

## **A GLANCE INTO THE INTERNATIONAL RELATIONS OF THE FACULTY OF MECHANICAL ENGINEERING IN NIŠ**

The Faculty of Mechanical Engineering of the University of Niš was founded on June 3, 1971. It developed from the Mechanical Engineering Department of the Faculty of Engineering in Niš. The instruction in the field of mechanical engineering started on October 1, 1960, in the framework of the Faculty of Engineering in Niš, which was a unit of the University of Belgrade. At that time, due to the shortage of faculty laboratories, instructions had been given in the laboratories of the Factory of Machines and Railroad Cars "Stanko Paunović", Pumps Manufacturers "Jastrebac", as well as in the Secondary School for Industrial Workers. The Faculty of Mechanical Engineering has still been working in the building that was erected in 1964. In March 1962, the Section of Mechanical Engineering was founded. Later on, it grew into the Institute of Mechanical Engineering, within which scientific research and professional projects were carried out. The first generation that enrolled into the mechanical engineering program numbered 128 students. Currently, the enrollment is 300 students on the yearly basis.

The Faculty of Mechanical Engineering organized postgraduate studies at the beginning of the academic year 1971/1972. The first master of science educated within this program was Katica Stevanović, who defended her master's thesis in the field of technical mechanics in 1972, under the mentorship of professor Danilo Rašković, D.Sc. She spent the year 1971 at the specialized training with the Institute of Mathematics of the Ukrainian Academy of Science, where she achieved the candidacy minimum for the fields of mathematical physics, nonlinear differential equations and nonlinear mechanics, under the mentorship of distinguished academician Yuriy Alekseevich Mitropolyski.

The first to acquire the title of doctor of technical sciences at the Faculty of Mechanical Engineering in Niš was Zoran Boričić, who defended his doctoral dissertation, titled "MHD Boundary Layer Universal Equations and Their Parametric Solutions", in the field of fluid mechanics, under the mentorship of professor Viktor Saljnikov, D.Sc. Prior to that, during the academic year 1969/1970, he had undergone the specialized training at the Polytechnical Institute Kalinin in Leningrad, with the eminent academician L. G. Lojčijanski as the mentor. Later on, in 1981, the same Institute hosted Dragica Milenković for the specialized training in the field of fluid mechanics and hydraulic machines.

The first-generation student, graduate mechanical engineer Života Živković spent four years of advanced training at the "Rheinisch-Westfälischen Technischen Hochschule" in Aachen, where he defended his doctoral dissertation "Lagerschwingungen bei sphärischen Getrieben" in 1970, under the mentorship of professor Dr.-ing. W. Meyer zur Capellen, and was awarded the degree of "Doktor-ingenieurs". His dissertation was the first that was validated at the Mechanical Engineering Department of the Faculty of Engineering in Niš in the field of mechanical engineering, that is, dynamics of machines and mechanisms. Ten years after that, in 1981/1982, Nenad Pavlović received advanced training at the same School, within the Institute of Mechanisms.

Jurij Korobov, the prematurely deceased professor of automatic control in the Faculty

of Mechanical Engineering in Niš, was engaged for lecturing in the postgraduate program at the Faculty of Mechanical Engineering of the Illinois State University, USA, in 1969/1970. Before that, he had given lectures at the Faculty of Natural Sciences of the University in Marseilles during the years 1965/1966 and 1966/1967.

During its first phase of existing, the Faculty of Mechanical Engineering was realizing international cooperation mainly through advanced training of junior associates and professors and scientific research for master's theses or doctoral dissertations. In the subsequent phase of the Faculty development, the cooperation was directed towards reciprocal bilateral participation in certain research programs, postgraduate education or organization of scientific conferences, symposia and seminars.

