

65 YEARS OF RESEARCH AT THE UNIVERSITY OF PETROȘANI



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The University of Petrosani carries out the tradition of the Mining Institute which had functioned within the Polytechnic Schools of Bucharest and Timisoara since 1920. According to the 1938 Law, the mining and metallurgy departments of the two polytechnic schools were transformed in mining and metallurgy faculties. The law for the reform of education given in 1948 represents an important stage in re-organizing the whole system of Romanian higher education; it laid the foundations of mining higher education through initiating the mining institutes in Bucharest and Timisoara, the Ore Institute in Brad, and the Coal Institute in Petroșani.

The fact that the Mining Institute was founded and carried out its activity in one of the most important mining basins in the country has determined proper conditions for the combining of education with production and research; consequently, the connection between theory and practice was given a concrete dimension when focusing on the vast area of the Jiu Valley and subsequently encompassing the other mining regions of the country; the result was a powerful material ground capable of providing the required academic coordinate to the educational process and of initiating a powerful research foundation whose end was excellence in the field of mining engineering.



State officials visit to the Mining Institute, 1968

At present, after 65 years from the beginning of mining higher education in Petrosani, the University of Petrosani assumes its mission of educating specialists in various technical, economic, and social fields while preserving the tradition that made its fame in the domain of mining engineering.

Our academic strategy turns scientific research into a part of the mission of the University and into an important component of the specialists' training capable of providing a complete and complex profile of the higher education graduate in accordance with the three levels of academic education: license degree, master degree, and doctor degree.

A performing educational system requires the existence of a level of excellence in all the educational and research fields it encompasses together with the maintaining and developing of its historical academic tradition, the enriching of international, national, and regional communities owing to the results of its scientific research and to the capabilities of its graduates.

The University of Petroșani provides a performing education which has developed and improved due to a vast activity of research while continuing the tradition of polytechnic schools in Romania in accordance with the requirements and means provided by the modern informational environment. It strives to establish a new academic profile that promotes manners of training adapted to the demands of a competition-directed society that is subject of the integration process within the European and international community. Academic education exits the area of information consumption and enters the area of learning to produce information.

Its main mission is the foundation of the specialist able to adapt to the demands of the market economy and new technologies, who owns technical, economic, and management knowledge promoting the principles of durable development and environment protection. The mission of our university in the field of research is carried out according to the following strategic objectives:

- Directing research fields towards regional, national and European Union's research and innovation priorities while starting from the real condition of the university's human and material resources;
- Participating in the national and European competitions of research and innovation grants;
- Developing partnerships with the economic and social environment;
- Promoting the university's image and competences in the specific fields of interest;
- Directing young people towards research;

In order to achieve the above mission, the University relies upon the following objectives:

- Providing support and facilities for the teaching staff with a view of promoting innovative scientific research grounded on the exceptional previous results;
- Promoting a challenging and rigorous education able to extract benefits out of its interaction with scientific research and relying on the background provided by the university's library and the scientific collections in the field;
- Employing at a maximum and preserving the advantages displayed by the faculties that should stimulate the intellectual and personal development of the teaching staff in a multidisciplinary academic environment;
- Strongly connecting education and research;
- Exploiting the opportunities offered by innovative partnerships with the business environment while striving to connect research and educational activities with the vast resources of certain industries that exploit the raw materials that provide the economic development of areas dealing with such opportunities.

The activity of scientific research of the University of Petroșani is organized at the level of faculties, departments, scientific research centres, and research laboratories as follows:

- Contracted research;
- Individual research reported at the level of departments;
- Doctoral schools' research;
- Research at the level of the students' scientific groups.

According to its characteristics, our university's scientific research ranges within two fields:

- Fundamental research;
- Applicative research: technological research; projecting, expertise, scientific consultancy, laboratory analyses, and *in situ* experimental determining.



Partnerships and research laboratories

The goal of fundamental scientific research is the increase of human knowledge and the understanding of natural or environment processes. Applicative scientific research aims at developing solutions with increased added value in order to settle certain issues or needs existing within the social and economic environment.

