CONCEPT OF THE JOURNAL “MINING OF MINERAL DEPOSITS” OF THE NATIONAL MINING UNIVERSITY

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ABSTRACT
This article describes the present concept of the journal “Mining of Mineral Deposits”. The introduction features information about the Underground Mining Department where the journal was created. It also focuses on a short prehistory of creating Ukrainian “School of Underground Mining”. Special consideration is given to previous journals and scientific and technical collections issued by the Department. The scope of topics and the details about the journal reformatting are also provided.

Keywords: journal, concept, Mining of Mineral Deposits, National Mining University, Underground Mining Department

1. INTRODUCTION
Today the National Mining University is one of the leading educational establishments of the country in geological prospecting and mining sector. Underground Mining Department is the leading department in the university. It was established in 1900 in order to prepare specialists in mining. There are 56 people working at the Department nowadays, among them 10 Professors, 24 Associate Professors and 9 Assistant Professors.

Underground Mining Department is engaged in the following research areas of mining industry: innovative technologies of opening, development and extraction of coal, iron-ore, uranium, copper and manganese deposits; methods of calculating rational parameters of various types of support, strain state management of the massif; ventilation of mine openings; underground coal gasification technologies; research of ecological environment and geomechanical processes; economic aspects and investment-innovative ways of mining industry development and other important topics.

One of the perspective research trends for our Department is the development of energy-saving technologies related to the extraction and processing of minerals.

The Department provides training to the students majoring in “Mining of the deposits and extraction of minerals” speciality. Laboratory projects, term, and diploma papers are performed in specially equipped laboratories and modern computer classes. Mining engineer’s higher education program provides knowledge in geodesy, geology, crystallography, mineralogy and petrography.

Alongside with the professional knowledge in technology and complex mechanization of minerals underground mining, future specialists gain fundamental knowledge of natural sciences and general technical knowledge: theoretical mechanics, strength of materials, theory of machines and mechanisms, thermodynamics, hydraulics, rocks physics, hydrogeology and engineering geology, mine surveying, rock failure mechanisms, mining aeroology, transport, electrification of underground mining operations, minerals processing, economics, organization and planning of mining operations, mines design, rock massif management, labour protection, and materials science.

The Department offers several specializations:
– underground mining of stratified deposits;
– underground mining of ore deposits;
– underground mining of minerals with profound learning of professionally oriented English language;
– underground mining of minerals with profound learning of information technologies;
– underground mining of minerals with profound learning of management in production field;
– designing mines and underground constructions.
During its existence, the Underground Mining Department has prepared more than 20000 mining engineers. The Department’s graduates work as heads of mining enterprises in Ukraine and abroad; they manage scientific and research, branch and academic institutes; as well as prepare specialists at higher education establishments for mining and other branches of industry.

In view of the above, it was obvious that starting up a high-profile professional scientific journal is essential for the Underground Mining Department and for the National Mining University. In addition, it is critical to build the mining engineers community for developing cutting-edge knowledge and sharing the best of mining practice. That is the ultimate reason why the Underground Mining Department became the foundation for the creation of the “School of Underground Mining” which is engaged in publishing several periodical editions.

2. PREREQUISITES OF CREATING UKRAINIAN “SCHOOL OF UNDERGROUND MINING”

The last decades saw a dramatic growth of coal production capacity while its quality, power and reliability of equipment has steadily improved. Moreover, stability of production processes can be controlled even better. In connection with that, unification of scientific schools focusing on “Mining of Deposits” is an integral trend from the viewpoint of technical and technological policy. That is why 2007 marked the start of the international scientific and practical conference “School of Underground Mining”.

The primary aim of the “School of Underground Mining” was exchange of experience, transfer of new progressive technologies, consolidation of efforts concerning saving and development of scientific trends, viable traditions and worthy status of a mining engineer in society.

