

**BUSINESS DEVELOPMENT
THROUGH CLUSTERS
COLLABORATION**

WARSAW, 13-15.09.2009

**Monday, September 14 2009**

**9:45 - 10:45 Welcome addresses and opening of the
Business Development Through Clusters Collaboration**

10:45 - 11:15 Coffee break

Plenary session

11:15 - 13:15 Presentations of OPTOKLASTER's Members

13:15 - 14:15 Lunch

14:15 - 15:15 Presentations of OPTICSVALLEY's Members

15:20 - 17:20 Individual 1/1 meeting between Polish and French companies

**19:00 Welcome Reception, Conclusion of the cooperation opportunity
The Welcome Reception will be at 19:00
in the Novotel Airport Hotel (1 Sierpnia 1 street)**

Tuesday, September 15 2009

8:15 - 17:00 Visit of companies and institute OPTOKLASTER's Members

Lunch



OPTOKLASTER Members :

AMBER Ltd.

AWAT Co. Ltd.

Research and Development Centre of Research and Didactic Equipment

COBRABID Ltd.

CTL - Centre of Laser Technology - LASERINSTRUMENTS Ltd.

Electric System & Laser Technology

Eurotek International Ltd.

POLISH FEDERATION OF ENGINEERING ASSOCIATIONS - NOT
INFRAMET

Institute of Physics PAS

The Institute of Optoelectronics MUT

Institute of Applied Optics

Institute of Electronic Materials Technology

Corporation East

MC LASER Ltd.

MIKROEL Ltd.

Optolab Ltd.

Przemysłowe Centrum Optyki S. A.

SEMICON

SENSOMED

SENSOR-NET Ltd.

SOLARIS LASER

SOLARIS OPTICS

Top-Gan Ltd.

VIGO system S. A.

WAMED, The Producer of Medical and Laboratory Equipment



OPTOKLASTER - Mazovian Photonic Technology Cluster was founded in October 2008. Optoklaster gathers manufacturing companies and research institutions agglomerated in Warsaw and its neighborhood (Mazowieckie voivodship). Optoklaster's headquarters are located in the Institute of Applied Optics, which acts as the coordinator of the Cluster. Companies belonging to the Optoklaster are manufacturing optical and optoelectronic elements, semiconductor lasers, laser apparatus for medical sector, as well as laser equipment for industry. In turn, the research institutes support them with designing, manufacturing and researching new sources of laser radiation, detectors and new materials for the use in optoelectronics. The engineering and scientific staff has expertise in: the scope of photonics including optics, solid-state physics, semiconductor technologies, infrared technology, optical and laser metrology, security systems and electronics. Lately, Optoklaster has signed the Preliminary Agreement of cooperation with the French cluster OPTICSVALLEY - Network in Optics Electronics and Software Engineering in the Paris Region.

OPTOKLASTER MAKES EFFORTS TO:

- increase competitiveness and innovativeness of Mazovia region through effective transfer of hi-tech technologies from research centers to companies,
- concentrate scientific research and coordinate the work of companies, agencies, associations and local authorities in the area of photonic technologies,
- facilitate the access to finance sources,
- restrict the risk of innovatory companies' actions,
- attain synergy effect,
- increase the knowledge and skills of Optoklaster's members,
- facilitate co-operation between members and other institutions, including foreign units,
- facilitate informal contacts as well as access to scientific, technological and business information.

OPTOKLASTER IS OPEN FOR CO-OPERATION! TAKE A CHANCE!

The AMBER was created in 1988. At the beginning main activity was concerned with manufacturing of laser biostimulators. AMBER produced 3 types of bio-stimulators, each could be equipped in 1, 2 or 3 independent lasers (laser power from: 1mW up to 60mW and selected wavelength: 635, 850, 950 nm). Laser parameters and energy dose are controlled by microprocessor. AMBER cooperated with Optoelectronic Institute and Institute of Plasma Physics and Laser Microfusion. Also, we cooperate with specialists from different technical fields and we are willing to realise tasks in range of laser technology, electronics (analogue and digital), optoelectronics, optics and precision engineering.

ACTIVITY:

Designing, manufacturing - assembling and delivery electronic, optoelectronic and laser units and systems.

- Nd:YAG, CO₂ laser services,
- Marking machine and laser plotter services
- Laser CO₂ marking and cutting

PURPOSE:

We are looking for companies which we can represent on Polish market and offer authorised service. Also we are looking for producers for whom we could be as subcontractors. We are ready to manufacturing, assembling and testing of units according with delivery documentation or realise a work from design up to prototype and put in motion production.

