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Laser physics and nonlinear optics at the Moscow State University

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This issue of Quantum Electronics is devoted to a prominent event – the 250th anniversary of the foundation of the M.V. Lomonosov Moscow State University, the oldest and the main university of Russia, whose role in the initiation and development of virtually all the directions in the native and world science cannot be overestimated.

The Moscow State University is one of the first scientific centres of our country where quantum electronics was initiated in the second half of the 1950s. It is researchers at the Moscow State University together with their colleagues at the P.N. Lebedev Physics Institute, USSR Academy of Sciences that created in 1958 the first in our country quantum paramagnetic amplifier. In 1965, scientists at the MSU developed the first optical parametric oscillator, and obtained for the first time tunable picosecond pulses with the help of this oscillator in 1968. The priority scientific results obtained by researchers at the MSU are quite numerous but it seems that there is no need to list all of them here.

The development of quantum electronics, laser physics, nonlinear optics, physics of superstrong light fields, nonlinear spectroscopy, laser biology and medicine, as well as the development of virtually all their applications in our country is inextricably connected with the Moscow University.

At present, extensive studies in the field of laser physics and quantum electronics are being performed at the Department of Physics, MSU (chairs of general physics and wave processes, quantum radiophysics, optics and spectroscopy, physics of oscillations, radiophysics, general physics and molecular electronics, and general physics), at D.V. Skobel'tsyn Institute of Nuclear Physics (departments of physical problems of quantum electronics, microelectronics, electromagnetic processes and interaction of atomic nuclei), at the International Teaching and Research Laser Center, MSU, and at some other departments of the Moscow University. However, the matter is not only that many important scientific results were obtained namely in the MSU. It is also extremely significant that the Moscow State University was, is, and always will be *alma mater* of highly qualified scientific and pedagogical personnel.

The graduates of the MSU not only develop extensively and successfully all the scientific fields mentioned above but also educate worthy successors by working at the Moscow University, institutes of the Russian Academy of Sciences, specialised institutes, and abroad. They have not only been awarded the most prestigious native and foreign scientific rewards and prizes but have also become the founders of many well-known scientific schools both in Russia and abroad.

This special anniversary issue of Quantum Electronics presents original papers prepared by researchers, postgraduates and students at various departments of the Moscow State University. The reader can see that the spectrum of scientific fields presented in the issue is quite comprehensive and diversified. These are original papers in sections 'Active media and lasers', 'Interaction laser radiation with matter', 'Laser plasma', 'Nonlinear optical phenomena', 'Optical solitons', 'Quantum optics and quantum calculations', 'Laser applications and other topics in quantum electronics', including the problems of coherent image processing, fabrication of wave-front sensors, laser diagnostics, nonlinear spectroscopy, etc.

Not all the papers prepared for the University anniversary are contained in the January issue of Quantum Electronics. Some papers will be published in a special section of the February issue of the journal.

The editorial board of Quantum Electronics kindly suggested that we would compile the anniversary issue. Thus, we present with pleasure to the readers of Quantum Electronics a selection of original papers illustrating a variety of modern scientific studies performed by researchers at the M.V. Lomonosov Moscow State University in the fields of quantum electronics, laser physics, physics of superstrong light fields, nonlinear optics, laser spectroscopy, laser biology, etc.

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