“School of Underground Mining” is an annually held event that brings together a large number of scientists and mining professionals in order to share experiences, latest developments and new ideas in mining science, to assess the implemented results and discuss perspective trends in mining that can be considered as potential solutions for the future.

3. PERIODICAL PUBLICATIONS OF UNDERGROUND MINING DEPARTMENT

3.1 Mining of Mineral Deposits

All collections of research papers from 2007 to 2012 were proceedings of the Ukrainian “School of Underground Mining”. These collections reflect scientific and technical achievements and foremost domestic and foreign experiences of new technologies in mining industry of Ukraine, Poland, Russia, Kazakhstan and other countries.

These publications present innovative technologies of dissection, preparation and working off coal, iron-ore, uranium, copper and manganese deposits, methods of calculating rational parameters of different roof types, management of the stress-strain state of the massif, ventilations and degassings, economic aspects and investment-innovative ways of mining industry development.

New technologies of coal and ore deposits are presented, as well as basic trends and perspectives of ecological and economical development of coal industry, its technological development, technology of under-open-cut deposits of kimberlite pipes in Yakutia in complex hydro-geological conditions, modeling of tall chambers stability with mining methods of iron-ore deposits with consolidating backfilling, substantiation of pillar chambers parameters of gypsum mines. Laws of stresses in frame support are specified taking into account mine workings depth.

In these collections, we also presented modern technologies of coal deposits complex development, together with current tasks of repeated use of mine workings of high-output stopes and tendencies of development workings support. Experience of degassing boreholes drilling is covered together with recovery and use of mine methane gas and new technical solutions to iron-ore deposits development. Methods and means of hydro-loosening of prone-to-bursts coal seams are examined. Economic expediency of collateral seams by method of borehole underground coal gasification is substantiated.

Covers of the “School of Underground Mining” editions from 2007 to 2012 are shown in Figure 1.

Figure 1. Covers of the previous editions of the “School of Underground Mining” (2007 – 2012)

“Mining of Mineral Deposits”, issued since 2013, is continuation of the “School of Underground Mining” (Fig. 2). This collection is officially registered in Ukraine’s Ministry of Justice. The register number is KB 20210-10010 P dated from 30th August 2013.

Figure 2. Covers of the last three volumes of “Mining of Mineral Deposits” (2013 – 2015)
Scientific and technical collection (“Mining of Mineral Deposits”) contains materials from native and foreign experience of innovation technologies implementation in mining. Research studies of problems in mining are presented. The total number of articles published in scientific and technical collections of the “School of Underground Mining” and subsequently “Mining of Mineral Deposits” is 520 (Fig. 3). Changes in Editorial Board are presented in Table 1.

Table 1. Members of Editorial Board of scientific and technical proceedings “New Techniques and Technologies in Mining” published by CRC Press/Balkema, Taylor and Francis Group was published by CRC Press/Balkema.

<table>
<thead>
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<th>Year</th>
<th>Ukraine</th>
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3.2 Annual Scientific and Technical Collections published by CRC Press/Balkema

The first collection of research papers published by CRC Press/Balkema, Taylor and Francis Group was proceedings “New Techniques and Technologies in Mining” (Bondarenko, Dychkov’s’kyi & Kovalev’s’ka, 2010). Performance summary (preface and description) is listed below. This collection stressed that mining is the foremost source of minerals that all countries find essential for maintaining and improving their standards of living. Mined materials are needed to construct roads and hospitals, build automobiles and houses, make computers and satellites, generate electricity, and to provide many other goods and services to satisfy most demanding consumers. High tech industries and even the better known resource industries are all dependent, in some way, on mining industry.

But exploring, extraction and processing of minerals require major material and labour costs and there is a large number of acute problems to face such as: environment and water pollution, worsening of mining-geological conditions, depletion of minerals that can be extracted only by conventional methods, rock pressure manifestation, big depths of deposits and transportation of minerals on the surface.

