

ISAN

Institute for Spectroscopy of the Russian Academy of Sciences

ISAN is a legal successor of the Institute of Spectroscopy of the USSR Academy of Sciences, founded in 1968. Glory and worldwide fame were brought to the Institute by S. Mandelstam (theory of spectra of highly ionized atoms, analytical spectroscopy), V. Letokhov (pioneering works on high-resolution spectroscopy, time and frequency standards, laser photochemistry and selective multiphoton excitation of molecules, laser isotope separation, laser cooling of atoms, optical lattices, atom optics and nanoplasmonics), R. Personov (hole burning in spectra of molecules, spectroscopy of single molecules), V. Agranovich (theory of excitons, polaritons, nonlinear optical properties of organic semiconductor materials and theory of hybrid nanostructures), and others.

Main research areas:

- complex basic research of spectra of atoms, ions with high ionization multiplicity, plasma, molecules, clusters, liquids, crystals and films, nanostructures and metamaterials, surface of solids, biological objects, including laser spectroscopy with the active influence of light on the matter and analytical spectroscopy;

- development of new methods of traditional and laser spectroscopy with the ultimate spectral, temporal and spatial resolution and sensitivity, studying matter at extremely low and high temperatures, magnetic fields and static pressures, spectral and kinetic measurements of ultrafast processes and their characterization, research of highly non-equilibrium states of matter;

- development of unique photonics devices, spectral instruments, analytical instruments, recording systems, methodologies and measurement metrics both for research and various applications;

- training of highly skilled research personnel.

Recent developments:

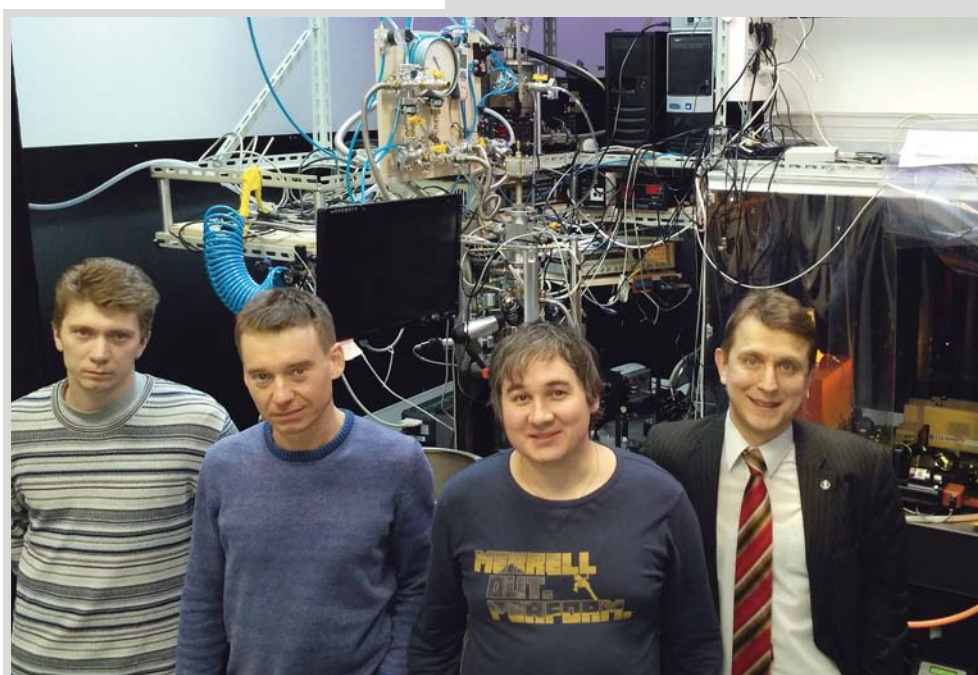
- development of fundamental and applied aspects of atom and nano-optics: controlling beams of neutral atoms; laser cooling of atomic beams; nanofabrication of array elements for the next generation of microelectronics; nanolocalized light sources; formation with atomic precision of atomic and molecular nanostructures with dimensions of about 10 nm, forming a bridge between the classical and quantum world, on the basis of their self-organization;

- development and implementation of the methods for the detailed diagnostics of modern functional materials with the help of a broadband high-resolution optical spectroscopy in close connection with the improvement of manufacturing technology of these materials and creation of novel functional materials;



*Профессоры В. Балыкин и
В. Летохов на семинаре в Институте
спектроскопии РАН*

*Prof. V. Balykin and Prof. V. Letokhov
at the seminar of the Institute for
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