Attaining the target values of these specific strategic objectives has always involved balanced and controlled activities that enabled the University to:

- Increase the number of national and international partnerships with a view of increasing scientific research performance;
- Increase human resources performance in the field of scientific research in order to provide national and international scientific visibility.

Beginning with 2012, the University of Petroșani is a member of the Universities World Forum which targets the sustainability of primary natural resources, of raw materials and of secondary resources as well as all the processes that regard their exploiting, processing, and use. Accordingly, the World Forum of Universities on Resources Sustainability – WFURS – including 75 universities belonging to 45 countries world-wide allows us to internationally connect both at the level of education and of research.

National partnerships with other universities, with national research and planning institutes, and with companies have been established. Such partnerships proved to determine benefits and resulted in winning national grants through the following programs: PNII, Nucleus, CEEEX, MENER, RELANSIN or CNCISIS. Bilateral cooperation grants have also been implemented: for instance, during the period 2007 – 2009, a collaboration with IIT Kharagpur, India, was in force while, during the period 2007 – 2008, a partnership within SAFEMANMIN was carried out and financed owing to FP6 program; a DFG project was financed by the Ministry of Research in Germany in 2001 and numberless research contracts were concluded with companies and dealt with the specific issues advanced by them; the accredited experts of the university also carried out technical expertises and consultancy works.

The same year, national partnerships were established with a view to apply for research grants according to the program "Partnerships – Collaborative Projects of Applied Research" (6 partnerships), 2 international partnerships for projects financed by FP7 European programs for ERA MIN competition and Research Fund for Coal and Steel as well as for POS –DRU sector programs.

There is an entire amount of experience accumulated through research projects and grants and, more recently, through sector projects that set forth our research potential. Accordingly, the acquired experience must not be wasted. The new strategy of the University is meant to provide the maintaining of the positions earned in certain fields of research, to capitalize, before they become morally obsolete, the equipments acquired during the last years, to grasp new coordinates of research and innovation at a regional, national, and international level.



University of Petroșani labs

The University of Petroșani owns good material facilities matching the present research needs which have been acquired during a long period owing to the common effort of the entire teaching staff: research laboratories equipped through budget subsidies, research projects, sponsorships, and the university's own resources which, nevertheless, should be permanently improved. Three research centres were in use at the level of the Mining Faculty and one CNCISIS accredited centre at the level of the Faculty of Mechanic and Electric Engineering. At present, the University includes 12 local research laboratories as well as a laboratory of analyses and trials in constructions accredited at a national level.



Labs pavilion, 1962 and Rock Mechanics Lab

During the last year, the University of Petroșani has taken part and organized, as a scientific sponsor, five international scientific symposiums (WSEAS) - World Scientific and Engineering Academy and Society whose volumes entered the main stream of data. At the same time, it is worth mentioning the consequent participation in the Geo Conference - SGEM where on the occasion of the 13th international symposium, the University of Petroșani organized the guest session Mineral Resources, Energy and Sustainability.

In 2013, the University of Petroșani hosted a meeting on the occasion of the visit of the Ambassador of Canada who lectured on "Corporatist social responsibility in the field of natural resources exploitation and durable development providing". The organizing, in Petroșani, under the coordination of the University, of a meeting focusing on the development of an important industrial field represents the acknowledging of the remarkable level of education performed by the University of Petroșani in the field of technical education; it is an opportunity of both pride and motivation to develop and further carry on a tradition that constantly adapts to the permanently changing labour market.



Organizing and participating in conferences

On such anniversary occasions, a synthesis of the University's accomplishments in the field of scientific research, projects management and innovation may be drawn out: more than 290 articles ISI Thomson or other international data bases indexed have been published during the last five years out of which 194 during the last two years.

The library of the university possesses an impressive didactic stuff and specialized books: 276,217 volumes out of which 5,693 volumes entered the library during the last five years. The number of scientific collections included in the library during the last five years represents 1,650 volumes out of the total 21,085 volumes.

The human resources of the University of Petroșani involved in the research field – teaching staff and researchers – represent 176 individuals and 176 Ph. D. Students. Besides Romanian Ph. D. students, the University coordinates doctoral students of the Technical University of Moldova in Chisinau, according to mutual agreements.