GENERAL INFORMATION:

In our opinion, AMBER could be very competitive in relation to offered services. We ensure high level of performance and specialists ready work in Poland and abroad. We have experience in laser technology (detection of laser radiation, semiconductors, gas and solid state laser technology), power supply and controls systems, computerisation of measurement and computer programming. We are good partner for companies realised non standard, interdisciplinary works.



Laser accessories



Power meter



Biostimulator LBK



Biostimulator LBK1

AWAT Co. Ltd.

The Design Implementation Enterprise AWAT was established in 1989 by the Military University of Technology (MUT) and its workers in order to develop the commercial side of scientific and technical achievements of MUT. In 1992, AWAT changed its status and started to act as a private firm. In the firm, 20 persons are employed and during a year about 300 persons make technical and scientific-technical works within the frame of the concluded agreements. AWAT performs the tasks that require highly qualified workers and modern solutions. It has flexible organization structure. The teams, often inter-discipline ones, are formed for performance of definite tasks. In result of their activity, new unique products, devices, and systems are made which meet requirements of their users. In AWAT, scientists and specialists are employed who were, or are now, employed in MUT and other scientific organizations, mainly military ones. It ensures reliability and high level of the accomplished works.

Main activities of AWAT concentrate in the following branches

- Electronics
- Optoelectronics
- Information technology
- Environment protection
- Building engineering
- Cars and machines technology
- Aircraft technology
- Materials engineering
- Health protection
- Control-measuring apparatus
- Training and simulators devices

Exemplary services and products

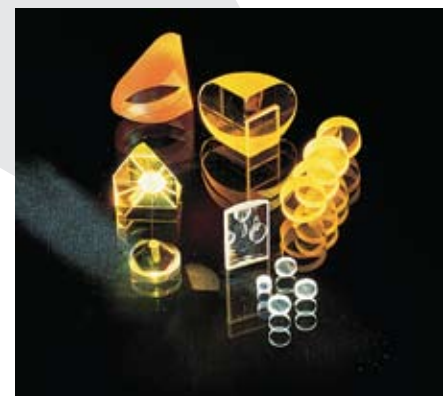
- Drying of buildings with crystalline injection
- Analysers of air pollution analysers of exhaust gases, dust-meters, alcohol-meters
- Design of information technology systems
- Trainings on highly specialized information technology systems
- Design and production of optoelectronic apparatus
- Production of liquid-crystalline mixtures
- Liquid-crystalline indicators
- Neutralisation of industrial wastes (also poisons)
- Technical protection of objects
- Computer artillery recounters
- Diagnostic devices of tank stabilisers
- Diagnostic devices of military optoelectronic systems
- Testing-diagnostic devices of combat vehicles equipment
- Simulators of flying objects
- Energy meters of laser radiation
- Optical filters
- Protection glasses (anti-laser glasses, glasses for computer work, glasses for drivers)
- Certification of laser and thermovision devices
- Analysis of hair for metals content determination



Anti - laser Protective Glasses



Diagnostic - therapeutic set



OPTICAL TECHNOLOGIES
- optical processing (cutting, polishing)
- thin film deposition
- new active media



System for stand-off methane detection



Multispectral pyrometer

RESEARCH AND DEVELOPMENT CENTRE OF RESEARCH AND DIDACTIC EQUIPMENT COBRABID Ltd.

Research and Development Centre of Research and Didactic Equipment "Cobrabid" Ltd. providing researches, implementation and production of apparatuses for chromatography, pressure measurements, diffusion, water activity, rheological quality, optoelectronics, systems to control heat processes of food preservation and other non-electric quantities. The firm also provides certification of classroom furniture and teaching aids. Cobrabid makes computerized information systems for the needs of science, technology, state and territorial autonomy. Center also deals publishing.

COBRABID offer:

- Device for Extract Concentration,
- Dual Range Lamp UV Radiation,
- Detector UV-254nm,
- Refractometry Detector,
- Spectrometry Detector,
- Unit Thermostat HPLC,
- Educational Set for Implementation Physical Trial Computer Aided,
- Educational Optical Set,
- Fiber Optic Demonstration Set,
- Lab Workbench BR-120 and BR 72,
- Automatic Pasteurisation Tinned Food,
- Sterilization Magnitude Measure,
- Diffusion Analyser and Water Activity,
- Unit Analyser Water Activity,
- Multichannel Set Stabilization and Temperature Measure,
- Multiple Feed Filter Paper Dish Operating.

