# Solomon Mendelevich Raĭskiĭ (Obituary)

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Doctor of Technical Sciences Solomon Mendelevich Raĭskiĭ, a noted spectroscopist, died suddenly on 4 March 1979 in his 74th year.

Raĭskiĭ's talent emerged in subtle experimental studies in the fields of physical optics, molecular physics, and spectral analysis. He originated a procedure for study of fast processes with time resolution of the order of $10^{-1}$ sec. He found a way to generate square microsecond light pulses and proposed an ingenious modification of the shadow method that made it possible to study the kinetics of various physicochemical processes under conditions that render them inaccessible to study by other methods. In another study, Raĭskiĭ combined a lens or concave mirror and a comparatively crude zone diaphragm into a single system with enormous depth of field. This opened up new opportunities in the design of photographic instruments.

At the suggestion of L. I. Mandel'shtam, Raĭskiĭ carried out a subtle experimental study of a tube formed by a monomolecular film of a surfactant with a stream of water falling through it. The photographs that he obtained of this monomolecular tube were unique, and the accompanying surface-phenomena studies are of great scientific value.

Raĭskiĭ's contribution to the development of spectral analysis in the Soviet Union, the elaboration of spectral procedures, and the introduction of spectral analysis into plant-laboratory practice in heavy industrial and other plants was particularly valuable.

Raĭskiĭ was born on 23 September 1905 at Novozybkov. On graduation from the Physics Department of Moscow State University in 1932, he remained in that department, first as an assistant and then as a lecturer in general physics and a scientific colleague of the optical laboratory, which was headed by G. S. Landsberg. In the early 1930s, the rapid growth of heavy industry in the USSR required the development of fast methods for chemical analysis of cast irons, steels, and alloys in the melting process so that the necessary corrections could be made and enormous masses of metal saved from going to waste. Chemical analytic procedures required too much time. It was then decided to use spectral analysis for melt quality control and other analyses. This means that spectral analysis, the capabilities of which were in dispute even for laboratory control of alloys, had to be put to use under the harsh conditions of the mill shops. Almost the entire burden of

SOLOMON MENDELEVICH RAĬSKIĬ (1905–1979)

organizing this work fell to Raĭskiĭ, who had become Landsberg's deputy. It was necessary to set up mechanical and optical workshops and concurrently to develop analytic procedures and establish communications with the mills. Raĭskiĭ's organizational effort was so extensive and varied that practically no time was left for his own scientific work, which he was obliged to pursue in spare moments and at night.

Raĭskiĭ developed a procedure for quantitative spectral-analytic determination of silicon in malleable iron during melting and built a device for spectral determination of silicon and chromium in malleable iron. He is credited with spectral methods for determination of the amounts of copper, titanium, aluminum, chromium, and tungsten in steel. He participated in design of instruments for visual, photographic and photoelectric measurements. These devices, which came to be known as steeloscopes and steelometers, then went into production by our opticomechanical industry.

It became clear in development of spectral methods of analysis that the electric spark is the best source for excitation of analytic spectra. However, the spark was unstable, and nothing at all was known concerning the input of specimen material into the spark gap. Raĭskiĭ devoted a series of papers to study of the scientific and

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technical aspects of this problem. The result was developed of a generator with two spark gaps, one responsible for stability of generator performance, while the other served to excite the spectrum. This generator circuit proved to be so successful that it is still in use today and known as the "Raĭskiĭ circuit." Raĭskiĭ successfully applied his method for study of fast processes to the study of the spark itself. He was able to show that the inflow of electrode material into the spark gap is of explosive nature and results in formation of a flame.

Raĭskiĭ devoted a great deal of attention to problems of error in quantitative determinations in spectral analysis and to general problems with a bearing on errors of analysis.

He was one of the organizers of the All-Union Conferences on Spectroscopy, and for many years directed the All-Moscow Spectral Colloquium.

Quick industrial acceptance of spectral methods elaborated in the laboratories was in no small measure attributable to Raĭskiĭ's tact and his ability to talk with people and get along with them. He worked to his last day in the interest of development of spectral analysis in his country.

It is particularly difficult to separate Raĭskiĭ's scientific and organizational activity from his outstanding personal qualities—his wisdom, his active friendliness toward people, his ability to help.

The passing of Solomon Mendelevich Raĭskiĭ is a great loss to his numerous friends and to progress in spectral analysis in the Soviet Union.

Translated by R. W. Bowers