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SPECIAL ISSUE DEVOTED TO THE 80TH BIRTHDAY OF S.A. AKHMANOV

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Sergei Aleksandrovich Akhmanov

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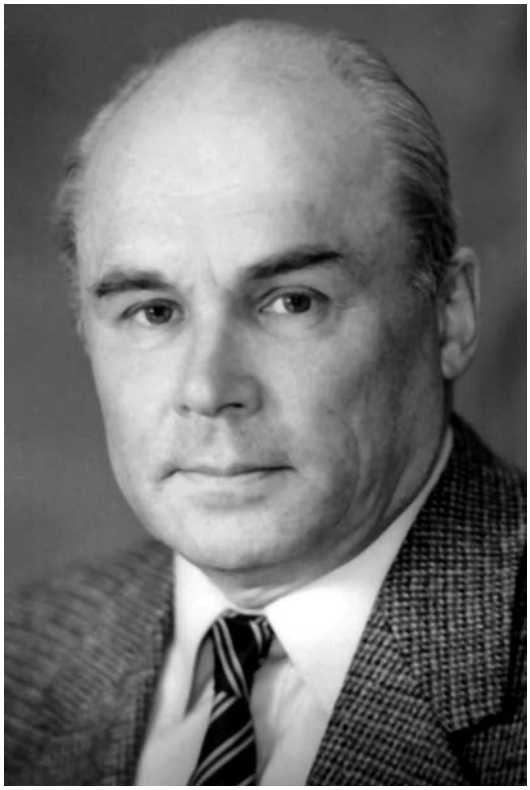
On 14 July 2009 was the 80th anniversary of Sergei Aleksandrovich Akhmanov's birthday. A world-famous scientist, an excellent teacher inseparably associated with the Lomonosov Moscow State University, and simply a man of indefatigable industry, he has left a rich and various legacy.

The scientific legacy of S.A. Akhmanov includes fundamental results in the theory of electromagnetic waves in nonlinear dispersion media forming the basis of nonlinear optics, the development of efficient nonlinear-optical frequency converters, including legendary optical parametric oscillators and amplifiers, pioneering studies of nonstationary and fluctuation phenomena in nonlinear interactions of light waves and basic works on statistical nonlinear optics. Sergei Aleksandrovich also supervised the development of the new methods of coherent nonlinear spectroscopy and laser diagnostics of matter and pioneering experimental investigations on the physics of superstrong light fields. The birth of nonlinear polarisation optics and the first studies of higher-order nonlinear processes are also related to the name of S.A. Akhmanov. S.A. Akhmanov and R.V. Khokhlov were awarded the Lenin and Lomonosov Prizes for the development of nonlinear optics.

The literature legacy of S.A. Akhmanov is very important. Together with R.V. Khokhlov, he wrote a monograph 'Problems of Nonlinear Optics' (1964), which was the first book in the world on nonlinear interactions of light waves and was a desk book for researchers and a handbook for postgraduates and students. The destiny of other books of Sergei Aleksandrovich such as 'Methods of Nonlinear Optics and Light-Scattering Spectroscopy', 'Introduction to Statistical Radiophysics and Optics', 'Optics of Femtosecond Laser Pulses', and, finally, 'Physical Optics' – an original textbook for universities, was also happy. Unfortunately, the book 'Nonlinear Optics' by S.A. Akhmanov and R.V. Khokhlov, which was announced by the Nauka publisher in 1974, was not published. The reason was that both the authors were extremely occupied: Rem Victorovich was already at that time the rector of the Lomonosov Moscow State University, while Sergei Aleksandrovich just became the head of the Chair of General Physics at the Department of Mechanics and Mathematics at the MSU.



S.A. Akhmanov.

A dedicated researcher and outstanding teacher, a real intellectual, a university professor in the highest sense of this notion, S.A. Akhmanov made a great contribution to the teaching and education of high-quality researchers. Having the broadest scientific erudition and a talent for explaining briefly and simply complicated scientific problems, he could carry away listeners by his ideas. The bright lectures of professor S.A. Akhmanov, which were unusual in their content and emotionally coloured, captured students, carrying away them to Big Science. Many of his diciples have become known scientists and are now performing successful investigations at various scientific centres in the world.

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During a seminar at the Chair.

S.A. Akhmanov and R.V. Khokhlov before a football match.

The deep sense of a responsibility, the resoluteness, the readiness to 'take a responsibility' – all these human qualities inherent in S.A. Akhmanov played a decisive role in the solution of a number of important and complicated problems. Thus, after the sudden demise of R.V. Khokhlov in 1977, Sergei Aleksandrovich, who was the head of the Chair of General Physics at the Department of Mechanics and Mathematics, also became the head of the Chair of Nonlinear Processes founded by Khokhlov in 1965. During a year, he headed simultaneously the two large chairs at the Department of Physics, which allowed their optimal reorganisation, by retaining the scientific legacy of Rem Victorovich and the high intellectual potential of the collective.

The same personal features of S.A. Akhmanov also played a decisive role in the construction of the well-known Nonlinear Optics Building in the campus of Moscow State University. Owing to the efforts of R.V. Khokhlov, the construction of this building was planned by the Government of our country. However, to construct the building in reality, the organisation talent of Sergei Aleksandrovich and his resolution and bravery to take a full responsibility for the building construction were required.

In 1978 S.A. Akhmanov created and headed a new Chair of General Physics and Wave Processes. It seems that at that time this chair was the only one in the higher educational system of our country, its name combining the educational and research aspects of the chair. S.A. Akhmanov created a universal group of scientists capable of solving pedagogical and scientific problems on a grand scale. Here, he managed to realise not only new scientific projects but also a number of pedagogical and organisation initiatives. Thus, the students of the Chair were presented with a possibility to choose special courses in accordance with their scientific interests. Now the practice of choosing 'special courses' has become standard at the Department of Physics as a whole. A special Laser Equipment Division was created at the Chair for the conversion training of researchers, which was very popular among scientists from many scientific and industrial centres. In 1989 S.A. Akhmanov initiated the creation of the International Laser Centre (ILC) at the MSU – the unique division of the University in which many educational and scientific and technical problems were solved. Schools for young scientists, which were first organised by S.A. Akhmanov, are still being held on the premises of the ILS at present.

Sergei Aleksandrovich worked hard as the chair of the Coordination Council on the Lasers Program of the State Committee on the People Education of the USSR and the deputy chair of the Scientific Council of the Academy of Sciences of the USSR on Coherent and Nonlinear Optics problem, and in the program committees of many conferences. Beginning from 1978 and till the end of his life, S.A. Akhmanov was a real leader of traditional International Conferences on Coherent and Nonlinear Optics (KiNO and ICONO). The high scientific level of these conferences and friendly and businesslike atmosphere, which were achieved to a great extent owing to the authority and efforts of Sergei Aleksandrovich, are still retained. The program of the 14th ICONO Conference (1991) also was completely formed by Sergei Aleksandrovich, but the conference itself was held without him. The chair and the ILC, MSU created by S.A. Akhmanov continue to organise ICONO Conferences till present, as well as the International Conference on Laser Applications in Life Sciences (LALS), which was first organised by him in 1986.

This issue of Quantum Electronics is devoted to the memory of Sergei Aleksandrovich Akhmanov and contains the papers of his disciples and team-mates, which reflect to some extent the modernity of the world he discovered to them.