

In Memoriam: Ivars Knēts (1938–2019)

On 1 March 2019, *Dr. habil. sc. ing.* Academician Ivars Knēts, full member of the Latvian Academy of Sciences, honorary member of the Latvian Association of the History of Science, and professor emeritus of the Riga Technical University (RTU), passed away at the age of 80.

Ivars Knēts was born on 17 September 1938 in Riga as the second son of a construction technician. His grandfather was a carpenter. The Knēts family comes from the Kurzeme region in Latvia. The professor's childhood was spent in Āgenskalns, Riga. In 1956, having graduated from the Riga Building School, Knēts began his studies at the Faculty of Construction Engineering of the State University of Latvia, which in 1958 became a structural unit of the Riga Polytechnic Institute (RPI; since 1990, the Riga Technical University). During his studies, Knēts was among the best students and showed interest in science. He graduated from the RPI in 1961 and obtained a diploma in civil engineering.

In 1961, Rector of the Riga Polytechnic Institute Aleksandrs Mālmeisters founded the Plasticity Research Laboratory, which was joined with the Faculty of Civil Engineering and operated under the RPI until the summer of 1963. Mālmeisters soon left the position of the rector of RPI and became the director of a newly established Institute of Polymer Mechanics of the Latvian Soviet Socialist Republic Academy of Sciences (LSSR AS). The Plasticity Research Laboratory was also merged in the institute. As its scientific collaborator, Knēts and others became members of the LSSR AS.

Professor Knēts further expanded the theory of local deformation, introduced by Professor Mālmeisters for calculating the durability of thin wall constructions.



Academician Ivars Knēts at inauguration at Riga Technical University, 21 December 1999. Photo by R. Krontāls.

In 1965, Knēts defended his thesis on the durability of thin-walled shells, and in 1977, a doctoral dissertation on the biomechanics of bone tissue. It was a new and promising scientific direction and a scientific laboratory was set up as early as in 1970 to study the mechanical properties and biomechanical behaviour of biological tissues created in nature through various loads and environmental factors. As a result of the intensive work of its team, the laboratory soon became the leading biomechanical centre for the study of biological tissue in the then Soviet Union.

Mālmeisters entrusted Knēts to form the Research Laboratory of Biomechanics. Intensive work on collective creation began, involving engineers, medical researchers, biochemists and specialists in material mechanics. Work with students continued and, in 1969, Ivars Knēts was elected as assistant professor at the Chair of Building Structures of the RPI; the following year he was elected chairman of the Young Scientists Council of the LSSR AS. The Research Laboratory of Biomechanics was officially founded in 1971. The first results on the research of the biomechanical properties of bone and blood vessels were soon received. In 1977, Knēts successfully defended his thesis for obtaining a Doctor of Sciences degree of the Union of Soviet Socialist Republics (USSR) on the topic *Cilvēka cieta bioloģisko audu deformēšanās un sabrukums* ('Deformation and collapse of human solid biological tissues'). Since 1978, he was a professor at RPI. As a visiting professor, he lectured in the USA, Italy, Bulgaria and Poland.

Knēts' scientific work was extensive and versatile. In 1975, the First USSR Conference on Engineering and Medical Biomechanics, with broad participation of foreign scientists, was organized by the Scientific Laboratory and the Scientific Research Institute of Traumatology and Orthopaedics of LSSR AS. The chairman of the conference committee was President of the LSSR AS Mālmeisters, and Ivars Knēts and Haralds Jansons acted as scientific secretaries. The following USSR conferences on biomechanics were held in Riga in 1979, 1983 and 1986. The last conference was part of the Conference of the European Society of Biomechanics and at the end of the conference, Knēts was awarded the title of the Honorary Member of the European Society of Biomechanics. The same year, he was awarded the title of the Honorary Member of the Czechoslovakian Society of Theoretical and Applied Mechanics, and in 1982 Knēts was accepted to the prestigious Scientific Council of Theoretical and Applied Mechanics of the Academy of Sciences of the Soviet Union.

In 1976, Knēts was awarded the LSSR State Prize for biomechanical substantiation of vascular reconstructive operations and their implementation

in clinical practice. In 1971 and in 1980, he received the LSSR AS Presidium Award for his research in biomechanics. In 1990, he became a member of the World Council of Biomechanics in the USA.

In 1987, Professor Knēts agreed to work full time at the RPI, under the condition that the entire laboratory team could come with him. His proposal was accepted and for the first time in the history of the LSSR AS, a scientific laboratory with its entire staff, hardware and salary fund moved under the RPI as an independent laboratory subordinate to the vice-rector for science. The laboratory operated in the building of the Faculty of Construction Engineering.

Alongside with his pedagogical work, on 1 August 1987, Knēts started working as vice-rector for science at the RPI and held this post until 20 December 1999, when he was elected rector of the RTU. In 2000, he started service as the 11th Rector of the Riga Technical University and was re-elected in 2004. He held this position until February 2011.

As a founder of the Riga Biomechanics School, Knēts was elected full member of the Latvian Academy of Sciences in 1992; he worked in many international associations and committees and was member of the editorial boards of many journals. In 2006, he received the Riga Prize in Science; in 2012, the Cicero Prize. He was also the honorary doctor (2000) of the Riga Stradiņš University, ordinary member of the European Academy of Sciences and Arts (1999), ordinary member of the World Academy of Materials and Manufacturing Engineering (2006), member of the Latvian Council of Science and its chairman (1993–1994; 1995–1996), member of the Senate of the Latvian Academy of Sciences, and honorary employee of RTU (2011).

Academician Knēts was interested in history, both that of his family and of the growth of universities and the development of engineering sciences. He took part in the 21st and 23rd International Baltic Conference on the History of Science held in Riga in 2003 and 2008, respectively, and was in the organizing and program committee. In the plenary session of the 2003 conference, Knēts reported on the '140 years of higher education in Latvia' (Knēts, 2003); in 2008, his paper was titled 'Riga Technical University—an important cornerstone for the development of Latvia (1862–1919–1958 ...–2008)' (Knēts, 2008). In 2008, he was elected honorary member of the Latvian Association of the History of Science for his contribution to the development and research of the history of RTU (Stradiņš, 2009). Academician Knēts supported the work of his colleagues, especially the activities of the staff of the RTU in associations.

During his studies, Knēts was engaged in athletics and participated in organizing sports activities in the renewed RPI. He was head of the athletics, tourism and swimming section of the RPI Sports Club. Working at the LSSR AS, Knēts was one of the sports activists. At the Latvian Olympic Committee (LOC) Renewal Conference on 19 November 1988, Ivars Knēts also became the vice-president of the newly established Latvian Olympic Academy and held this position until 1996. He was also the former president of the Latvian Student Sports Union (1992–1996). (Knēts, 1999)

The academician's scientific work is measured by more than 200 published scientific and methodological works, books, and he has obtained 6 patents abroad. Ivars Knēts held the RPI in high esteem, and since 1990 highly valued the traditions of the RTU; he participated in the compilation of five books devoted to the history of university education (2002–2017).

Academician Ivars Knēts is the author of more than 200 scientific publications and books, he has supervised the work of many bachelors, masters and doctors. His scientific and pedagogical work will be continued by his students.

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