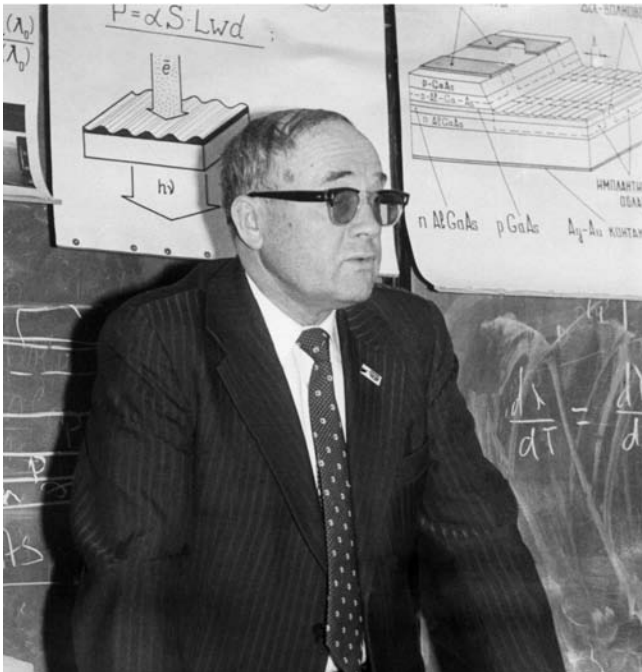


## Mitrofan Fedorovich Stel'makh (1918 – 1993)



On 21 December 2008 Professor Mitrofan Fedorovich Stel'makh would have been 90. Doctor of Technical Sciences, M.F. Stel'makh was one of the outstanding scientists and of science and industry organisers in the fields of microwaves and quantum electronics, the founder of the 'Polyus' Scientific-Research Institute and its Director from 1962 to 1983. He was also a laureate of the USSR State Prize and a member of the Editorial Board of *Kvantovaya Elektronika*.

M.F. Stel'makh was born on 21 December 1918 in the Donetsk region into the family of a blacksmith. In 1935 – 1941 he studied at the Physics Department of the Kharkov State University and his mentors were L.D. Landau, I.M. Lifshitz, and S.D. Gvozdover. As a postgraduate, he volunteered to the front. He was seriously wounded and then released from active service. From 1946 he worked in scientific-research institutes (Artillery Instrumentation Scientific-Research Institute No. 5, Central Scientific-Research Institute No. 108, 'Polyus' Scientific-Research Institute).

Working in the field of microwaves, M.F. Stel'makh and his colleagues constructed a travelling-wave tube (TWT) with a low noise factor, which made it possible to increase considerably the radar range. He also developed TWTs for microwave repeaters used in trunk communication lines and anti-aircraft defence and invented a new type of the TWT.

The high scientific erudition and major experimental skills enabled M.F. Stel'makh to realise, at the dawn of laser technology, how wide is the range of potential laser applications. On the initiative of M.F. Stel'makh and his colleagues, which was supported by the Ministry of Electronics Manufacturing Industry, the Soviet government decided in 1962 to establish a specialised quantum electronics institute (now known as the 'Polyus' Scientific-Research Institute) with the task of developing quantum-electronic devices and systems and to search for promising laser applications.

M.F. Stel'makh devoted over 30 years of his life to quantum electronics and his 'Polyus' Institute. Over a short period he organised a highly qualified team, which started research and development of lasers and of systems based on them. In 2001 the 'Polyus' Scientific-Research Institute was named after Mitrofan Fedorovich Stel'makh. On the one hand, this is well-deserved memory of his contribution to the development of laser technologies of our country and on the other hand, – the obligation of the institute staff to continue appropriately the research and traditions laid by him.

Under the leadership of M.F. Stel'makh, the following directions of quantum electronics were successfully developing at the 'Polyus' Scientific-Research Institute: semiconductor lasers for communication systems, for data storage and retrieval; solid-state lasers for laser technologies, for radar applications, range finding, and medicine (including growth of necessary crystals); laser gyroscopes; technological laser instrumentation; laser medicine. The developments of the Institute research workers were awarded with two Lenin Prizes, many State Prizes, prizes of the Young Communist League and in recent years with prizes of the Russian Government. Under new complicated economic conditions, the Institute is highly effective and called-for, which is undoubtedly due to its founder and organiser M.F. Stel'makh, who laid down stable foundations of its future development.

M.F. Stel'makh constantly gave much attention to training highly qualified scientists and engineers, which was done in close cooperation with higher educational establishments such as the Moscow State University, Moscow Institute of Physics and Technology, Moscow Institute of Electronic Engineering, Moscow Institute of Radio Engineering, Electronics and Automation, etc. He felt it was important to extend his own personal scientific and technical horizons and to improve the qualifications of his colleagues. The sphere of his constant interest included postgraduates at the Moscow Institute of Physics and Technology and the 'Polyus' Institute, his chair of quantum electronics at the Moscow Institute of Physics and Technology, his participation in the work of the Scientific Technical Council at this Institute and in several other scientific councils, the work on the University Coordination Council on Quantum Electronics, participation in the All-Union and International conferences on quantum electronics, publishing of the journal 'Lazernaya Tekhnika i Optoelektronika', which he headed, and work in the Editorial Council of 'Kvantovaya Elektronika', where for many years he was an Associate Editor. M.F. Stel'makh paid much attention to scientific links with the Academy of Sciences, higher educational establishments, leading organizations in defence, and the Laser Association of the USSR in which he chaired the Laser Medicine Committee.

In the last 10 years of his life, M.F. Stel'makh headed the Physical Research Centre at the 'Polyus' Scientific-Industrial Enterprise as well as supervised works on applications of lasers in medicine, particularly in cardiology and vascular surgery.

M.F. Stel'makh was awarded orders and medals by the Soviet Union for his feat of arms and for his work, he was a laureate of the USSR State Prize. His achievements in developing microwaves and quantum electronics are well known to the scientific and engineering communities in Russia, the Commonwealth of Independent States, and abroad.

The name of Mitrofan Fedorovich Stel'makh, major scientist and organiser of science and industry, will always remain a part of the history of the development of microwave technology and quantum electronics in our country and worldwide.

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