MULTI - CHANNEL SET TO STABILIZE AND MONITOR THE TEMPERATURE OF MICRO SAMPLES

Mobile, modular unit to stabilize and record temperature suitable for different applications, including chosen shapes and sizes of (micro) samples, aimed particularly at physico-chemical and biotechnological laboratories. It enables a quick stable temperature obtaining during the measurement of the prepared to being examined samples, as well as their storing and keeping at the same temperature with the option of continuous registering, archiving and processing the data.



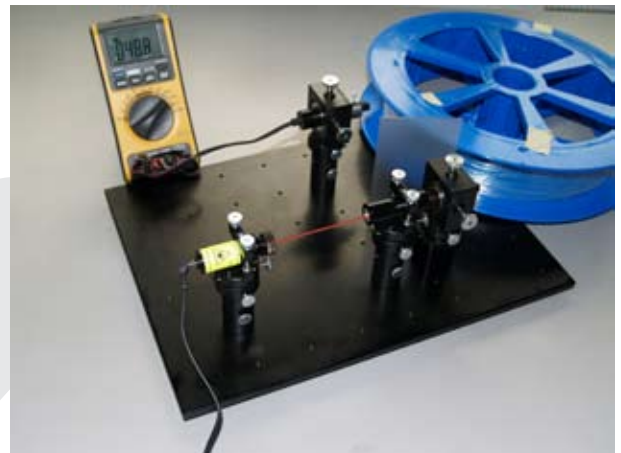
FIBER OPTIC DEMONSTRATION SET

Fiber Optic Demonstration Set to permit for instruct with measurement basic elements of fiber optic technical used in telecommunication and measurement systems. General part for this discipline is measure such kind properties like numerical aperture, damping, light propagation in a single and multimode fiber. Used light sources are 635 and 670 nm which are more comfortable for education, in spite of typical telecommunication sources NJR.



ESO EDUCATIONAL OPTICAL SET

ESO Educational Optical Set is an unique set of educational equipment for wide range demonstration of optical phenomena from high school, colleges up to university degree too. Thanks to using of high quality of optical and fine mechanical elements ESO brings many possibilities to build measurement and simultaneously educational optical devices.



CTL - CENTRE OF LASER TECHNOLOGY - LASERINSTRUMENTS Ltd.

CTL is the leading private Polish company specialising in the field of laser technology. The firm started its activity in October 1991 in Warsaw. The main field of company's activity is research, construction and production of lasers, laser modules, laser and opto-electronic systems for medicine, material processing, measurement technology, education, research and safety.

Our company specialises in execution of orders according to individual customers' requirements. The company conducts also the training courses for: doctors, physiotherapists, engineers, physicists, etc.

We focus on research, development and production of OEM modules, sub-assemblies and accessories for CO₂, YAG and Diode lasers. The CTL's range of products includes 30 own construction of laser devices and technologies for two leading directions of its activity i.e. medicine and industrial technologies. A few CTL's medical lasers already obtained the CE conformance marks with the directives of European Union and next lasers are under the adequate research and compatibility procedures.

As a complement to its own offer CTL actively promotes and distributes laser and optoelectronic components and systems of renowned foreign companies on local markets.

Our company is absolutely committed to superior product quality and continuous improvement when developing our projects. Our personnel constantly improve their qualifications, among others through participation in specialist conferences, branch exhibitions, etc. Our devices are produced in compliance with International Standards for production and safety e.g. according to IEC-825, IEC-601, etc. Our company quality management has been confirmed with ISO 9001 certificate. We have our own R&D Department as well as 1500m² of class A production and testing place.

CTL cooperates with many research, service and production institutions here and abroad. In solving difficult, innovative design and research projects employs leading specialists from Poland or abroad. CTL enjoys esteem within customers and business partners, which has been proven by many awards, and distinctions granted to CTL among others twice GRAND PRIX of the prestigious fairs. CTL company became also the Leader of Enterprise in 1999.

The President of the company Ludwik Pokora (technical physicist, Ph. D., Prof.) is a known authority in laser and optoelectronic technology. He is the author of over 300 publications, 25 patents and two books on applications of lasers. Ludwik Pokora is the member of local and international scientific-technical societies and committees, among others: International Society for Photo-Optical Instrumentation Engineering (SPIE), IEEE Lasers and Electro-Optics Society, World Association for Laser Therapy (WALT) and the member of Parliament of European Medical Laser Association (EMLA). He is the expert in the EU committee for evaluation of research projects

on laser technology and optoelectronics. He is also the Head of Department in High Medical School.

PRODUCTS REVIEW

CTL researches, designs and produces lasers, laser and opto-electronic modules, accessories and subassemblies.