In order to find modern solutions, scientists and engineers all over the world are dedicating their researches to most current problems and inventions of innovative technologies and techniques in mining. Some of the most important results of such researches are presented in this book and cover the following topics: management of strain-stress state of the massif, underground coal gasification, substantiation of rational parameters of various types of support, ventilation in underground openings, design of mine workings and other vital questions.

Complication of mining and geological conditions of the deposit mining, continually growing material and labour costs of maintenance and support of the openings, and necessity to strengthen the requirements for safety of mining operations make the question of scientific base development for mining industry unconditionally important. This collection of papers represents scientific and technical achievements in progressive and innovative technologies of the leading countries in mining industry.

The world’s renowned specialists in mining have contributed their research papers to this collection on the following topics: innovative technologies of opening; development and extraction of coal, iron-ore, uranium, copper and manganese deposits; methods of calculating rational parameters of various types of support; management of strain-stress state of the rock massif; borehole underground coal gasification technologies; geomechanical and geotechnical processes in underground mining; economic aspects and investment-innovative ways of mining industry development; mine ventilation and labour safety and other important topics.

The number of articles published by CRC Press/Balkema in Annual Scientific and Technical Collections since 2010 by years are presented in Figure 4.

The second collection of research papers dedicated to the “School of Underground Mining” conference – “Technical and Geoinformational Systems in Mining” (Pivnyak, Bondarenko & Kovalevs’ka, 2011) embraces many important scientific trends such as implementation of new mining methods to extract mineral deposits with high methane content together with new methods of roof management for high rates of the longwall advance. Specific attention is given to mathematical simulation of the support functioning in the development of mine workings, creation of 3-D modeling to study stress-strain state of the rock massif and development of new bolt support designs.

Much work has been done in order to simulate and assess economic and ecological risks during undermining land surface together with forecasting of dynamic phenomena in regional zones of the Donbass mines. Geoinformational systems in mining, electro-stimulation of chemical reactions in coal and new methods of mine waste utilization are scrutinized as well. Consideration is given to rational parameters of ventilation and degassing at production units of deep mines with the use of complex air cooling systems.
Taking into account worsening of mining and geological conditions for conventional extraction of coal, much attention is given to borehole underground coal gasification technology at Ukraine’s coal deposits. Very intriguing topic is connected with one of the most perspective and abundant sources of energy on the planet – gas hydrates. The questions of their prospecting, properties and ways of extraction are also covered in this book. Financial aspects of mines operation and financial strategy of mining industry in Poland, Ukraine and other countries are also examined.

New trends of mineral deposits mining in the world consist in intensifying and concentration of mining operations. This is achieved by means of developing new technical equipment and its introduction into operations. This equipment is more reliable, powerful and its service life is longer. Consideration is given to quantity reduction of stopes and development workings together with their geometrical dimension growth, as well as length increase of longwalls and extraction panels which are examined. Innovative technologies helping to increase technical-economic indices, extraction volume, working efficiency and safety rules are presented in the book. Specific attention is given to unmanned mineral extraction technologies development using electro-hydraulic management system of machinery. Plough system is examined for the purpose of coal extraction from thin and very thin coal seams (ranging from 0.8 to 1.2 m of thickness) with gaining stable daily output equal to 2.5 – 3 thousand tons.

Analytical models describing geomechanical interaction between “massif – support” system elements are presented, finite-element method of research and simulation of stress-strain state around stopes and development workings at coal, ore and other mines are also substantiated.

The borehole underground coal gasification technology is introduced which allows to obtain technical gas for electricity generation, and syngas for utilization in the chemical industry. The results of the research into gas hydrates and development of technologies for their extraction from the Black Sea bottom are scrutinized.

Third collection of scientific papers “Geomechanical Processes During Underground Mining” (Pivnyak, Bondarenko, Kovalevs’ka & Illiashov, 2012) is addressed to mining engineers, engineering technicians, designers, scientific and research personnel, students, postgraduates and all mining-related professionals working in coal and ore industry.

