Alexander Alexandrovich Kaplyansky, on his 95th birthday

14 December 2025 — 95th anniversary of the birth of the editor-in-chief of the journal „Solid State Physics“ Academician of the Russian Academy of Sciences Alexander Alexandrovich Kaplyansky

A.A. Kaplyansky is an internationally recognized scientist in the field of solid state physics and spectroscopy of dielectrics and semiconductors, the founder of optical piezospectroscopy of solids.

In addition to a deep understanding of scientific problems, the originality of his thinking, and the rich intuition of a born experimenter, A.A. Kaplyansky had a unique spatial representation that always allowed him to quickly evaluate the picture of electronic and vibrational phenomena in crystals from the point of view of their symmetry.

A.A. Kaplyansky began his scientific career under the guidance of Corresponding Member of the USSR Academy of Sciences E.F. Gross began by investigating the nature of linear spectra caused by exciton excitation in crystals. A.A. Kaplyansky was awarded the Lenin Prize as part of a team of authors for his studies of excitons in semiconductors in 1966.

A.A. Kaplyansky was the first to discover and study new phenomena in optical spectroscopy: latent anisotropy of impurity centers and reversible splitting of spectral lines of impurity centers in crystals during their elastic uniaxial deformation („Kaplansky method“ or „Kaplansky splitting“). In 1975, Kaplyansky and his co-authors were awarded the USSR State Prize for the creation of new methods for studying impurity centers and defects in crystals.

Alexander Alexandrovich has made a recognized contribution to the study of the fundamental properties of acoustic phonons in the terahertz range, in which traditional ultrasonic methods no longer work. In a multi-year cycle of work by A.A. Kaplyansky and his collaborators, the modes of phonon propagation, their scattering on lattice defects and on the surface, interaction with electronic levels of impurities and excitons, and anharmonic interactions have been studied.

Together with his students, A.A. Kaplyansky discovered a new photoelectric phenomenon in impurity dielectrics: the spontaneous formation of stable domains of a strong electric field in ruby crystals under the influence of light. This study marked the beginning of a fundamental cycle of research on photovoltaic phenomena in impurity dielectrics.

Kaplyansky paid considerable attention to the study of the properties of new optical materials, such as dielectric media with spatially periodic refractive index modulation (photonic crystals). A.A. Kaplyansky and his collaborators for the first time studied synthetic opal as a photonic crystal — now one of the key materials in photonics. Another relevant area was the study of nanoobjects based on dielectrics, in which a number of important effects common to nanoparticles were optically observed, including dimensional quantization of acoustic vibrations of nanocrystals (Lamb modes).

Alexander Alexandrovich has been the head of the Laboratory of Solid State Spectroscopy (Optics) at the Ioffe Institute of Physics and Technology for more than forty years, paying great attention to the training of scientific personnel. He educated a whole galaxy of talented students, and for a long time led the branch of the Department of Solid State Physics at the Faculty of Physics of St. Petersburg State University.

A.A. Kaplyansky was the editor-in-chief of the journal „Solid State Physics“ and a member of the editorial board of the journal „Successes of Physical Sciences“. For many years he was a member of the editorial boards of „Journal of Luminescence“ and „Comments on Condensed Matter Physics“, and on the organizing committees of international conferences on luminescence, phonon physics, defects in dielectric materials, dynamic processes in the excited state of solids.

In 1987 A.A. Kaplyansky was elected a corresponding member of the USSR Academy of Sciences, and in 2003 a full member of the Russian Academy of Sciences. He was awarded the Order of Honor in 1999 and the Order of Friendship in 2010, the Humboldt Prize (1997), the Ioffe Prize of the Russian Academy of Sciences (2008), and the D.S. Rozhdestvensky Prize (2013), Lebedev Gold Medal (2021).

Friends and colleagues knew A.A. Kaplyansky not only as a prominent scientist, but also as a versatile and charming man with an inimitable sense of humor. His activities extended far beyond crystal spectroscopy and included a wide range of interests (travel, photography, poetry, and various types of water sports).

Students, colleagues, friends