

## **International Conference: Essays of Mining Science and Practice**

Dear colleagues, participants of the international conference "Essays of Mining Science and Practice"!

The Institute of Geotechnical Mechanics named by N. Poljakov of National Academy of Sciences of Ukraine (IGTM NASU) for the first time hosts the International Scientific Conference "Essays of Mining Science and Practice".

IGTM NASU was founded in 1967 with the aim of solving problems of mineral exploitation at great depths, namely coal, ore, loose, non-ore materials, ferrous and non-ferrous metals, for the coordination of scientific development, as well as for the practical use of science achievements.

The founder and the first director of the Institute was a well-known scientist in mining mechanics, academician Nikolai Poljakov, who devoted a great amount of energy organizing and developing the Institute.

The main directions of the Institute scientific activities are as follows: the physics and mechanics of rocks; new effective methods for the destruction of rocks; aerogasdynamic processes control; the study of the physical foundations and scientific justification for the progressive methods and techniques for mineral development.

In 1967-1975 the Institute developed and expanded relevant scientific areas, scientific personnel received training; laboratory base, pilot plant production with design departments were built; relations with geological, coal, mining enterprises were established. During this period, fundamental research in petrophysics and mechanics of rocks and massifs, new methods for their destruction, the theory of mining machines and working processes, mine aerogasdynamics, dynamic manifestations of mining and gas pressure were carried out.

During 1975-1992 the Institute had worked under the leadership of academician Valentyn Poturaiev. At this time, new scientific directions such as the destruction of rocks, the normalization of thermal conditions during underground coal mining, the development and implementation of vibrating transport machines and units for the mining were formed. Research on the mechanics of deformation and destruction of rubber elements of machines operating under cyclic loads in the atmosphere of various temperatures, as well as in aggressive environments, had been widely developed.

Since 1992, the Institute is headed by Academician Anatolii Bulat. At this time, the priority areas of fundamental research are the development of coal deposits in Ukraine, the development and implementation of new technologies for the coal mining at great depths, and a comprehensive solution to the issues of coal mining. Interdepartmental Scientific Councils are being created on the basis of the Institute: "Scientific basis for the development of coal deposits in Ukraine" and "Explosion mechanics and technologies and its applying in the national economy". The Association of Authors of Scientific Discoveries was organized. International conferences have been held actively.

In recent years, the fundamental research of the Institute is reflected in competitive developments. In particular, a conceptual approach was developed to restructure the coal industry in order to diversify the activities of mines in the direction of in-depth processing of coal into heat and electricity, the «Gas Horizon» degassing technology and advanced

coal seam degassing technology were created, which can produce additional high quality methane in advance.

A new roof bolt support technology have become widespread at Ukrainian coal-mining enterprises, which creates conditions for blocking the destruction process of boundary rocks. A new technique for the coal preparation on the working screening surfaces was created. The parametric series of dynamically active rubber resonant belt harp screens for the classification of minerals successfully works in many coal, iron ore, non-ore, metallurgical and coal-concentrating enterprises of Ukraine and abroad.

Today the Institute is the leading organization in Ukraine in mining and processing of minerals. Current research directions of the Institute include the study of the rocks and massifs properties, their destruction and the control of the stress-strain state; development of scientific foundations of mining and technical processes, equipment and technology for the extraction and processing of minerals; physico-technical and geological foundations of technologies for mining methane; research of processes and technologies of energy transformation of coal and coal mine methane, parameters of functioning and structure of energy complexes; energy saving and reliability of mining. Scientific schools, which are widely known in Ukraine and abroad, are established and successfully operate in these areas at the Institute.

Now, 320 employees work in the Institute, of which 160 researchers, including an academician and 3 corresponding members of the National Academy of Sciences of Ukraine, 11 professors, 27 doctors of science and 65 philosophy doctors.

The Conference "Essays of Mining Science and Practice" creates a unified knowledge space in mining science, building interaction between academic institutions and universities with representatives of industrial enterprises of the mining industry.

The Conference is organized by Institute of Geotechnical Mechanics named by N. Poljakov of National Academy of Sciences of Ukraine and held under the aegis of the National Academy of Sciences of Ukraine. The coordinator of the Conference is the Institute of Strategic Technologies named after academician S.M. Koniukhov.

The subject of the Conference covers the latest scientific achievements in the most relevant areas of the development of mining science.

The participants of Conference are both well-known scientists and young scientific specialists, as well as representatives of industrial enterprises.

Over 250 participants take part in the Conference in 2019.

The scientific committee of the Conference is represented by scientists and experts from Ukraine, Uzbekistan, Armenia, Kazakhstan, Georgia, Germany, Poland, USA, Japan, Great Britain, Jordan and Australia.

More than 100 scientific works are presented in the following areas: rock mechanics; engineering geology; mining machinery engineering; mining geotechnics and engineering; coal mine methane recovery; geology of mineral deposits; mining safety and labor protection; mineral raw materials processing and concentration, etc.

The format of the Conference allows to consider the scientific, practical and educational aspects of the issues. The Conference "Essays of Mining Science and Practice" is an interdisciplinary research platform for international scientific schools, it provides an opportunity to share practical experience and knowledge in all relevant issues of the mining.

I wish fruitful work for all Conference participants!

Academician of the NAS of Ukraine,  
professor Anatolii Bulat,  
Scientific Committee Chair