The articles of this collection cover economic aspects of mining companies’ development strategies, peculiarities of various mineral deposits development techniques, imitational modeling of mine workings with rock massif, methane extraction technologies for coal mining, geomechanical processes in plow mining, mining transport importance for mineral extraction, massif strain-stress state management using non-explosive destructing materials, surface mining negative impact on the environment.

The alternative ways of mining such as borehole underground coal gasification for extraction of hardly accessible coal and development of gasification plant is paid a large amount of attention to. The development and use of alternative sources of energy such as gas hydrates and sun energy are also given consideration in this book. The authors focus on a wide range of topics, including rock mechanics, computer engineering, monitoring of natural hazards, safety issues, efficient ventilation of mine workings and implementation of degassing system, selection of extraction methods, mine construction and tunneling, design of roof support, mine economics and management and other current issues related to improvement of minerals development conditions.
Fourth collection of scientific papers “Mining of Mineral Deposits” (Pivnyak, Bondarenko, Kovalevs’ka & Illia­shov, 2013) is especially useful to mining engineers, scientific and research personnel, students, postgraduates and all professionals connected with the coal and ore industry.

The papers herein describe topics related to mine workings driveage, optimization of longwall working parameters, modeling of mine support interaction with rock massif, stress-strain state of rock massif during mining operations, geomechanical tasks solving, economic issues and environment protection.

Additional information is provided regarding recovery and utilization of mine methane, borehole underground coal gasification and alternative energy sources development such as gas hydrates.

This collection of papers represents scientific and technical achievements with regard to mineral deposits mining intensification based on effective use of modern techniques and technologies. Specific attention is paid to progressive and innovation technologies in the coal industry of leading countries.

 Widening the range of mining-geological conditions under which drivage and maintenance of mining activities are carried out requires application of several constructive decisions. Hence, this collection of papers is focusing on the following topics: results of new equipment introduction; experiments testing interaction of rock support elements, protective construction and near-the-contour rock massif; analytical and calculation methods of geomechanical tasks solution; development of gas hydrates and technologies of underground coal gasification; studies of environment protection; economic issues; management and marketing in mining production, and other important aspects of mineral deposits exploration.

The articles of the fifth collection of scientific papers “Progressive Technologies of Coal, Coalbed Methane, and Ores Mining” (Bondarenko, Kovalevs’ka & Ganshevych, 2014) cover economic aspects of mining companies’ development strategies, peculiarities of various mineral deposits development techniques, imitational modeling of mine workings with rock massif, methane extraction technologies during coal mining, geomechanical processes during plow mining, mining transport importance for mineral extraction, massif strain-stress state management using non-explosive destructing materials, surface mining negative influence on the environment.

Presenting technologies in underground coal extraction, with special attention to mine galleries support and maintenance, load mechanism of “massif – support system – safety system” systems, analysis of face equipment for thin coal seams mining and substantiation of rational stoping parameters.

Advanced surface mining technologies of coal and ore are discussed in an original form, stability calculations of internal dumps and open-cut faces are presented, as well as examination of land surface subsidence using modern methods of calculation experiments. Special attention is given to the complex mining of mineral resources, such as: iron ore, coal deposits with drilling advance degassing well, methane extraction from coal and anthropogenic deposits, heat receipt from mine water with help of thermal pumps.

The unique geological conditions for mining in Poland and the Ukrainian require a new technological approach for mining thin and very thin coal seams with thickness of 1 m and less, using selective coal extraction methods, leaving rock behind in the mine. Relevant technological solutions are discussed in this volume.

Further technological process control during coal seam underground gasification is described together with pressure – temperature conditions of gas hydrates formation from gaseous mixture of various content. Substantiation is also given to gas hydrates extraction technologies development and 21st century new pulse technologies of well drilling and a temperature mode of a rock-cutting tool and equipment with cryogenic-graval filters is examined.

Gas extraction process located in flooded deposits with uniform and macro heterogeneous collectors are presented with the description of an effective methodology of two-subbench technology of ore deposits extraction.

