NIKOLAI IVANOVICH KOROTEEV

ser spectroscopy always lay at the core of Koroteev's wide-ranging scientific interests. In addition to coherent Raman spectroscopy, he worked vigorously on the generation and applications of ultrashort laser pulses, nonlinear optics of surfaces, and the application of laser techniques in the life sciences. His most recent research concerned nonlinear optics of chiral media and investigations of photochromic materials.

Findings from these and other research activities are documented in over 250 technical publications authored or co-authored by Koroteev.

Koroteev will always be very much associated with Moscow State University, where he held academic positions in the physics department from the time of his PhD degree until his untimely death. From 1992 on, he occupied the Chair of General Physics and Wave Processes, a position previously held by the founders of nonlinear optics in Russia, Rem V. Khokhlov and Akhmanov.

As an educator, Koroteev carried out several important initiatives in physics training and devised new lecture courses on the fundamental aspects of laser–matter interactions and other topics. Well-known as a gifted lecturer, he was an inspiration to his students.

Koroteev always viewed science and learning as international in scope. He was instrumental in founding the International Laser Center (ILC) of Moscow State University, and he served as its first director. Through Koroteev's guidance and tireless efforts, the ILC has developed into a major international organization in the field of laser physics and nonlinear optics. Koroteev also served for several years as the university's vice-rector for international relations. In that position, he was a leading scientific ambassador for his country and became a powerful force in building bridges between institutions of higher learning throughout the world.

Koroteev will be remembered not only for his many outstanding contributions to nonlinear optics, but also for his enormous personal efforts to advance his beloved discipline throughout the world, and in Eastern Europe in particular. Through a very difficult period in Russian science, Koroteev dedicated himself to preserving his institute, university, and national science effort and to supporting and encouraging the scientists involved in it. At the same time, he never wavered from the view that science should be a shared enterprise, involving people of all nations. In doing such things, he set an extraordinary example of personal commitment. Such attributes, together with that rare combination of great intelligence and personal charm, made Koroteev both admired and loved by all who had the privilege to know him.

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John Marshall Jr

John Marshall Jr, a pioneer in nuclear reactors and a very early member of the Manhattan Project, died in Los Alamos, New Mexico, on 21 October 1997, after a long struggle with Parkinson's disease.

Born in Philadelphia on 12 April 1917, Marshall earned a BS in physics from Swarthmore College in 1938. While at Swarthmore, he worked summers at the Franklin Institute's Bartol Foundation, where he used early cyclotrons to study the properties of deuterons. Under the supervision of Lee DuBridge at the University of Rochester, he earned a PhD in physics in 1941. His thesis was entitled "The Inelastic Scattering of Protons."

Early in his career at Rochester, Marshall also worked with Robert Dicke on one of the original cyclotrons, with which they bombarded numerous elements with proton beams and thereby discovered a number of new isotopes.

Marshall's abilities were brought to the attention of Leo Szilard, the Hungarian-born physicist who helped to initiate the Manhattan Project. In the fall of 1941, Szilard asked Marshall to come to Columbia University to help with the initial measurements on thermalization and absorption of neutrons in carbon stacks. These measurements provided the basis for understanding that a larger "pile" of carbon interspersed with uranium would lead to a self-sustaining nuclear reaction.

JOHN MARSHALL JR

At Columbia, Marshall started a long-term collaboration with Enrico Fermi. When it was decided to build the first pile at the University of Chicago, Marshall went with Fermi to join the university's Metallurgical Laboratory, where he was assigned the task of smelting, casting, cutting, and shaping the pure uranium pieces needed for the pile.

After the first pile went critical, Marshall, Fermi, and Leona Woods worked quickly to build the next reactors at the Argonne Laboratory, and, by 1943–44, they were at the Hanford Works, near Richland, Washington, to bring the first production reactor into operation.

After World War II, Marshall continued to study the nature of reactors with Fermi.

In 1950, Marshall became the main designer and project manager for Chicago's synchro-cyclotron, which went into operation in 1952. By that time, Marshall was a professor of physics at Chicago. A large number of landmark papers about the nature of the neutron resulted from his collaboration with Fermi. Their close collaboration continued at Chicago until Fermi's death in 1955.

In 1957, Marshall moved to Los Alamos to work at the Los Alamos National Laboratory—20 years after he had first visited the area, on horseback, while on vacation with his father, who had grown up in New Mexico. When the younger Marshall returned in 1957, it was to investigate the possibility of harnessing thermonuclear reactions in a future plasma-containing fusion reactor. At that time, this secret effort was known as Project Sherwood, but the name was changed to the Magnetic Fusion Energy program when the project was declassified in 1958.

By 1959, Marshall had developed and patented a coaxial plasma gun device, which, to this day, has been a mainstay of studies in plasma injection in the worldwide magnetic fusion energy program. The coaxial plasma gun, which has come to be known as the Marshall gun, is a device for producing and hydrodynamically accelerating plasmas to a high energy by discharging an electric current through a gas between coaxial electrodes. It was used initially for injection into thermonuclear magnetic containment devices and, more recently, for space propulsion studies, plasma processing, and the modification of surfaces.

A mentor to many physicists and technicians, Marshall worked on numerous magnetic energy fusion experiments, as well as the 1969–70 Los Alamos "Birdseed" experiments to study cross-field plasma injection into Earth's upper atmosphere. All his collaborators were impressed by his deep understanding and intuitive grasp of physics and engineering concepts. He had a very practical approach to laboratory experiments and their design.

Marshall enjoyed hiking and rock climbing and was a familiar sight in town as he jogged to and from work. Before he retired formally in 1982, he had held various titles, including that of technical staff member, group leader and assistant division leader. He was one of the first scientists to be appointed a laboratory fellow in the early 1980s. After his retirement, he continued to provide advice and encouragement to his colleagues for a number of years.

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Grigory Ezekielevich Pikus

Grigory Ezekielevich Pikus, a pioneer in the theory of semiconductors, died in St. Petersburg (formerly Leningrad), Russia, on 12 April 1998.

Born on 7 May 1923 in Moscow, Grigory began his education in Minsk, where he attended high school. In the fall of 1940, he became a student in the physical-engineering department of Leningrad Politechnical University.