Semen I. Spivak (1945–2020)

On July 25, 2020, a prominent scientist and remarkable person, Semen Izrailevich Spivak (Семён Израилевич Спивак in Russian), passed away.

Semen Spivak was born on February 4, 1945, in Dnepropetrovsk, USSR. After graduating from Novosibirsk University in 1967, he worked at the Institute of Catalysis of the Siberian Branch of the Academy of Sciences in Novosibirsk, where he defended his PhD thesis.

Since then, all subsequent scientific activities of Semen Spivak were closely related to chemistry and mathematical modeling in chemistry, although he graduated from the Faculty of Mathematics at Novosibirsk University. In the late 60s, faced at the Institute of Catalysis with the need to build models of chemical processes under uncertainty and inaccuracy, Semen Spivak met Leonid Kantorovich, a Nobel Prize winner and brilliant mathematician, and his ideas about a new science of data processing with bounded (interval) uncertainty (see [1]). This acquaintance had a profound influence on all subsequent research topics of Semen Spivak and determined his path in science for many years. Leonid Kantorovich himself was no longer engaged in the development of his pioneering ideas outlined in the fundamental article [1], and Semen Spivak became his direct disciple and successor in elaborating the interval approach

to processing inaccurate and uncertain data, mainly in problems of chemistry and chemical technology.

In 1976, Semen Spivak moved to Ufa as a senior researcher at the Research Institute of Petrochemistry, and in 1985 he received his D.Sc. degree in physics and mathematics. In 1986 Semen Spivak started working at the Bashkir State University as the head of Mathematical Modeling Department. Since 1992, he was the head of the laboratory of mathematical chemistry at the Institute of Petrochemistry and Catalysis.

Apart from interval data processing, Professor Spivak's research interests were mathematical modeling and optimization of complex chemical processes, mathematical theory of experiment, inverse problems of chemical kinetics and thermodynamics, identification of complex chemical reactions, as well as financial mathematics.

Semen Spivak is the author of over 900 scientific papers, a large portion of which has been published in international journals. Under his leadership, a scientific school on mathematical modeling and optimization was formed in Ufa, Russia.

During his long scientific life, Semen Spivak was a scientific consultant for 10 DSc thesises and a scientific supervisor of 50 PhD thesises. Under his leadership, popular scientific seminars were organized in the city of Ufa. In 2008, Semen Spivak was awarded the title "Honorary Worker of Higher Education of Russia", in 2018 — "Honored Professor of the Bashkir State University".

The phenomenon of Semen Spivak, as a teacher and mentor, consisted of the fact that he completely and unboundedly plunged into his work, drawing his students along with him. His strong passion of science and belief that the results were sure to follow if one worked arduously, earnestly and patiently always encouraged his colleagues and students. Being an absolutely sincere and noble person by nature, he never demanded anything from his students. He set tasks, he formulated problem statements. And it was up to everyone to decide how to deal with them.

Semen Izrailevich saw his mission in training "elite scientific personnel". Therefore, when starting to work with his students, he did not start from their current level of knowledge. It went without saying that, if required, the necessary topics from any area of knowledge would be studied and mastered. The desire to meet the high level of their teacher forced many of his students through hard work to improve themselves and achieve unexpected results for themselves.

He dreamed of writing a book. He said that he wanted to retire and devote himself only to this cause. But there were always those near him whose potential he saw and wanted to help reveal. For this purpose, he was ready to sacrifice his time and energy ...

The Russian scientific community, Bashkir State University and all colleagues of Semen Spivak have suffered an irreparable loss. His memory will be cherished in the hearts of all those who were lucky enough to live and work near him.

[1] Kantorovich, L.V. (1962). On some new approaches to numerical methods and processing observation data. *Siberian Mathematical Journal*, **3**, No. 5: 701–709. (in Russian) Electronic version is accessible at `http://www.nsc.ru/interval/Introduction/Kantorovich62.pdf`

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