



## V. Lashkaryov Institute of Semiconductor Physics (ISP) in Kyiv, Ukraine

Technical areas: **semiconductor materials and devices science; semiconductor devices for sensing, high-temperature and microwave electronics, optoelectronics, infrared photoelectronics and solar power engineering.**

### General Information

The Institute of Semiconductor Physics (ISP) of the National Academy of Sciences of Ukraine (NASU) was established in 1960 on the basis of several departments and laboratories of the Institute of Physics of the NASU as a leading research center specializing in semiconductor materials and devices science. ISP consists of 8 divisions, each containing of 3 to 5 departments. Total staff is nearly 730 persons, including about 390 scientists with Dr. Sc. and Cand. Sc. (Ph.D) degrees.

There is a self-financing Special Design-and-Technology Bureau (SKTB) with a Pilot Production Line at the Institute. There also are the following subdivisions develop their activity at ISP:- (i) the center “Diagnostics of Semiconductor Materials, Structures and Applied Systems”; (ii) the center “Cryogenic Sensors and Thermometry”; (iii) the testing laboratory for holographic safety elements; (iv) the central testing laboratory for semiconductor materials science; (v) the center for testing the photoconverters and photoelectric batteries. The Technology Park “Semiconductor Technologies and Materials, Optoelectronics and Sensor Technique” was also created on the premises of ISP in 1999.

ISP’s research and development results include new methods of optical and electrical characterization and certification of semiconductor materials and devices, and a variety of sensors for measurements of temperature, magnetic field and pressure, chemical and biological sensors, microwave devices, high-resolution photo resistors, high-efficiency silicon-based solar elements and optoelectronic devices, including liquid-crystal, electroluminescence displays and indicators.

### Institute’s focus

ISP is engaged in fundamental and applied research in the following areas:

- semiconductor materials science;
- interaction between electromagnetic radiation and matter;
- semiconductor optics, spectroscopy and photonics;
- physics of low-dimensional structures, micro- and nanoelectronics;
- optoelectronics and solar energetics;
- technologies and materials for sensors
- infrared engineering and microwave electronics.

### Valuable technology offerings

A broad-ranging of technologies and devices for transfer and commercialization, offered by ISP, include various physical, chemical and biological sensors, and diagnostic systems, microwave devices, solar elements, optoelectronic devices, electroluminescence displays, low-cost self-assembling technology for nano-electro-mechanical systems (NEMS), ultra-fast light-emission sources, etc.

### Scientific cooperation and technology transfer

The Institute is quite active in international scientific cooperation and grant competitions. A number of projects were executed in the framework of STCU, NATO, EU INTAS and INCO-COPERNICUS programs, and Network of Excellence of the 6<sup>th</sup> Framework Program. Continuing those traditions, ISP is also involved in several international projects that are now funding by EU 7th Framework Program. As cooperative, educational and training activities of ISP, noteworthy is NIS-NEST project, which aims to contribute towards closer and mutually beneficial collaboration between the EU and the Eastern European partner countries, in the field of novel exploratory research within the 7<sup>th</sup> Framework Program for Research and Technological Development of EU.

ISP has established a strong collaboration with a number of university, research centers and industries in Ukraine and abroad. Some of them are the SRI “ORION” and SRI “MICRODEVICES” both in Kyiv, University of Florida and Arkansas University (USA), Southampton and Nottingham Universities (UK), Institute of Solid State Physics (Sofia, Bulgaria), Institute of Microelectronics and Nanotechnology (France), Institute for Research in Metrology (Turin, Italy), Institute of Low Temperature and Structure Research (Wroclaw, Poland), Ioffe Physico-Technical Institute (Russia), Institute for Electrotechnique (Bratislava, Slovakia), Institute for Technical Physics and Materials (Budapest, Hungary), Technical University (Darmstadt, Germany).

ISP in cooperation with Ukrainian small trade and R&D enterprises supplied some materials and devices to the business customers and universities in the USA, UK, France, Italy, Switzerland, Germany, China, Poland and Russia. Some of them are the thin-film optical germanium and cryogenic temperature sensors.

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