In this respect, beside the above-mentioned, advanced training programs were conducted in the following foreign scientific institutions:

- Laboratory for Fluid Mechanics, Strasbourg, France (Bogdan Ristić, 1962/1963)
- Chair for Thermodynamics TU Stuttgart, Germany (Nenad Radojković, 1966/1967)
- "Sigma" Pumps Manufacturers Institute Olomouc, Czechoslovakia (Bogdan Ristić, 1969)
- Institute for Machine Reliability and Durability, Byelorussian Academy of Science (Vlastimir Djokić, 1979)
- Institute for Machine Tools in Budapest, Hungary (Miroslav Trajanović, 1979)
- Technical University in Berlin, Germany (Vinko Jevtić, 1980)
- Institute of Thermal Technique of the Warsaw Polytechnics, Poland (Gradimir Ilić, 1980)
- University Hohenheim, Stuttgart, Germany (Aleksandar Stefanović, 1982/1983)
- Institute of Applied Mathematics, Freiburg, Germany (Ljiljana Petković, 1984)
- Ruhr-University Bochum, Germany (Zoran Marinković, 1986)
- Moscow State University "Lomonosov", Russia (Dragoljub Djordjević, 1986)
- The Institutes for Heavy Machines Exploitation and Construction in Wroclaw and Gdansk, Poland (Miomir Jovanović, 1987)
- UMIST, Manchester, Great Britain (Miroslav Trajanović, 1987)
- Chair for Transportation Technique TH Darmstadt, Germany (Radić Mijajlović, 1969/1969, 1973, 1982; Zoran Marinković, 1988)
- Krakow Polytechnics, Poland (Miodrag Stojiljković, 1988)
- Institute of Processing and Machine Tools, Warsaw, Poland (Dragan Temeljovski, 1988)
- Mechanical Engineering Institute, University of Tsukubi, Japan (Slobodan Jovanović, 1989)
- Illinois State University, Urbana, USA (Dragan Domazet, 1990/1991)

On the basis of the inter-university cooperation agreement, signed in 1975, the Faculty of Mechanical Engineering in Niš has had a long-term cooperation with the Sektion Geratetechnik, TH Ilmenau. In the framework of this cooperation, the postgraduate

teaching program in the field of fine mechanics was carried out. The educational process included the following professors: G. Boegelsack, E. Kallenbach, H. Haferkorn, H. Mehlhorn, G. Hohne, P. Wiesner and H. J. Schorch. The results of this cooperation are: several master's degrees and one doctoral degree (Tomislav Petrović), joint organization of several scientific meetings, exchange of advanced training options, numerous scientific and professional papers reported at various international scientific conferences. In the scope of this cooperation, the university textbook "Technical Optics" was prepared and published by H. Haferkorn and Nenad Pavlović as the authors. Within this cooperation framework, moreover, professor Života Živković was awarded honorary doctorate by the TH Ilmenau.

From the year 1977, also according to the university agreement, similar cooperation started in the field of machine constructions with the Ruhr-University Bochum, as well as with the TH Darmstadt in the field of mechanical transportation engineering. The greatest contribution in this was given by the professors: O. E. Schneidermann, F. Jahrow, W. Merzkirch, and professors: R. Neugebauer and Pahl, respectively. Within this cooperation, the following faculty staff prepared the experimental parts of their doctoral dissertations: Vinko Jevtić under the mentorship of professor E. O. Schneidermann, and Vojislav Miltenović under the mentorship of professor W. Jarchow.

During a certain period, starting from 1980, the institutionalized cooperation in the field of machine constructions has been realized with the Institute for Machine Reliability and Durability, Byelorussian Academy of Science in Minsk. Similar cooperation started in 1987 with the Krakow Polytechnics "Thaddeus Kosciuszko".

On the basis of the mentioned international cooperation, the following professors gave their scientific lectures at the Faculty of Mechanical Engineering: G. Dittrich, from the Institute of Mechanisms RWTH Aachen, 1984; J. Brosch, J. Stelmah, B. Sendyka and I. Kubala, from the Krakow Polytechnics; Z. Korzen, from the Warsaw Polytechnics, 1988; T. Bishof, Hohenheim-Stuttgart, 1988; F. Krth and F. Krause, from the TU Magdeburg, 1988; K. Hitschke, TU Dresden, 1988; K. Matsushima, from the University of Tsukuba, 1990.

