

Irina P. Beletskaya. Biographical sketch



Professor, Full member of the Russian Academy of Sciences Irina P. Beletskaya was born in Leningrad (St-Petersburg) on 10 March 1933. She graduated from the Department of Chemistry of the Lomonosov Moscow State University in 1958, where she started her amazing scientific life forever linked with the Department. After 3 years she obtained her Cand.Sci. degree (analogue of Ph.D.) and by 1963, when she was only 30 years old, she reached the D.Sci. Intensive research was always accompanied with teaching, and since 1971 she served as a Professor of chemistry at the Department giving lecture courses on general organic chemistry and special postgraduate courses on organometallic chemistry and transition metal catalysis.

Initial research activities of Prof. Beletskaya were targeted at the study of reaction mechanisms. She contributed much to the studies of electrophilic reactions at saturated carbon thoroughly investigating the mechanisms of the reactions of organometallic compounds, revealing the regularities of S_E pathways. In this early period of her academician career she elaborated one of the earliest CH-acidity scales widely employing electrochemical data and intensively studied the reactivity of carbanions and supernucleophiles. She also proceeded with the studies of the mechanisms of nucleophilic aromatic and vinylic substitution.

Professor Beletskaya was among the first to apply rare earth elements in organic chemistry, undertaking the synthesis of novel organolanthanide complexes useful in catalytic organic synthesis. In the 70s Irina P. Beletskaya was again among the first to develop a new vast field of the application of transition metal catalysts in organic synthesis. She initiated the studies of palladium and nickel-catalyzed reactions in our country, and developed a number of convenient protocols for the formation of C-C and C-heteroatom bonds. The development of this area by Prof. Beletskaya

is associated with the use of the ligand-free catalysis. Such catalysts demonstrated much higher activity in C-C bond formation reactions with organoboron or organotin compounds. A general approach of the simple and mild aqueous phosphine-free catalysis was elaborated. Further development of this approach was the use of microemulsions or other high-capacity solubilizing media, and thorough mechanistic studies led to the development of new catalytic systems based on nanoparticles. Thus professor Beletskaya was among the pioneers of the green chemistry approach in catalysis.

In spite of the harsh economic situation after 1991, the research activity of Irina P. Beletskaya even accelerated. Now her current interests include organometallic chemistry, catalysis, supramolecular chemistry, nanochemistry. In the last decades the scientific interests of Prof. Beletskaya cover the application of palladium- and copper-catalyzed amination of aryl and heteroaryl halides aimed at the synthesis of macrocyclic compounds of diverse architecture, the creation of fluorescent chemosensors on the basis of such sophisticated compounds, catalytic transformations of porphyrins including C-H activation reactions, application of the catalysis by gold complexes, use of polymer-supported palladium and copper nanoparticles, catalysis by Lewis and Bronsted acids and organocatalysis in the asymmetric synthesis.

All this enormous research avalanche resulted in over 1000 publications, about hundred of Ph.D. students got their degrees under her supervision, she put forward 15 doctors of science, among her pupils are such eminent scientists as academician Egorov, corresponding member Ananikov, other leading chemists working in Russia and abroad. She produced a vast series of highly renowned monographs, critical reviews and book chapters on various aspects of palladium and other transition metal catalyzed reactions,

including the Heck reaction, C-C and C-heteroatom cross-coupling, addition to triple bond, carbonylation, water in organometallic chemistry, dendrimers and porphyrins modifications. Totally, 9 times she contributed to Chem. Rev. Journal what can be regarded as a personal record among prominent scientists.

In 1974 Irina P. Beletskaya was elected a corresponding member of the Academy of Science of USSR, and in 1992 became its full member (an academician). Since 1989 Prof. Beletskaya has been the head of the Laboratory of Organoelement Compounds at the Department of Chemistry of MSU.

Scientific awards of Prof. Beletskaya are numerous indicating the worldwide acknowledgement of her merits. First of all, she is an Honoured Professor of the Moscow State University, an emeritus academician of the Bashkir National Academy of Science, an emeritus professor of St-Petersburg State University, of Cordoba University (Argentina), Honorary Doctor of Royal Institute of Technology, Stockholm (Sweden), Professor Honoris Causa of the University of Alicante (Spain), she was awarded External member of the Royal Academy of Exact, Physical and Natural Sciences of Spain. Professor Beletskaya has won the State Prize of Russian Federation, Mendeleev, Lomonosov, Nesmeyanov, Demidov, Kapitza, Arbuzov and Balandin Prizes for creativity and achievements in chemistry. She has also got the IUPAC Distinguished Woman in Chemistry International Award. It is to be noted that Professor Beletskaya also participated in the activities of the International Union of Pure and Applied Chemistry (IUPAC) serving in late 80s first as a secretary, then a vice-president, and in 1991–1993

as a president of the Division of Organic Chemistry. Until 2001 she was working on the IUPAC Committee on chemical weapons destruction technologies (CWDT).

Irina Beletskaya has been serving for many years as an editor-in-chief of the Russian Journal of Organic Chemistry. She is or has been a member of the editorial boards of a number of leading journals including The Bulletin of Russian Academy of Science (Izvestiya RAN, Mendeleev Communications, Chemistry Letters, Journal of Organometallic Chemistry, Organometallics, Chemistry – A European Journal.

During decades Professor Beletskaya has been engaged in versatile and fruitful international cooperation with prominent chemists throughout the world and especially in Europe. Only to mention among them such specialists in catalysis as Christina Moberg from KTH (Sweden), Marta Catellani from Parma (Italy), Francisco Alonso, Miguel Yus and Carmen Najera from Alicante (Spain). The most tight and long cooperation is undoubtedly with the French chemists: Pierre Dixneuf (Rennes), Jean-Paul Genet (Paris), Rinaldo Poli (Toulouse), Frederic Lamaty (Montpellier), and, first of all, our collaborators and friends from University of Burgundy, Dijon. Since 1994 when Irina P. Beletskaya got acquaintance with professor Roger Guilard this mutual research has been steadily developing producing exciting results by combining catalysis with chemistry of macroheterocyclic compounds and their analytical and physico-chemical applications. A concise mini-review which follows describes the achievements of the Russian-French cooperation in this field.

Редакционный совет журнала Макрогетероциклы сердечно поздравляет нашего постоянного автора академика Ирину Петровну Белецкую с юбилеем.

Крепкого Вам здоровья, Ирина Петровна, на долгие годы. Пусть все Ваши планы осуществляются!

Новых открытий, новых успехов и благодарных учеников!