

OBITUARY

DOI: 10.1070/QEL16251

In memory of Mikhail Yakovlevich Schelev

On 12 September 2016, after a serious illness died Doctor of Physical and Mathematical Sciences, Honoured Scientist of the Russian Federation, Professor Mikhail Yakovlevich Schelev, a well-known scientist, an outstanding expert in the field of electron-optical instruments for recording fast processes in experimental physics, one of the founders of a new branch of engineering physics – pico-femtosecond photoelectronics.

M.Ya. Schelev was born on 14 November 1938 in Moscow. In 1962 he graduated from the Bauman Moscow Higher Technical School, having obtained a qualification of a radio-engineer in radio-electronic devices. During the period of 1964–1967 he was a postgraduate student of the Department of Radiophysics at the Moscow Institute of Physics and Technology. Since 1962 he worked at the P.N. Lebedev Physics Institute (FIAN), where he started as an ordinary radio-engineer, and afterwards, after FIAN separation, at the General Physics Institute (GPI) where he progressed up to the Head of the Photoelectronics Department which he supervised up to the end of his life.

Under the leadership and personal involvement of Prof. Schelev, a number of time-analysing image converter tubes (ICT) were designed, which were first in the world to reach the temporal resolution level of 1–10 ps (1962–1976) and then 100–200 fs (2000–2003). Mikhail Yakovlevich with his co-authors was able to confirm experimentally the existence of a multifocus structure in the propagation of high-power laser beams (this phenomenon was registered as a discovery), to establish the role of self-focusing in the processes of laser spark formation, to detect a fine temporal structure in neodymium laser radiation in passive mode locking, to implement recording of X-ray radiation from laser plasma with picosecond time resolution and to measure the carrier frequency offset in a single laser pulse of picosecond duration.

M.Ya. Schelev developed a new generation of femtosecond streak tubes and photoelectron guns for laser research, implemented the calibration of pico-femtosecond lasers into the practice of electron-optical diagnostics, organised the works on computer modelling of streak tubes and initiated experiments on two-component photocathodes and photocathodes with negative electron affinity. As a result, new streak tubes, electron-optical and diffractometry cameras have been designed, operating in the spectral range of 1–1700 nm, with a sensitivity sufficient to register individual photoelectrons and possessing femtosecond time resolution at a phase speed of linear sweep which exceeds the speed of light by two–three times.

Mikhail Yakovlevich had especially hard times during the 'dashing nineties'. When much around was being destroyed, he was creating. In an exceedingly tight economic situation, he managed to preserve the Photoelectronics Department, GPI, and to implement a unique research/engineering chain providing mathematical simulation, design, manufacture and testing of experimental prototypes of streak image tubes and cameras on their basis. Several hundred streak tubes and cameras developed and manufactured at the GPI are now successfully used in research laboratories in Russia and around the world.

For his works on experimental implementation of methods and means of pico-femtosecond electron-optical diagnostics and their application in laser research, M.Ya. Schelev, as a member of the research team, was awarded the Lenin Komsomol Prize (1971), the USSR State Prize (1986) and also the Stoletov Prize of the Presidium of the Russian Academy of Sciences (2014).

M.Ya. Schelev for many years was a member of the GPI Scientific Council and made a significant contribution to its organisation and development. He was a full member of the Russian Academies of Natural and Engineering Sciences, a member of the Expert Council of the Higher Attestation Commission in Physics, a member of several Dissertation Councils, read lectures at the Bauman Moscow State Technical University, Moscow Institute of Physics and Technology and Lomonosov Moscow State University.

He was the author of more than 450 papers and reviews published in Russian and foreign scientific journals. Since 1968, M.Ya. Schelev, as a national delegate, was a permanent participant of the International Congresses on High-Speed Photography and Photonics. Mikhail Yakovlevich contributed enormously to successful holding of two High-Speed Congresses in Moscow (1980 and 1998) as the Chairman of the Organising and Programme Committees.

M.Ya. Schelev' scientific activity brought him great fame and well-deserved authority among foreign colleagues. The evidence of this is the international Hubert Shardin Gold Medal awarded to him by the German Physical Society (1972), international Photo-Sonics award established by the Society of Optical Engineers, USA (1988), international award 'VIDE & CREDE' ('See and believe') established by the Japan Society for High-Speed Photography and Photonics and Hamamatsu Co. (2009), the title of Honorary Professor of Beijing Institute of Technology (China, 1999), his membership in the editorial boards of the journals Laser Focus World, Frontiers of Optoelectronics, and Acta Photonica Sinica.

We have lost a scientist deeply devoted to Science until his last breath. His name is forever inscribed into the history of the formation and development of national and world Photoelectronics. We will preserve in our hearts the memory of Mikhail Yakovlevich Schelev – the decent, principled, and honest Man.

S.N. Bagayev, E.M. Dianov, V.I. Konov, O.N. Krokhin, G.A. Mesyats, V.V. Osiko, P.P. Pashinin, I.A. Shcherbakov, staff members of the Photoelectronics Department, GPI

Kvantovaya Elektronika **46** (11) 1066 (2016)
Translated by M.A. Monastyrskiy