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In memoriam—Professor Michael Adol'fovich Styrikovich (1902–1995)



Professor Michael Adol'fovich Styrikovich, an outstanding Russian scientist in the field of thermophysics and power engineering, died on 27 October 1995 in Moscow. He was a member of the Russian Academy of Sciences and Honorary Chairman of the National Committee for Heat and Mass Transfer.

Professor Styrikovich was born on 16 November 1902 in Saint Petersburg, Russia. In 1927 he graduated from the Mechanical Department of the Saint Petersburg Technological Institute and began his scientific activity at the Bureau of Thermal Engineering Experiments which was later transformed into the world-renowned Polzunov Central Boiler and Turbine Institute.

In his first investigations Professor Styrikovich devoted his attention to the processes of burning and radiative heat transfer in boiler furnaces. Later, he studied convective heat transfer of flue gases to tubes. At that time, most researchers studied integral characteristics of heat transfer, whereas Professor Styrikovich focused his attention on local phenomena. Such an approach made it possible to discover the basic physics of the processes investigated and to obtain correlations which to a greater extent corresponded to reality.

In the 1930s, Professor Styrikovich started his studies on two-phase flow hydrodynamics which embraced two-phase flow in tubes, steam separation and bubbling. The results of Professor Styrikovich's investigations together with those of his colleagues constituted the basis of the Norms for thermal and aerodynamic design of steam boilers, which were

developed in 1937–1938. This work put Professor Styrikovich in the line of the leading persons of the Russian thermal-engineering science.

In 1936, Professor Styrikovich was elected a Professor of the Moscow Power Institute (MEI), and started from 1938, he was in charge of the Department of Boiler Installations of this Institute. In 1939, he was awarded a doctorate without presenting a dissertation.

At this time, Professor Styrikovich and his colleagues conducted a series of pioneer studies on mercury vapor generation. The work involved single-phase heat transfer to liquid mercury and mercury boiling on unwetted surfaces.

Further studies were interrupted by the beginning of the World War II. During the two years of the war, Professor Styrikovich worked in the Urals as a scientific manager of the group of specialists which were responsible for reliable operation of thermal power stations and developing measures for increasing their capacity.

However, as early as 1943, he returned to Moscow and proceeded to teach at the Moscow Power Engineering Institute. At the same time, he conducted scientific work at the MEI and the Moscow Division of Polzunov Central Boiler and Turbine Institute, and later at the Krzhizhnovskiy Power Engineering Institute. For a long time extensive investigations on two-phase hydrodynamics and heat transfer were carried out under the supervision of Professor Styrikovich at this Institute as well as at the Institute of High Temperatures of the Russian Academy of Sciences.

This research included boiling, burnout and dryout characteristics, and post-burnout heat transfer. Heat transfer to water of supercritical parameters was also studied thoroughly.

The results of these investigations were presented in many papers and monographs among which *Intra Boiler Processes* (1954) and *Hydraulics of Vapor-Liquid Systems* (1958) are the most familiar. The latter was written in collaboration with S. S. Kutateladze.

During the same period, Professor Styrikovich initiated studies on solubility of certain substances in high pressure steam. To increase the sensitivity and the accuracy of the experiments, he proposed to use radioactive isotopes which acted as tracers. This technique made it possible to obtain reliable data on the transition of many substances from the boiler water into steam. In the course of these experiments the behavior of such poorly soluble substances as SiO_2 and BO_2 was successfully studied. On the basis of these investigations a theory of solutions in steam was developed and reported in the monograph *Steam Generation Processes at Power Plants* (1969). This was done in collaboration with his wife Professor O. I. Martynova.

The successful conclusion of the subsequent investigations was assured by implementation of new experimental techniques which were developed by Professor Styrikovich, his students, and his followers. For example, to investigate the processes in a boiling boundary-layer, the so-called 'salt method' was mastered, to study salt entertainment with steam, the above isotope tracers with soft β -irradiation were applied, and when exploring steam-water flow hydrodynamics, hard γ -irradiation was used.

From 1949, Professor Styrikovich was a Corresponding Member and in 1964 he was elected an

Academician of the Russian Academy of Sciences. For a long time, starting from the moment when the Division of Physical and Technical Problems of Energetic was organized in the Academy, Academician Styrikovich directed the activity of the Division as its Academician-Secretary.

In the 1970s and 1980s, the main work of Academician Styrikovich concerned general problems of power engineering, its economy, and long-term and short-term forecasting of its development in Russia and the world, as a whole. He made an attempt to substantiate a probable structure of the energy consumption in the future taking into account the main trends in living-style and standards, economy demands, and environment protection requirements.

A broad scientific approach was typical of Academician Styrikovich. His breadth of views and principles are well-known. His merits were universally recognized throughout the world; he was an indisputable authority as a scientist and as an eminent person. He was Co-Chairman of the Executive Committee of the World Energy Conference, the CODATA Vice-President, and the President of the International Center for Heat and Mass Transfer. From 1968 to the last days of his life, Academician Styrikovich was Chairman of the Russian National Committee for Heat and Mass Transfer.

Thousands of students of Academician Michael Adol'fovich Styrikovich and hundreds of his colleagues grieve over his loss and will hold him in remembrance.

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