

## Prof Dr Sc Vladimir Marić

### *Curriculum vitae*



Vladimir Marić, Full Professor at the Faculty of Food Technology and Biotechnology, University of Zagreb, and a member of the Croatian Academy of Engineering left us permanently on May 22, 2009. All of us who knew him are deeply grieved by the sad news of his untimely demise.

Prof Dr Sc Vladimir Marić was born on 11 January 1939 in Dežanovac near Daruvar, where he finished elementary school, and then moved to Zagreb to continue his education. He graduated from the Biotechnological Department of the Faculty of Technology, University of Zagreb, Croatia in 1964. Upon returning from military service, he was accepted as an assistant in teaching Industrial microbiology I and II at the same department. In 1970 he finished his postgraduate study in fermentative technologies, and in 1973 he earned his PhD in Biotechnological sciences. From April to September 1974, he was a research fellow at Swiss Federal Institute of Technology Zurich, Switzerland (ETH Zürich), where he worked on the production of single-cell proteins from carbohydrates. As a scholarship holder of British Council, he went to a 10-month specialist training at Biochemistry Department at the University of Birmingham, UK (from October 1974 to August 1975). He was again at ETH Zurich in 1978 as a scholarship holder of the Croatian Committee of Scientific Work. From 1975 he was an Assistant Professor at the Faculty of Technology, where he also became an Associate Professor in 1978. At the Faculty of Food Technology and Biotechnology he became a Full Professor, holding the position of Head of the Department of Biochemical Engineering from 1980 to 1984, and performing the duty of the Dean of Faculty from 1984 to 1988.

The first thing that comes to mind about Prof Marić is his incredible diligence. We always wondered again and again how he managed to achieve so much. The secret lay in his impeccable self-discipline and organisation; he was simply a man who thought and worked fast, bringing decisions firmly and quickly, but never irrationally. Innovative by nature, he was always willing to accept what is new. That is why his criteria were placed extremely high. It takes a lot of courage for that, which he never lacked. As a result, the standards he created in science and teaching were set high. We will especially remember that Professor Marić was a man of his word, with ethical and moral principles. These are the most valuable qualities that we endeavoured to accomplish in the years spent with him, and this is our legacy, for which we are ever grateful.

The scientific research of Professor Vladimir Marić was focused on various areas of biotechnology and bioprocess engineering. It began in the very demanding and challenging field of microbial continuous culture techniques, from where he extended his work on continuous processes as the leader of the Single-Cell-Protein Production Project team of twenty researchers to develop the production of yeast and bacterial biomass on methanol and hydrocarbons. After that, Professor Marić lead many demanding projects on developing the procedures of isolation, storage and application of biologically active biomass (known as starter cultures) in different fields of use (e.g. lactic or acetic acid bacteria) and for production of microbial metabolites (e.g. different physiologically active compounds for yeast). Later, he focused his research on the construction and scientific characterization of a completely new type of bioreactor, a so-called horizontal rotating tubular bioreactor, which will become a sign of recognition of his Laboratory in the international scientific community. The work of Prof Marić was also oriented towards various areas of industrial microbiology, biotechnology and biochemical engineering. More specifically, his scientific interest was focused on beer technology, production of single-cell proteins, oxygen transfer in bioreactor, mathematical modelling of biotechnological processes and their scale-up, then isolation, preservation and application of biologically active biomass (starter cultures) and metabolites.

There is a number of scientific projects on which he worked as the leading researcher, such as Protein biosynthesis, GIBIT, Physiological activity of natural and rDNA microorganisms, as well as Modelling and bioprocess transfer to a larger scale, and Mathematical modelling in the development of bioprocesses and products, as well as 19 technological projects and development programmes. He is the author of over 150 scientific and professional papers, 12 books, 2 monographs and 6 university textbooks. He held many lectures, most of them as invited lecturer, and acted as a moderator in a number of round-table discussions. As the representative from Croatia, he participated in the meeting on National Biotechnology Policy, held in Toronto, Canada in 1987.