Our main product lines are:

High and low power lasers for medicine:

- 10W, 15W and 25W CO₂ lasers for surgery
- 5W and 10W Nd:YAG lasers for contact microsurgery
- 5W and 10W Er:YAG lasers for dentistry and dermatology
- red and infrared diode lasers with power from 100mW up to 500mW for LLLT
- 3W, 5W, 15W and 30W high power diode lasers for aesthetic medicine and contact microsurgery
- 3W and 5W KTP diode pumped lasers for aesthetic medicine and ophthalmology
- 30W and 50W Nd:YAG lasers for precise microwelding in dentistry

Industrial lasers and laser systems for material processing:

- 12W and 25W CO₂ lasers with galvo X-Y scanning heads for non-contact, precise marking of non-metals
- 50W Nd:YAG lasers configured with X-Y-Z plotters or microscope for non-contact, precise welding and drilling of metals

OEM modules, subassemblies and accessories:

- 5-, 6- and 7-mirror joint articulated arms
- power supplies and controllers for DC and RF excited CO₂, diode and solid state lasers
- Er:YAG and Nd:YAG laser heads and pump chambers
- DC excited CO₂ laser heads and tubes
- laser safety spectacles and goggles

CTL also promotes and distributes laser systems, components and accessories of many worldwide companies in Poland and some countries in Central and Eastern Europe. We represent first of all such companies as:

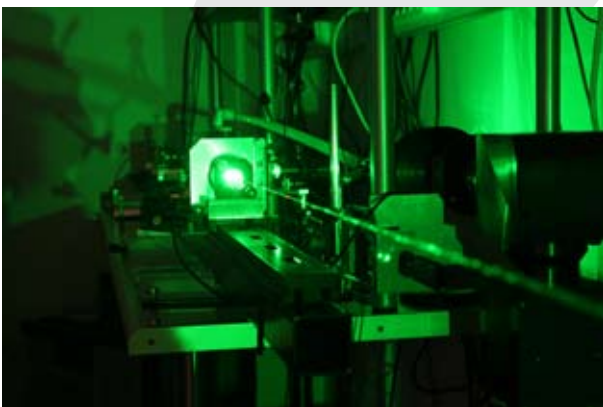
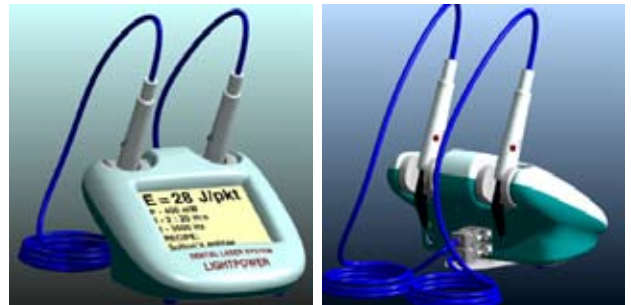
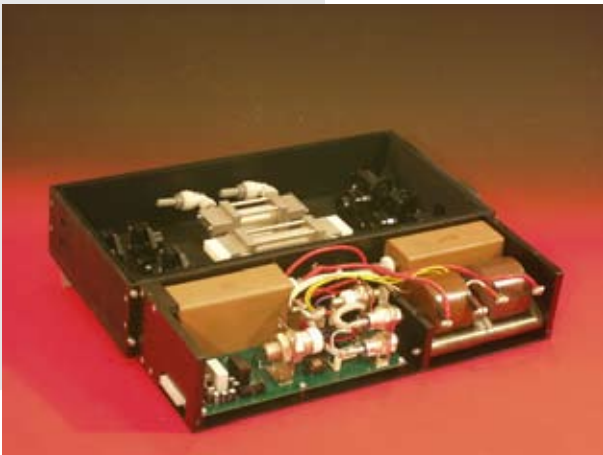
- High Power Devices - red and IR laser diodes
- Sanyo - red and IR laser diodes
- ATC-Semiconductor Devices - infrared laser diodes & custom made modules
- Analog Modules - laser electronics
- Kigre - special glass components and laser transmitters
- Laser Physics - ion lasers
- Laser Tools and Technics - CO₂ laser marking and cutting systems
- SEI - Nd:YAG and CO₂ laser marking and cutting systems
- Ferranti Photonics - CO₂ laser cutting systems
- ACI - Nd:YAG laser marking systems
- Quanta System - medical lasers
- ClearLight - light therapy systems
- Lumatec - infrared photocoagulators
- Ophir - power and energy meters
- Duma Optronics - innovative optronics instrumentation
- Clauss - telecom fiber tools
- Kvant - laser and optical educational kits