At the end of June 1988, the Faculty of Mechanical Engineering in Niš hosted several sessions of the IFToMM Board for Terminology, participated by 12 eminent scientists from 11 countries.

Within the Chair of Mechanics, the Scientific Seminar of Theoretical and Applied Mechanics has been working, having certain interruptions and periods of permanent activities. This Seminar also carried out an international cooperation that was not institutionalized through any formal agreements either by the Faculty of Mechanical Engineering or by the University of Niš. However, thanks to particular individual efforts of the chair heads and some professors, as well as to periodical support rendered by the Faculty deans acting in various terms, this cooperation has been realized throughout the period of 30 years, and the professors who participated in the Seminar of Mechanics with invited lectures are surely worth mentioning. Here is the list of their names:

- Academician Yuriy Alekseevich Mitropolyski, Institute of Mathematics, Ukrainian Academy of Science, 1980, 1995
- Academician Konstantin Frolov, Institute of Mechanical Engineering, Academy of Sciences, Moscow, 1981

- Professor Dr. J. Vojnarovski, Silesian Polytechnics, Gliwice, Poland, 1985
- Professor Dr. A. Tilikovsky, Warsaw Polytechnics, Poland, 1985, 1990
- Professor Dr. Richard Hetnarski, James E. Gleason, professor of mechanical engineering, Rochester Institute of Technology, USA, 1990
- Professor Dr. Jirzy Pindera, University of Waterloo, Canada, 1991
- Professor Dr. Bohdan I. Kindrattsky, Lviv Polytechnical Institute, Ukraine, 1991
- Academician V. V. Kozlov, University of Moscow, MGU "Lomonosov", Russia, 1991
- Dr. Alosha Lopatin, Institute of Mathematics, Academy of Sciences, Kiev, Ukraine, 1995
- Dr Valentina Filychakova, Institute of Mathematics, Academy of Sciences, Kiev, Ukraine, 1995
- Professor Dr. William A. Nash, University of Massachusetts, Amherst, New York, USA, 1991
- Professor Dr. Kazuyuki Yagasaki, Tamagawea University, Machida, Japan, 1991
- Academician Valentin Vitaljevish Rummyantsev, Vichislitelyniy Center, Russian Academy of Science, Moscow, Russia, 1995
- Academician Felix R. Chernousko, Russian Academy of Science, Moscow, Russia, 1995
- Professor Dr. Carlos Almeida, President of Brazilian Society of Mechanics, Rio de Janeiro, Brasil, 1995
- Professor Dr. Anatoliy A. Martinyuk, Institute of Mechanics, Academy of Sciences, Ukraine, 1995
- Academician Anthony Kounadis, National Technical University of Athens, Greece, 1997.

Alongside with the already mentioned associates of the Chair for Mechanics, the following have also realized advanced training abroad: Mile Maksić, at the famous scientific school of mechanics in Udine, Italy, 1972; Predrag Kozić and Ratko Pavlović, at the Warsaw Polytechnics, Poland, 1985, 1987 and 1989, under the mentorship of professor A. Tilikovsky; Dragan Jovanović, at the University of Waterloo, Canada, in the laboratory of professor J. Pindera.

In 1989, professor K. (Stevanović) Hedrih went to the University of Waterloo, Canada, and the Rochester Institute of Technology, USA, as a visiting professor. She gave several lectures at the scientific seminars of mechanics at these institutions, as well as at the University of Rochester, and she also had certain consultative discussions in the fields of nonlinear oscillation theory and nonlinear mechanics. She was simultaneously given advanced training herself by professors Dr. S. T. Ariaratnam and Dr. Richard Hetnarski. She gave an invited lecture at the National Technical University of Athens, Greece, in 1997. Also, she participated in the IUTAM Congress on Theoretical and Applied Mechanics in Haifa, Israel, 1992. In 1996, she was appointed honorary academician by the Higher Education Academy of Sciences, Ukraine, and she was also appointed academician by the Academy of Nonlinear Science, Moscow, 1997.

