

In memory of Yurii Alekseevich Trutnev

DOI: <https://doi.org/10.3367/UFNe.2022.01.039144>

The outstanding Russian scientist, one of the founders and creators of Russian thermonuclear weapons, first deputy research supervisor of the Russian Federal Nuclear Center–All-Russian Research Institute of Experimental Physics (RFNC–VNIIEF), academician of the Russian Academy of Sciences (RAS), doctor of technical sciences, Professor Yurii Alekseevich Trutnev passed away on August 6, 2021.

Yu A Trutnev was born on November 2, 1927 in Moscow into a family of students at the Timiryazev Agricultural Academy. In 1951, having graduated from the Physical Department of Leningrad University, Yu A Trutnev arrived at KB-11 (now RFNC–VNIIEF). His teachers were the prominent scientists David Abramovich Frank-Kamenetskii and Nikolai Aleksandrovich Dmitriev. Academicians Ya B Zel'dovich, Andrei Dmitrievich Sakharov, and Yu B Khariton exerted great influence on his formation as a scientist.

In 1954–1955, when quite a young man, Yurii Alekseevich became a co-author and one of the participants in the creation of our first thermonuclear charge based on the new principle of radiation implosion.

In 1955, Yu A Trutnev, together with Yu N Babaev, proposed to miniaturize considerably the charge via a new daring solution to the problem of transfer of X-ray radiation determining the implosion. This design was implemented successfully in 1958 in ‘Proekt-49’ and became a very important basis for creating the thermonuclear arsenal of our country.

Together with A D Sakharov, Yu A Trutnev was one of the authors and initiators of the implementation of ‘Proekt-602’ — the most powerful thermonuclear charge in the history of nuclear weapons.

In 1958–1962, a whole spectrum of thermonuclear charges, which were fundamentals of the native system of nuclear-missile weapons, was worked out with the direct participation of Yu A Trutnev.

In 1964, at the age of 37, Yu A Trutnev was elected a corresponding member of the USSR Academy of Sciences. In 1965, he became a successor to academicians A D Sakharov and Ya B Zel'dovich and became head of the joint theoretical sector at VNIIEF, which he directed till 1999. During this time, the collective guided by him designed hundreds of nuclear and thermonuclear charges that underlay nuclear facilities of virtually all types of the military force of the USSR and the Russian Federation.

In the 1970s–1980s, Yu A Trutnev contributed considerably to the organization in our country of work investigating space-rocket hardware durability and elaborating protection from the damaging effect of nuclear explosions. Yurii



Yurii Alekseevich Trutnev
(02.11.1927–06.08.2021)

Alekseevich was a participant in and in many cases a leader of over 50 nuclear tests and unique underground physical experiments examining the durability of military hardware and the effect of damaging factors of anti-missile defense (AMD).

Particularly valuable were Yu A Trutnev's initiatives to develop, on the team headed by him, new ‘nontraditional’ modes of work, which made it possible to proceed to develop armories, and other significant projects, based on new physical principles.

In the 1960s–1980s, being the head of theoretical computational work at VNIIEF and one of the founders of the computational center at VNIIEF, Yu A Trutnev made great efforts to develop the scientific, technical, and material foundation of the center.

Of great importance was Yu A Trutnev's activity aimed at retaining Russia's nuclear status in the period that the USSR disintegrated. Yu A Trutnev was an active member of RAS (a full member since 1991) and possessed true authority in the academic community. For a long time, he was member of the Bureau of the Division of Physical Sciences of RAS. In

2003, Yu A Trutnev was awarded the I V Kurchatov Gold Medal of RAS for his body of classified work of great military-strategic and national economic significance that provided a modern reliable nuclear shield to the country. Yurii Alekseevich was personally acquainted with I V Kurchatov, who supported, with his inherent adherence to principles, his young colleague's budding new investigations.

Yu A Trutnev's exceptional characteristics were his remarkable scientific intuition and an extraordinary working capacity. At the age of 93, he continued actively working out new physical methods for maintaining nuclear weapons operability under the Comprehensive Nuclear Test Ban Treaty (CTBT) (proton radiography), creating modern original types of nonnuclear armaments and means to overcome anti-missile defense, as well as many other major problems, whose solution is necessary for safeguarding Russia.

Educating and establishing cadres (personnel) were his great merit.

Yurii Alekseevich took up the baton of the outstanding pioneers of the Atomic Project and continued quite successfully the very important work of ensuring the national security of Russia. Yu A Trutnev's talent for finding ways to develop the national security of the state, consistency, and uncompromising stand in advocating essential matters are a template for new generations of specialists in the nuclear weapons industry.

The result of the creation and development of our nuclear weapons is well known — it has been 75 years of PEACE!

Yu A Trutnev's whole creative scientific life (over 70 years) presents an example of boundless service to the Motherland. He is one of those people for whom the fate of the Motherland was always the main and undoubted priority.

Yurii Alekseevich was an honorary citizen of the city of Sarov and the Nizhny Novgorod region.

Yu A Trutnev's merits were highly acknowledged by the state and the scientific community: he received his first award — the Order of Lenin — at the age of 29 and the Lenin Prize at the age of 32. He became a Hero of Socialist Labor at the age of 35, a State Prize winner at 57, and a laureate of the RF Government Prize at 89.

In 2017, Yurii Alekseevich became a full recipient of the order For Merit to the Fatherland.

The cherished memory of our colleague and friend Yurii Alekseevich Trutnev will remain in our hearts, and his deeds will be written in the history of our country forever.

*S G Garanin, R I Il'kaev, V E Kostyukov,
A E Likhachev, V P Neznamov, V A Rubakov,
G N Rykovanov, V D Selemir, A M Sergeev,
I D Spassky, A K Chernyshev, I A Shcherbakov*