

# Tenth Anniversary of the Foundation of the Institute of Physical Optics

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The Institute of Physical Optics was founded on the decree of The Cabinet of Ministers of Ukraine of July 7 and a respective decree of the Ministry of Education of Ukraine from September 18 1992 and is subordinated directly to the Ministry of Education and Sciences of Ukraine. From the moment of its foundation the principle directions of its scientific activity were parametrical crystallooptics and optics of phase transitions, gradient optical effects and optics of incommensurate structures, methods of optical measurements, optical principles of storage and communication. During ten years of its activity the subjects of study were expanded to biooptics, optical tomography, optics of circular polarized waves, optics and acoustics of phase transitions at high hydrostatic pressure, optics of liquid crystals, optical spectroscopy (Raman scattering, absorption spectroscopy), technology of crystal growth (including biocrystals), magnetooptics, nonlinear and parametrical optics with accounting of spatial dispersion.

The most interesting scientific results of the Institute is the theoretical description and founding of gradient effects of parametrical crystallooptics; a complex study of the crystals with incommensurate structure (optical and acoustical) and their real structure by the methods of Raman scattering and AFM; founding and study of the new effects of the optics of circular waves (acoustogyration diffraction of light, two beam circular refraction); study of high order parametrical effects; founding of the “forbidden” domain structure in ferroelastics, of spatial points on phase diagrams (isolated point, “infinity” distant point); the study of absorption spectrums of the hemoglobin of patients with mental affections; computer simulation of the lattice dynamic of the incommensurate crystals; growth of borate crystals with different isotope substitution, solid solutions of langbeinite, protein crystals, et cetera.

An automated imaging polarimeter for the reconstruction of the strain field distribution, an automated optical microscope for study of dynamic processes, an automated dilatometer with the sensitivity of displacement measurements 2nm, the creation of a magnetooptical facility for study high magnetic fields are original developments of the Institute.

The results of scientific investigations were published in more than 700 scientific papers, abstracts, patents and books. The Institute conducted the International Meeting on parametrical crystallooptics (Paraopt-2001) and 1-st Ukrainian Workshop on ferroelectricity (1999). A Ukrainian Journal of Physical Optics was founded and is being published by the Institute. During ten years 12 co-workers obtained a Ph.D. degree and 3 – a Habilitation degree on the speciality “optics, laser physics”. Many of them prolonged their postdoctoral education in the foremost Universities around the world - Waseda University, Vienna University, Paris University, Saarbrucken University, et cetera.

For 10 years the Institute has been the leading center of three state scientific programs of the Ministry of Education and Sciences of Ukraine.