The last collection of scientific papers was “New Developments in Mining Engineering: Theoretical and Practical Solutions of Mineral Deposits” (Bondarenko, Kovalevs’ka & Pivnyak 2015). This annual series includes scientific papers on mining profiles. This volume presents multiple aspects of mining technology implementation in several aspects: extraction of coal, iron, manganese, uranium and other ores. Capturing and utilization of coalbed methane by various methods including alternative ones, safety measures in mining, ecological aspects, etc.

Specific attention is paid to intensification of mineral resources extraction processes by way of modernizing openings methods, development and mining methods depending on mining-geological conditions. Experimental results of stress-strain state rock massif forecast by means of computational experiments using recursive methods are also discussed. Any mining operations should finally result in adequate recovery of land surface and utilization of mining wastes using various environmentally friendly methods, thus, sufficient attention is paid to this scientific trend.

Non traditional methods of minerals mining are becoming more topical and of higher demand in the modern society. Hence, several papers/chapter are devoted to underground coal gasification and its subsequent processes. In addition, extraction technologies of gas hydrate, as a source of an abundant amount of natural gas are thoroughly examined in this book, including implementation of gas hydrate technologies for mine methane utilization with its following transportation in a solid state.

Furthermore, attention is given to evolution of economic efficiency of minerals mining by the proposed methods, their ways of enrichment, ecological aspects and the influence of mining production on the environment, innovational logistics solutions at mining enterprises, and also to perspectives of Ukraine’s mining industry integration to the European standards.

The total number of articles published by CRC Press/Balkema in Annual Scientific and Technical Collections are presented on Figure 5.
4. SCOPE OF THE JOURNAL
“MINING OF MINERAL DEPOSITS”

During the last nine years, the Underground Mining Department of the National Mining University (Ukraine) has been publishing an annual collective volume of scientific papers “Mining of Mineral Deposits” representing scientific results from the domestic and foreign experience of innovative technologies developed for minerals mining. It also encompasses the results of scientific studies related to the economic condition of various countries with significant mining infrastructure.

Recently, the founders of this collection have decided to change its format into a journal titled “Mining of Mineral Deposits” that will allow this issue, following the expert evaluation by CSAB (Content Selection & Advisory Board), to enter the SCOPUS database.

The aim of this journal is to cover key problems facing the modern mining industry and provide solutions to these issues based on fundamental and applied studies involving the development of new scientific approaches.

The journal places an emphasis on familiarizing foreign and domestic professionals with the modern tendencies of Ukraine’s and European countries’ mining industry development. The popularization and knowledge exchange gained as a result of the relationship between national and international research will assist in future development projects.

“Mining of Mineral Deposits” publish scientific papers from leading specialists in the mining industry, progressive R&D laboratories, commercial organizations and universities with an established mining profile.

Journal of “Mining of Mineral Deposits” covers topics related to mining sciences. The journal’s subject matter includes:

- Mining of Coal and Ore Deposits (mining technology and technique, mining methods, blasting, transportation, ventilation, mine design and planning, mining surveying, mine geology);
- Geomechanics (rock mechanics, geomechanical planning);
- Clean Coal Technologies (underground coal gasification, hydrogenation, coal bed methane);
- Reservoir Engineering (mining geophysics, borehole exploring, oil and gas exploitation);
- Environment (environmental safety, natural and technological hazards in mines, mine environmental geochemistry, environmental pollution control and remediation technology, problems associated with mining and mineral processing activities, environmental aspects of mining operations, tailings and waste dumps management, reclamation);
- Economy (economics and industry organization, management of mineral resources);
- Occupational Safety and Health;
- Social Aspects of Mining Activities.

The readers can find in this journal both the articles with applied investigations and with results of fundamental researches that make the base for new technical developments. The present journal is addressed to mining engineers, scientific and research personnel, students, postgraduates and all professionals connected with the mining industry.

