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PERSONALIA

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In memory of Anatoliĭ Pavlovich Nefedov

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Anatoliĭ Pavlovich Nefedov, executive director of the Institute for High Energy Densities, distinguished scientist of Russia, DSc in technical sciences, professor, outstanding specialist in the physics and chemistry of low-temperature plasma, one of the founders of dusty plasma physics and plasma crystals died at the age of 62 on the 19th February 2001.

A P Nefedov was born on 26 April 1939 in Sadovniki village of the Lenin district of Moscow region.

In 1957 he graduated from school with a gold medal distinction and enrolled in the Moscow Power Institute, which he graduated with his first degree as a thermal physics engineer.

In spring 1963 Nefedov was allocated to the Institute of High Temperatures of the Academy of Sciences of the USSR headed by academicians V A Kirillin and A E Scheĭndlin. Nefedov's work at that time was a fortunate combination of research in the laboratory and application of the results of this research to large-scale MHD plants. Anatoliĭ Pavlovich, an experimental scientist, directly participated both in the design of such plants, solving practical problems, and in the research in physics and plasma diagnostics in MHD generators, paying maximum attention to spectroscopic and probe techniques for measuring atomic concentrations of alkaline seed and the concentration of electrons. In 1971 he presented and successfully defended his PhD thesis on the 'Development of diagnostic techniques in inhomogeneous flows in MHD generator channels'. In the 1980s A P Nefedov was occupied with developing diagnostic techniques of various plasma characteristics for the MHD energy conversion technology. Original diagnostic systems were designed under his guidance: an optical system for measuring atomic concentrations, a laser anemometer, a reflectometer, an instrument to measure the local electric conductivity of the plasma and the concentrations of charged particles, instruments for measuring average sizes, refractive index and concentration of microscopic particles in plasma flows, a gas analyzer for monitoring harmful emissions of power generators. An important place in Nefedov's work was taken by researching the chemically non-equilibrium boundary layer in the flow of multi-component chemically active plasma.

In 1989 A P Nefedov presented and defended his DSc thesis on "The main characteristics of low-temperature plasma flows in power generators. Measurement techniques and results." In 1991 he rose to a professorship. All these years A P Nefedov gained not only an unassailable reputation among colleagues but also proved to be a brilliant science organizer, rising through the positions of learned secretary of the High Temperature Institute, Head of Department and then Head of the Section of low-temperature plasma physics of the institute.

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Translated by V I Kisin

Anatoliĭ Pavlovich Nefedov
(26.04.1939 – 19.02.2001)

In 1993, following the suggestion of the academician V E Fortov, A P Nefedov transferred to the High Energy Densities Research Center of the Russian Academy of Sciences; his subsequent activity greatly helped the build-up of this center as an academic institution.

The main part of the scientific activities of A P Nefedov in the 1990s was devoted to a new field of physics: the physics of strongly-coupled dusty plasma. With the energy so characteristic of him, A P Nefedov and co-workers carried out a number of original studies of spatially ordered structures of charged microscopic particles in thermal plasma, DC glow discharge plasma, inductively-coupled plasma and nuclear-induced plasma. The results of these elegant experimental studies caused a considerable stir in this country and abroad and brought him international recognition.

Since 1997, V E Fortov and A P Nefedov organized research into plasma-dust formations under micro-gravity conditions. Experiments were carried out on board the Mir

orbital station in the Plasma crystal research project and in March 2001 the first stage of the dusty plasma project was realized successfully on the Russian segment of the international space station. This last experiment was run in collaboration with the Institute of Extraterrestrial Physics of the Max Planck Society (director: foreign member of the Russian Academy of Sciences Professor G Morfill, in close contact with the Russian space corporation "Energiya", the space flight control center and the Yu A Gagarin Astronaut Training Center. This experiment, which, owing to A P Nefedov's tremendous effort, was the very first physics experiment on the international space station, did take place; unfortunately to Anatoliĭ Pavlovich's colleagues and friends, it became his swan song.

A P Nefedov invariably devoted much attention to helping young scientists to mature; from 1998 he headed the chair of High Energy Density Physics of the Moscow Physico-Technical Institute.

To his colleagues A P Nefedov was known as a brilliant organizer of all-Russia and international conferences on low-temperature plasma physics. Anatoliĭ Pavlovich headed the Learned Council on Inter-Disciplinary Research Program of 'integrated investigation of thermo-physical properties of materials at extremal energy densities' of the Russian Federation Ministry of Industry, Sciences and Technology and was vice-chairman of the Learned Council of the Russian Academy on low-temperature plasma physics.

Working with Anatoliĭ Pavlovich was easy since he was communicable and open; he was also a man of inner harmony, which manifested itself in sincere kindness, impeccable honesty, empathy and genuine culture. The charm of his personality is hardly rendered in words: as one could hardly sing Russian songs without their melodies, those which he so loved to sing in moments of relaxation.

The untimely death of A P Nefedov is hard to accept and to bear for his colleagues and collaborators. However, his achievements and the imprint of his personality will long remain.

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