Contractual research during the last four years represents 1,573,890,54 lei covering 120 contracts out of which 705,014.49 lei represent its last year value.

The sums coming from research ultimately represent the important efforts of the teaching staff which brought a consistent income to the university's own capital. The turning to good account of the results of researches also means five license requests belonging to the University's teaching staff.

The results of researches were disseminated through their publishing in the main stream of national and international data, the university constantly supporting the participation of the members of its staff to scientific symposiums.

Beginning with 1990, four national and international scientific symposiums were organized in Petroșani. In 1991, the University of Petroșani organized the national symposium *Science and Technique in the Mining Field* which also occurred in 1992 displaying similar themes. In 1993, the University organized the anniversary symposium *45 Years of Mining Higher Education* and in 1994 the national symposium focusing on the *Present and Future Coordinates of the Jiu Valley's Economic and Social Activity*. The 1995 anniversary symposium had in view *75 Years of Higher Education in Romania* and brought to Petroșani a large number of foreign guests in the second half of October. At the same time, in July 1995, a symposium focusing on the *Transition Sociology* was organized by the specialized department. Until 2000, the yearly national symposiums organized by the University of Petroșani set forth researches and results in the scientific and technical fields. In 1998, the University coordinated an anniversary session, *50 Years of Mining Higher Education in Petroșani*.



Scientific symposiums at Petroșani

Beginning with 2000, the University of Petroșani yearly organizes “UNIVERSITARIA ROPET” International Scientific Symposium that hosts representatives of widely-known universities with whom the University of Petroșani concluded collaboration conventions.

In 2005, the appellation of the event changed into “UNIVERSITARIA SIMPRO” International Multidisciplinary Symposium focusing on a variety of subjects and displaying high scientific standards. Until 2006, the symposium was held yearly; further it took place every two years. In 2014, the University is going to organize its sixth edition which is complementary to the SESAM symposium of INCĐ INSEMEX Petroșani that reached its sixth edition this year.



International collaborations

At the same time, during the last years, the University of Petroșani has co-organized with prestigious universities in Europe located in Budapest, Zaporozhye, Kiev, Magdeburg, Miskolc, Moscow, Poznan, Simferopol, Sumi and Kharkov two international events: MICROCAD, yearly held in Kharkov and “High Technologies in Scientific Research - INTERPARTNER” yearly held in Alushta (Ukraine).

For almost 40 years, the University of Petroșani has been represented in the international organizing committees of the World Mining Congress (WMC-IOC) by the following personalities: Professor Ștefan Covaci, Ph. D. Docent, Professor Dumitru Fodor, Ph. D., and Professor Nicolae Iliăș, Ph. D.



Participations to World Mining Congresses

The University of Petroșani is part of the international Society of Mining Professors, a professional association that includes well-known personalities belonging to the academic environment in the field of extracting and capitalizing mineral resources; in 2001, the University held the presidency of the organizing committee and coordinated its 13th yearly conference in Petroșani.

In 2000, the University of Petroșani co-organized, under the coordination of the International Tunnels Association, the *3rd National Conference of Underground Constructions*, with international participation.

The University also co-organized the *International Conference of the Euro-Region Danube-Cris-Mures-Tisa* in 2001, at Petroșani. The same year, it coordinated the third conference *Health and Environment*.

In 2008 the University of Petroșani organized in Petroșani the ninth edition of ISCSM, *9th International Continuous Surface Mining Symposium*. In 2009, it was the co-organizer of the *Balkan Mineral Processing Congress (BMPC)*, in Bucharest. The last two events were internationally known and gathered international specialists.

The dissemination of the results of researches belonging to technical and economic fields is supported by the University owing to the publishing of periodical magazines, ***Annals of the University of Petroșani***, CNCSIS acknowledged and BDI included: ***Mining Engineering, Mechanical Engineering, Economics and Electrical Engineering*** edited by Universitas Publishing House, and ***Transylvanian Journal of Mathematics and Mechanics***, indexed by international data bases and published by a different publishing house.

