

OBITUARY

Aleksandar Bezjak (1928 – 2010)



Prof. Dr. Aleksandar Bezjak, retired professor of inorganic chemistry at Faculty of Pharmacy and Biochemistry of the University of Zagreb passed away on February 21, 2010 in Zagreb. He was born on January 2, 1928 in Samobor, Croatia. He graduated in chemistry from Chemical Technology Department of the Technical Faculty, University of Zagreb (1957) whereas he won his doctoral degree from the Faculty of Science and Mathematics of the University of Zagreb (1964). His scientific interests were in X-ray crystallography, equally in powder and single crystal diffraction analyses; in both fields he reached high expertise. Inclined to set up mathematical models to describe the system under investigation he combined experimental and theoretical methods in physical and analytical chemistry of cements. His work on cements was highly appreciated and he was invited to establish the research laboratories within JUCEMA (former Yugoslav Association of Cement Producers) in order to develop standards for obtaining high quality products. His scientific career

was significantly inspired by three distinguished scientists with whom he worked in his early days. Prof. Bezjak wrote by himself: 'I was lucky to work subsequently with three distinguished scientists prof. Danilo Blanuša-matematician, prof. Miroslav Karšulin-physical chemists, and prof. Drago Grdenić-chemist and crystallographer.

In 1957 he was employed as an assistant in the X-ray laboratory of Rudjer Bošković Institute. From 1961 to 1969 he acted as the head of Research Department of JUCEMA. In 1969 he was appointed associate professor at the Faculty of Pharmacy and Biochemistry and in 1975 a full professor in the Department of Inorganic Chemistry. He was professor of informatics at the Faculty of Pharmacy and Biochemistry (1987–1989) and served as a deputy of dean (1970–1972 and 1978–1980) of that faculty. As the internationally recognised expert in chemistry of cements he was appointed a member of international RILEM Committee on "Mathematical modelling of Hydration of Cements" and "Phase analysis of cement" (1982–1988). Due to his international reputation the project "Kinetic Analysis of Prediction of Cement Hydration" was financed by National Bureau of Standards, USA (1985–1988).

The results of Bezjak's research were published in number of scientific and technical papers. In the field of X-ray structure analysis, including development of direct methods for phase determination of structure factors, he solved the crystal structures of two organic molecules phthalylurea and mellitic acid (benzene hexacarboxylic acid discovered in 1799 by M. H. Klaproth) prior to any computer programs were available for determination of structures of organic molecules (1953 and 1960, respectively). At that time the structure of organic molecules were solvable by intellectual power only. Mathematically oriented mind, personalised in prof. Bezjak, combined stereochemical characteristics of the molecule and its orientation in the crystal lattice with vector interpretation of structure factors to solve

the problem of phasing. X-ray qualitative and quantitative phase analyses of complex mixtures were in focus of his research for all his active life. The two seminal papers on X-ray quantitative analysis of multiphase systems, published in 1961 and 1971 in *Croatica Chemica Acta*, for the first time offered general solution. Though prof. Bezjak was the first author who solved that problem, priority was assigned to Chinese author F. H. Chung whose two papers were published in 1974 in *Journal of Applied Crystallography*. Thus, the Chung method should be named the Bezjak's method. The results obtained by X-ray diffraction he complemented also by electron diffraction and electron transmission microscopy in collaboration with his wife Dr. Ivanka Jelenić. The methods developed by prof. Bezjak have been applied in the research of calcium-silicate ma-

terials, enamels and polymers. As the well established crystallographer prof. Bezjak was elected member of the first Yugoslav Crystallographic Croatian Council (1966).

Prof. Bezjak was dedicated teacher and he acted as a mentor to about forty MrSc and PhD students. His enthusiasm in research and a broad knowledge in science, humanities, and music inspired his students and co-workers. In personal contacts he was attentive listener but he never hesitated to expose his opinion in the complex situations supporting the interest of a scientific community. Prof. Bezjak was involved in different activities for a benefit of scientific community. All of those who knew prof. Bezjak will miss his distinctive human personality, and respects for his colleagues and friends.