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LEOPOLD RUŽIČKA'S SCIENTIFIC LEGACY IN CROATIAN ORGANIC CHEMISTRY

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Leopold Ružička was born on September 13, 1887, in Vukovar. After the early death of his father in 1891, he returned with his mother to her birthplace, Osijek. There he attended the primary school and the classical gymnasium. He was generally a good pupil but he found his real interests in physics and mathematics. There was no chemistry in the curriculum at that time, still he decided to study this subject due to his interests in the composition of natural products. He chose the Technische Hochschule at Karlsruhe, where he started his chemical studies in the year 1906. This step proved to be decisive for his future. He completed his laboratory courses in less than two years and immediately started his doctoral work on ketenes with Professor Staudinger who was, at the age of 27, less than seven years older than him. After two years of research **Leopold Ružička** obtained the title "Dipl. Ing", and two weeks later "Dr. Ing". Together with Staudinger he started to work on at that time quite unexplored field of active compounds called pyrethrins – isolated from Dalmatian insect powder, a plant product, toxic to insects and other coldblooded animals. They thus opened a new chapter of alicyclic chemistry. These early discioveries will eventually have set the basis for the Nobel prize award **Leopold Ružička** has been awarded in 1939.

In October 1912 he followed Staudinger who became professor at ETH, Swiss Federal Institute of Technology at Zurich. For the accomplishment of his habilitation work in 1917 he received support of the oldest perfume manufacturers in the world, in Germany and the results of their collaboration were the total synthesis of fenchone and the interpretation of the Wagner rearrangement. After his habilitation in 1918 the firm of Ciba, Basle, became interested in his work on the synthesis of quinine-like compounds. In collaboration with his research group, first synthesis of β-collidine and of linalool, the partial synthesis of pinene, and a series of investigations in the monoterpene field were carried out.

In 1921, the Geneva perfume manufacturers Chuit, Naef & Firmenich, asked him to work with them. By this time the investigations of higher terpenes have already been started and **Ružička** contributed with the total syntheses of nerolidol and farnesol, and the establishment of the structure of jasmone. But for the perfumery industry the most important were the elucidations of the structures of the naturally occurring musk perfumes, civetone and muscone. Following these discoveries **Ružička** and his co-workers were able to prepare the whole series of alicyclic ketones with 9 to over 30 carbon atoms as ring members.

From October 1926 till 1929 **Leopold Ružička** was Professor of Organic Chemistry at the University of Utrecht but then decided to accept the invitation to return to ETH Zurich again. In 1930, the Ciba renewed the contact with his laboratory. This association led in a few years to scientifically as well as industrially important successes in the field of the male sex hormones. From 1937 the Rockefeller Foundation financially supported the research on natural compounds, especially the triterpenes and steroids.

Professor **Ružička** was for his descoveries in the field of synthetic organic chemistry awarded eight honorary doctorates, 7 prizes and medals, including the Nobel prize, 24 honorary memberships of different scientific societies, and 18 memberships of scientific academies. **Leopold Ružička's** work opened new fields in synthetic organic chemistry in which many of his students and successers, like Vladimir Prelog, found their starting points on their journey into chemical science. Both **Ružička** and Prelog established strong roots of organic chemistry in Croatia that have resulted in a number of most prominent Croatian chemists rightfully called „Croatian school of organic chemistry". Although in the meantime techniques and fields of investigation of organic chemists changed, Croatian univesities and research institutes still find their place at the world science map in this field of chemistry. A look in the list of projects financially suppported by the Croatian Science Foundation reveals ten projects dealing with the synthesis of organic compounds, or with investigation of their structures (http://www.hrzz.hr/default.aspx?id=78). This makes a significant share of financed projects, not only in the area of chemistry. Below, we bring several abstracts of works for which we could clearly say they are, together with our knowledge on other life science disciplines, based also on the scientific legacy of **Leopold Ružička**.