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CHRONICLE

Evgenii Ivanovich Klabunovskii
(On the Occasion of His 80th Birthday)

On July 7, 2003, Professor Evgenii Ivanovich Klabunovskii, a famous scientist in the field of organic catalysis, celebrated his 80th birthday. Klabunovkii graduated from the Department of Chemistry at Moscow State University in 1947 and became a graduate student under the supervision of Academician Balandin. In 1951, he defended his Cand. Sci. work entitled *Asymmetric Synthesis Using Catalysts Based on Chiral Quartz*. After a year working at the Research Institute of Synthetic Alcohols attached to the Ministry of Chemical Industry, Klabunovskii has spent over 50 years working at the Zelinskii Institute of Organic Chemistry of the Academy of Sciences. In 1966, he obtained his Dr. Sci. degree. In 1969, after Academician Balandin, he became the Head of the laboratory of energy and structure factors in heterogeneous catalysis, which later received the name of the Laboratory of Asymmetric Catalysis.

Asymmetric catalysis is the main line of Klabunovskii's research. In the beginning of his career, this field of science was considered funny and not promising. It was usually recalled when considering the problems of the origin of life on the earth in a very general sense. This problem also attracted Klabunovskii's attention. Recently, asymmetric catalysis, homogeneous and heterogeneous, became one of the most important areas of catalysis. Three recent Nobel Prizes for enantioselective catalysis make this clear. Enantioselective catalysis makes it possible to produce pharmaceuticals and physiologically active compounds on a commercial scale.

Klabunovskii is commonly recognized as the lead expert on asymmetric catalysis in our country. His studies are well-known abroad. He discovered the enantioselective activity of several metal catalysts (copper, cobalt, ruthenium, and palladium), hydrides of rare-earth intermetallic compounds modified by optically active oxy and amino acids in the hydrogenation reactions of diketone and ketocarboxylic acid esters. Having studied the mechanisms of these reactions he established, for the first time in asymmetric catalysis, correlations between the enantioselective activity of the catalysts and the thermodynamic stability of intermediate complexes formed on the surface of metal catalysts. This made it possible to predict the asymmetric action of other catalytic systems, which had been empirically selected. He was the first to discover the synergy of the catalytic and enantioselective activity and the ligand effect in the action of catalytic systems.

Klabunivskii discovered and studied a new class of enantioselective catalysts based on lanthanum–nickel hydride systems modified by chiral tartaric acid. It was found that the reaction of asymmetric hydrogenation occurs via a step of triple metal–modifier–substrate complex formation, and this conclusion was further confirmed by other researchers.

Homogeneous asymmetric catalysis has also been studied. Klabunovskii applied chirooptical methods, including the spectra of circular dichroism and magnetooptical rotation dispersion (the Faraday effect), to study the mechanism of hydrogenation, hydrosilylation, and cross-coupling on phosphine and phosphite complexes of rhodium, nickel, and cobalt. These processes lead to practically important preparations, such as ipobrufen, aspartam, L-dofa, and others. As a result, Klabunovskii found stereochemical correlations between the conformation of the intermediate complex and the absolute configuration of the product molecule, and correlations between the enantioselectivity and the thermodynamic stability of the complex.

Klabunovskii discovered and studied the reaction of reductive aminolysis of isolactones under the action of a chiral palladium complex leading to the formation of several practically important chiral amino acids (including fluorine-containing ones), and dipeptides.

Klabunovskii studied "structural factors in catalysis" from the standpoint of the multiplet theory and applied an original method of a catalytic "probe" to determine the geometric nonuniformity of a nickel catalyst surface by hydrogenation of triptycene derivatives (compounds with a complex spatial structure). Natural and synthetic chiral polymer matrices were used in asymmetric catalysis for the first time.

Klabunovskii was a disciple of Balandin, and he went through a lot of effort to publish collected Balandin's works when his teacher passed away. Two monographs were published that contained the foundations of the multiplet theory, and collected papers devoted to the life and work of Balandin.

Klabunovskii is the author of seven books, over 700 research papers on asymmetric catalysis in Russian and foreign journals, and a number of patents and inventor's certificates devoted to catalyst synthesis. He supervised three doctoral and 30 cand. sci. dissertations. He has been invited many times to give lectures in various countries and has lectured at many international meetings.

The editorial board of *Kinetics and Catalysis* expresses cordial congratulations to Evgenii Ivanovich Klabunovskii and wishes him good health and further scientific success.

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