5. REFORMATTING OF THE JOURNAL

“Mining of Mineral Deposits” is an expert peer-review international edition. Last year, 2015, was a time of significant change for the Editorial Office in charge of the journal of “Mining of Mineral Deposits”. We devised and implemented a development strategy aimed at introducing the journal of “Mining of Mineral Deposits” to the international community of science. The biggest changes concerned the layout, form of publishing, as well as beginning cooperation with foreign reviewers.

Since 2016, we launched an online version of the journal aimed at the international scientific community.

We have put up a new website – http://mining.in.ua. Papers are published on the website of the journal on a daily basis. The website is in English and its artwork uses the same motifs as the new cover of the journal (Fig. 6).

The online version is described as the original (reference) version of the journal. We provide open access to every issue. We firmly believe that open access to this publication will increase its influence. We also add the papers published in the previous journal to the archive.

“Mining of Mineral Deposits” is multi language journal. The authors can publish their articles in English, Ukrainian and Russian language. English language abstract is obvious for each article. The accuracy of English language articles and abstract in English is monitored and...
checked by a Language Editor. In the future, we would like to receive more papers written by authors from abroad.

We have designed each page with a layout in A4 format which includes the following information:
- paper is accompanied by a title page including the title, the author(s) name, affiliation (department, organization, city, country), corresponding author info (email, phone number, fax number);
- the text includes: title of the abstract, which states the purpose of the study, methods, main findings, practical implications, originality and is followed by keywords;
- in the introduction the author/s give/s: state of the art; a short analysis of the recent research and publications and unsolved aspects of the problem;
- results and discussion;
- acknowledgement (information on the source of funding for the piece of work);
- references list drawn up in accordance with the rules of the APA name-date method;
- article info: information concerning the date when the text was received, revised and published online.

Details concerning the author(s) – such as the last, first and middle name, scientific degree, position, affiliations, e.g. department, institution, city and country and postal code.

To introduce the quarterly journal to the international scientific community in 2016, we have started cooperation with a number of overseas editors. Editorial Board counts 36 members. It incorporates leading and respectable scientists and practical specialists in mining field. Foreign specialists also participate in the work of Editorial Board (Fig. 7). It provides excellent expertise of published articles.

Figure 7. Members of Editorial Board of the “Mining of Mineral Deposits” by nationality in 2016

We believe that the Editorial Board expertise and substantial experience will significantly reinforce the importance and magnitude of the journal, allowing it to transfer to a new level of quality.

6. CONCLUSIONS
In 2016, we will continue to improve the quality of our journal. We would like to thank all the authors, editors and reviewers who cooperated with us in preparing the journal of “Mining of Mineral Deposits”. We believe that our joint efforts will enable us to become one of the leading international journals in the field of mining science.

We welcome submissions of scientific papers from leading specialists in mining industry, progressive R&D laboratories, commercial organizations and universities with an established mining profile. If you want to cooperate with us, you are more than welcome!

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ABSTRACT (IN UKRAINIAN)
Дана стаття описує назву концепцію журналу “Розробка Родовищ”. У вступі наведено інформацію про кафедру підземної розробки родовищ, де і був створений журнал. Також описані передумови створення української Школи підземної розробки. Особливу увагу приділяється попереднім журналам та науково-технічним збірникам, виданим кафедрою. Також представлено коло питань та інформація про форматування журналу.
ABSTRACT (IN RUSSIAN)

Данная статья описывает имеющуюся концепцию журнала “Разработка месторождений”. Во введении представлена информация о кафедре подземной разработки месторождений, где и был создан журнал. Также описаны предпосылки создания украинской Школы подземной разработки месторождений. Особое внимание уделяно предыдущим журналам и научно-техническим сборникам, которые были изданы кафедрой. Также приведен круг вопросов и информация о формировании журнала.

Ключевые слова: журнал, концепция, Разработка Месторождений, Национальный горный университет, кафедра подземной разработки

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