

Edvards Liepiņš (1944–2019)

On June 13, 2019 we lost our colleague Edvards Liepiņš, an outstanding scientist, NMR spectroscopist, teacher and mentor. He was the head of the Laboratory of Physical Organic Chemistry at the Latvian Institute of Organic Synthesis, a professor at the Riga Technical University, and an academician of the Latvian Academy of Sciences. E. Liepiņš was born on July 1, 1944 in Tukums, Latvia. He started his career in 1964 at Sloka paper mill factory. In 1971, he graduated from the Chemical Faculty of the Riga Polytechnical Institute as an engineer in chemical technology of biologically active compounds. He was studying at the evening department and at the same time started to work at the Latvian Institute of Organic Synthesis (LIOS). E. Liepiņš obtained Dr. chem. in 1975 under supervision of Prof. Solomon Hiller and Dr. chem. Vadim Pestunovich and Dr. habil. chem. in 1988. In 1995, he was elected as a corresponding member of the Latvian Academy of Sciences and in 1998, as a full member.

E. Liepiņš was one of the pioneers of nuclear magnetic resonance (NMR) spectroscopy in Latvia in the 1970s. Later, he worked on structural and reactivity studies of organic and organometallic compounds, complex dynamical processes, reaction kinetics, effects of hydrogen bonding and isotopic H/D substitution on magnetic resonance parameters using multi-nuclear NMR spectroscopy. From 1990 to 1992, he was a visiting scientist at the Swiss Federal Institute of Technology in Zurich in Nobel laureate prof. Kurt Wüthrich laboratory. During this time, E. Liepiņš carried out studies on protein structure and hydration in aqueous solutions, which contributed to awarding the Nobel Prize (2002) to prof. K. Wüthrich. From 1992 to 2004, he worked as an associate professor at the Karolinska Institute in Stockholm, Sweden, in prof. Gottfried Otting laboratory. During that time E. Liepiņš published his research in a number of the most prestigious scientific journals, including *Science* and several *Nature* group journals. In 2004, E. Liepiņš returned to Latvia and became the head of the Laboratory of Physical Organic Chemistry at LIOS by taking over duties from prof. Jānis Stradiņš, as well as a professor at the Riga Technical University.

His goal at that time – creation of a world-class (national) NMR center and expanding the research into NMR-based structural biology and rational drug discovery. The field of his scientific interests was extensive. His deep knowledge in organic and stereochemistry made it possible to solve complex problems such as estimation of novel reaction mechanisms, determination of not only the structures of novel compounds but also unstable intermediates in the reaction mixtures. Under his leadership, the interaction of various nanoparticles with biologically active compounds were conducted to study the possibility of targeted delivery of drug or DNA fragments.

He was a founder of the computer simulation group inside the Laboratory of Physical Organic Chemistry, making it



possible to model the mechanisms of chemical reactions, structures of small molecules, their physicochemical properties and interaction with proteins, predicting the potential activity of new compounds by computational methods such as quantum chemistry, docking, and molecular dynamics. Nowadays, his students, Kirils Zinovjevs, Ruslans Muhamedjevs, and Diana Zelencova successfully apply these methods in their scientific research.

Throughout his research activities Edvards Liepiņš established a highly qualified scientific school supervising more than 17 bachelor and master theses, as well as 7 doctoral theses (Ēriks Kupče, Ieva Zicmane, Juris Saulītis, Ilmārs Sekacis, Irēna Birģele, Kristaps Jaudzems, Ingūna Goba). He inspired and encouraged his students and coworkers for solving actual scientific problems and gave them all necessary tools for it. Using his network of international collaborators, he helped the students to get traineeships at the best foreign laboratories. The LIOS NMR laboratory has since become one of the best equipped in Northern Europe and its lead has been taken over by one of his students prof. K. Jaudzems.

E. Liepiņš was the author of around 600 peer-reviewed articles in internationally recognized scientific journals, conference theses, inventor's certificates, and patents, of which about 140 articles were published in "Chemistry of Heterocyclic Compounds". He has been awarded with several awards – Solomon Hiller Medal (2004), Gustavs Vanags Award (2005), Grindel Medal (2007), Paul Walden Medal (2007), Cabinet of Ministers of the Republic of Latvia Prize (2011), acknowledging his scientific achievements, collaboration with the national pharmaceutical industry, and establishing a new field of scientific research in Latvia.

Edvards Liepiņš was a tough but truly honest person, a dreamer and at the same time very responsible for his actions. A special personality that we will deeply miss.

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