers of space aeronautics. One of them is the gifted self-taught inventor Yuri V. Kondratyuk, who wrote, as far back as in 1917, that launching an interplanetary flight would require “less materiel than building a few large warships.” He, who longed passionately for space, was not able to build a rocket – the tragedy of a person who was born “at a wrong time and in a wrong place” and was forced to live under a false name. The Novosibirsk-based Kondratyuk Memorial Museum keeps a reprint of his book “Conquest of Interplanetary Space”, which in 2008 was taken on board an International Space Station as a sign of recognition of his pioneering ideas.

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