

## Victor Alexandrovich Karnaukhov 1930-2016

Prominent Russian scientist Victor Alexandrovich Karnaukhov passed away on 16 April after a long disease. Karnaukhov was a highly skilled physicist, applying ever-modern experimental methods and possessing fundamental theoretical knowledge in nuclear physics. A characteristic feature of his research was his choice of outstanding physical problems that could lead him to obtain qualitatively new results.



Karnaukhov

In 1954, after graduating from Moscow State University, Karnaukhov began working at the National Scientific Center in Moscow - the so-called Kurchatov Institute. The department was headed by G N Flerov, who created a team of future founders of the Laboratory of Nuclear Reactions (LNR) at JINR, where Karnaukhov moved in 1960 and was head of department until 1976.

While investigating the decay of  $^{20}\text{Ne}$  in 1962, Karnaukhov made the first observation of an essentially new type of radioactive decay:  $\beta$ -delayed proton radioactivity. His research group went on to find a number of proton emitters, and today there are around 100 known sources. The emission of delayed protons is a powerful tool to study nuclear structure, and the discovery earned Karnaukhov the USSR State Prize in 1975. Previously, he and his collaborators had also observed the polonium isomer  $^{212}\text{Po}$ , which is remarkable for its anomalous suppressed  $\alpha$ -decay, and he also actively participated (together with S Polikanov) in the discovery and identification of spontaneous fission isomers of heavy nuclei. On the experimental side, Karnaukhov proposed and realised a new type of very fast, gas-filled mass separator at the LNR cyclotron, which ultimately enabled the discovery of more than 30 new short-lived isotopes - most of them delayed proton emitters.

In 1977, Karnaukhov became head of a department at the Laboratory of Nuclear Problems, where he initiated a large project concerning super-dense nuclei. Since the start of the 1990s, his main research interests were the detailed study of phase transitions in nuclear systems. Even today, a new project proposed by Karnaukhov is under way at the Laboratory of High Energy Physics, JINR, to study the fission of hypernuclei produced in collisions of relativistic deuterons with heavy targets. His scientific achievements are presented in more than 150 publications, and his studies

of proton radioactivity are referred to in many textbooks, monographs and encyclopedias.

He had remarkable courtesy and helpfulness, and the ability to propose exciting scientific ideas and demonstrate firm principles when discussing challenging problems. Victor Karnaukhov will forever live in our memory.

- *His friends, colleagues and the DLNP staff.*