The Chair of Mechanics organized the International Scientific Conference "Nonlinear Deterministic and Stochastic Processes in Nonlinear Mechanics with Applications in Mechanical Systems", held in 1991, as well as the Yugoslav Congress with international participation "XXI YUCTAM Niš" in 1995, supported by the Faculty and Yugoslav Society of Mechanics.

The members of the Chair for Mechanics are collaborating with the following professors from abroad: academician Oleg Aleksandrovich Goroshko, "Taras Shevchenko" University of Kiev, Ukraine; Dr. S. T. Ariaratnam, University of Waterloo, Canada; academician Vladimir M. Matrosov, president of the Academy of Nonlinear Science, Moscow, Russia; academician Ilya Blekhman, Engineering Academy, Sankt Petersburg, Russia; Dr. Giuseppe Rega, "La Sapienza" University of Rome, Italy; Dr. Hans Troger, TU Vienna, Austria; Dr. Bohdan I. Kindrattsky, Lviv Polytechnical Institute, Ukraine; Dr Aleksandar Sergeevich Andreev, Ulyanovsk State University, Russia; and other.

During the period from 1983 to 1985, the members of the Chair for Hydraulics professors Z. Boričić, D. Nikodijević and D. Milenković, were engaged in the research under the title "Development of Parametric Methods in the Boundary Layer Theory". The research was carried out in the framework of the cooperation between the Chair for Aeromechanics and Gas Dynamics of the Faculty of Mechanics and Mathematics, Moscow State University "Lomonosov", and the corresponding chairs from the faculties of mechanical engineering in Niš, Belgrade and Kragujevac. The Russian research team was directed by Professor Viktor Jakovljevič Škadov, while the Yugoslav part was guided by Professor Dr. Viktor Saljnikov.

The Chair for Natural and Mathematical Sciences collaborates with the Institute of Mathematics, Bulgarian Academy of Sciences, and the Department of Mathematics, University of Sofia, in the scope of the cooperation program of the Faculty of Philosophy in Niš, organizing alternately joint seminars in topology.

Beside professor Jurij Korobov, other professors were spending longer periods of teaching abroad: at the Fachhochschule Wilhelmshaven, Germany - Vinko Jevtić (1989 and 1990), Vojislav Stojiljković (1990) and Vojislav Miltenović (1990); and at the Faculty of Mathematics of the Oldenburg University - Ljiljana Petković (1989).

The Chair for Social Sciences of the Faculty of Mechanical Engineering (professor Dragoljub Djordjević and teaching fellow Bogdan Djurović) cooperates with the following professors: Thomas Bremer, from the Deutsche Gesellschaft fuer Osteuropakunde, Berlin, Germany; Eileen Barker, from the London School of Economics, Great Britain; Paul Mojsessa, Resemont College, USA; Nonka Bogomilova Todorova, from the Institute of Philosophy, Bulgarian Academy of Sciences, Sofia.

A great number of the teaching staff of the Faculty of Mechanical Engineering participated with their scientific reports in significant scientific meetings in foreign countries, organized in various fields of mechanical engineering, and in the field of mechanics particularly. Moreover, a lot of papers were published in the international journals, both abroad and in the country. A number of professors (Lj. Petković, K. Hedrih, and others) have been engaged as the reviewers for the Mathematical Reviews and Zentralblatt.

Some of the Faculty of Mechanical Engineering teaching staff are also the members of various international and foreign scientific societies, like: Euromech (K. Hedrih, ...),

IFTToMM (Ž. Živković, T. Petrović, N. Pavlović, ...), GAMM (Z. Boričić, K. Hedrih, D. Nikodijević, D. Milenković, ...), American Mathematical Society (Lj. Petković, K. Hedrih, ...).

The professors of the Faculty of Mechanical Engineering in Niš are taking part in the edition of the University Scientific Journal "Facta Universitatis". They give particular contribution, both by editing and by publishing their own papers, to the series "Mechanics, Automatic Control and Robotics" and "Mechanical Engineering".

*Katica (Stevanović) Hedrih*