Prof Marić had a very successful cooperation with a number of business organizations from Croatia, Macedonia, Serbia, and Bosnia and Herzegovina, such as TOK, Ilirska Bistrica; INA-Petrokemija, Kutina; Pliva, Zagreb; Podravka, Koprivnica; and breweries in Zagreb, Karlovac, Split, Prilep and Skopje. In breweries in Pančevo, Karlovac, Daruvar, in the malt houses in Svetozarevo and Karlovac, and in alcohol beverage factory in Županja, he was the supervisor of the major engineering and technological projects. He also revised engineering and technological projects in breweries in Koprivnica, Banja Luka and Split.

Apart from the scientific work, Prof Marić also actively participated in teaching, so he took part in a number of undergraduate and postgraduate lectures, including the new programme according to Bologna Process, such as Biochemical engineering, Biotechnology II, Biotechnological production of food, beverages and basic chemicals, Process and product development in biotechnology, Process development in production of malt and beer. He was also the main organizer of many scientific and professional courses and conferences. At the Biotechnological Faculty in Ljubljana, Slovenia at postgraduate study he held lectures in Biotechnology of alcoholic beverages. At the Faculty of Chemistry and Technology in Split, Croatia he lectured Beer production, while at the Karlovac University of Applied Sciences, Croatia he lectured the malt and brewing technology.

He skillfully prepared the material used in his lectures, and enabled students to participate in his lectures with ease. Prof Marić supervised dozens of diploma works, 14 master theses and 14 doctoral theses.

In the period from 1981 to 1983 he was a member of Scientific Committee of the University of Zagreb. Among his other activities, he was a member of the Head Committee for Biotechnology from 1990 to 1993, a member of the Head Commission for Biotechnological Sciences, the Chair of Scientific Council for Biotechnological Sciences, and a member of the National Scientific Council. For eight years (1995–2003) he was a board member of Karlovac Brewery and a member of Scientific and Advisory Committee of the European Federation of Biotechnology. Also, he was a member of the Croatian Academy of Engineering and the Group of Beer, Malt and Hop Industry of Croatia.

He was an active member of several editorial boards of scientific journals, including *Prehrambeno-tehnološka i biotehnološka revija*, *Mikrobiologija*, *Pivoarstvo* and *Chemical and Biochemical Engineering Quarterly*, for 10 years he was the editor-in-chief of the professional journal *Svijet piva*, as well as the deputy editor of *Food Technology and Biotechnology*. As a collaborator of the 'Miroslav Krleža' Lexicographic Institute, he was the author and editor of the Croatian Encyclopaedia and Technical Lexicon in four languages in his field of work (food technology and biotechnology). At the position of the president of Technical Commission for Drinks at the Croatian Chamber of Economy, he worked on visual aspects of Croatian products, including the labels 'Croatian Quality' and 'Croatian Origin'. Also, he was the representative of the Group of Beer, Malt and Hop Industry of Croatia at the Council and Scientific Committee of the Brewers of Europe. Other organisations privileged to acknowledge his membership are Croatian Microbiological Society, Society for Nutrition Improvement, Croatian Water Pollution Control Society, Scientific Council for Crude Oil of the Croatian Academy of Sciences and Arts, the Institute of Brewing and Distilling in the UK, and the working group for product selection in the European Federation of Biotechnology.

He received numerous awards and recognitions, among which are the award *Fran Bošnjaković* in year 2000 and the State Prize for Science in year 2008, in category *Life Achievement Award* for exceptional contributions to the development of biotechnical sciences, especially biotechnology and bioprocess engineering in Croatia.

His vast knowledge and practical experience Professor Marić unselfishly delivered to students and younger associates. He raised generations of engineers who now occupy responsible positions in industry, administration and academic community.

His name will remain remembered in the history of Croatian biotechnology, bioprocess engineering and brewing industry.