During the years, a widely known publication strictly connected with the mining profile came out under several appellations: **1918 - 1941 Annals of Romania's Mines** / Mine Engineers' Association, Bucharest - 12 issues/year displaying the following numbers: year 1/1918 no. 1-12 until year 24/1941 no.1-12. Between **1950** and **1974**, they published **Mines Magazine**/ Publication of the Technicians' Scientific Association in the People's Republic of Romania and of the Ministry of Mines and Oil, in Bucharest, 12 issues/ year displaying the following numbers: year 1/1950 no.1-12, etc. until 1974. From **1974** until **1990**, the magazine appears as **Mines. Oil. Gas** / Publication of the Ministry of Mines, Oil, and Gas of the Socialist Republic of Romania, in Bucharest, 12 issues/ year displaying the following numbers: year I/1974 no. 1-12 until 1989.

Between **1991** and **2010**, it came out as **Mines Review**/ University of Petroșani and the General Department of Mineral Resources, published by Infomin Publishing House in Deva and displaying the following figures: Volume I no. 1-12, etc. until 2010. Beginning with the last two issues in 2009 and until now, it is also written in English. Beginning with **2011**, **Mines Review** is published by the University of Petroșani, at Universitas Publishing House, 4 issues a year and has turned into a world known publication, **Mining Review**, BDI indexed and CNCSIS acknowledged, supported by its industrial partners: the National Pit Coal Company – at present changed into Hunedoara Energetic Complex, INCD INSEMEX Petroșani, MAXAM Romania, Roșia Montană Gold Corporation, Oltenia Energy Complex SA, Deva Gold Certeju de Sus and the National Salt Society as well as by other partners.



Industrial partners

The above data show that the University of Petrosani not only possesses the ability to organize international scientific events but also demonstrate its international opening and prestige as a prominent centre of academic and scientific excellence.

A large number of collaboration agreements and teaching staff exchanges were concluded in partnership with prestigious universities in Europe, Africa, Asia, and America: RWTH Aachen University, TU Bergakademie Freiberg, University of Technology Clausthal (Germany), Politecnico di Torino (Italy), Ecole Nationale Supérieure des Techniques et des Mines d'Alsace et Ecole Supérieure de Mines de Nancy (France), Technical University of Ostrava (Czech Republic), University of Mining and Geology "St. Ivan Rilski" Sofia (Bulgaria), Silesian University of Technology Gliwice (Poland), Wrocław University of Technology (Poland), Technical Faculty in Bor, University of Technology Beograd (Serbia), University of Miskolc, University of Pécs (Hungary), University of Castilla - La Mancha, University of Valencia (Spain), Technical University of Moldova in Chișinău, Eindhoven University of Technology (The Netherlands), Moscow State Mining University (Russia), Kharkov State Polytechnic University (Ukraine), University of Zagreb (Croatia), Assiut University and University of Cairo (Egypt), Technical University of Krivoy Rog (Ukraine), Technical University of Kosice (Slovakia), University of Ljubljana (Slovenia).



Research and innovation

A proof of the wide recognition of the academic staff of the University is the presence of its members in professional technical organizations or in international organisms, in the editorial and scientific boards of national and international magazines and of scientific conferences in the country and abroad: *Mining Planning and Equipment Selection* - MPES, *International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production* - SWEMP; *International Symposium on Computer Applications in the Minerals Industries* - CAMI; *International Symposium Roof Bolting in Mining* - RWTH Aachen University; *International Conference on Environment and Mineral Processing* - Technical University of Ostrava, Czech Republic; *International Symposium on AIMM 2005* - IIT Kharagpur, India, *17th International Mining Congress & Exhibition of Turkey*, *International Geo Conference SGEM*, Albena, *International Carpathian Control Conference* and many others.

Although the hereby considerations include a large amount of data, nonetheless, there are still many other facts that deserve a closer attention as there are also personalities who made of science the aim of their lives and are worth mentioning. Owing to them the University of Petroșani has become the academic forum of today which is the result of a history worthy of being remembered and which is surely capable of forging a reliable future.

Let's also pay homage to those who are no longer among us and to those who played an important part in the development of the University. A warm "thank you" to all those who work in the University and to those who celebrate beside us!

Happy Anniversary! and Good Luck!