THE ELECTRIC SYSTEM & LASER TECHNOLOGY

The Electric System & Laser Technology Company was established in the year 1990, in the city of Katowice. Following the original assumptions, the company's performance was to include industrial automation and laser technology, together with servicing the control - measuring equipment, which was to be the main source of income in the initial period of the company's activity. Unfortunately, the economic transformations in the beginning of the 90 - ties had resulted in worsening of the financial condition of state - owned companies which were supposed to be main customers of the company in the field of servicing, and, as a consequence, the activities in laser technology came into prominence. In the mid - nineties, the majority of work was focused in the electronic circuits designed to the lasers pumped with discharge lamps, as well as in diode and gas lasers. In this period of time, the first power supply and control systems for solid state lasers came into being. Our customers were such companies as Central Mining Institute, Katowice, Industrial Electronics Institute, Warsaw; Institute of Applied Optics, Warsaw; Institute of Electronics Materials Technology, Warsaw, Technical University of Rzeszów and others.

In the latter part of the 90 - ties, owing to the rapidly developing sales market in medicine, we had increased the rate of work focused around the lasers with this type of application. At that time our first developments in medical lasers had appeared, designed for the MC Laser company which engaged with the lot production of this equipment. Among the lasers of greater importance, one can count the multi - functional combined laser for dental applications, CO2 laser intended for making bloodless surgical interventions, neodymium and ruby lasers for removal of excessive hair. At those times, there had also appeared a series of bio-stimulation lasers designed for the MC Laser and having the general medical appropriation. In the year 2000 we had included in our offer a new series of OEM subassemblies for solid - state lasers. These comprise, among the others, power supplies controllers, optical and entire lasers in the OEM version. In the year 2001, we presented first time our offer in Munich, at the largest laser technology exhibition on the World, acquiring this way new sales markets. Our most important objective is to get the status of the one of leading European companies in the field of solid state laser OEM devices. If you have any needs concerning laser technology please don't hesitate and contact us for detailed custom quotation.



EUROTEK INTERNATIONAL Ltd.

Eurotek International was founded in 1991. Currently employs 7 people including 2 PhD's, 3 engineers (electronic and laser science). Annual turnover exceeds one mln euro. Located in the premises of the Institute of Physics PAS in Warsaw.

Major fields of activity Electrooptical systems sales and service. Eurotek represents several major manufacturers including Coherent Inc., Quantel Group, Thorlabs Inc., Photon Technology International, Dantec Dynamics AS, APE. Eurotek gained experience in setting up the complex laser and measurement systems in academic research. Key installations include system for ultrafast and high resolution spectroscopy, laser material deposition, material processing etc. We provide service to virtually all system we sell. Laser types we cover are:

- Water-cooled ion laser
- CO2 laser - slab / waveguide, RF excited
- Solid state - CW and pulsed
- Tunable dye, Ti:S, parametric oscillators (OPO)
- Ultrafast Ti:S oscillators and OPOs
- Ultrafast amplifiers and OPAs
- Laser powers supplies

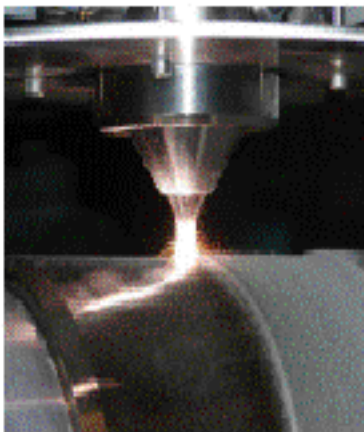
Measurement systems Eurotek offers expertise in some measurement fields:

- Laser beam characterization
- Laser based and conventional source spectrofluorometry including time-resolved spectroscopy methods
- PLD and related methods
- Laser Doppler and hot wire anemometry
- Flow visualisation and particle imaging
- Laser induced fluorescence analytical methods

Unique equipment manufacturing Eurotek has a history of participation in building original equipment with various degree of involment, summarized in the table below:

Pos.	Description	Collaboration ¹⁾	Year	Technology	End User
1	Laser film subtitling	Solaris Laser SA ²⁾	1995	Ar laser 488 nm, acoustooptic modulator	
2	High power , pulsed laser diode with short pulse for photocurrent kinetics		1997	Pulsed laser 500 mW , 900 ns risetime	CEMAT-ITME Warszawa
3	3D laser prototyping and sintering	ESLT Warszawa IWS Drezno Probis Warszawa IMP PAN Gdańsk ³⁾	2002/2006	CO2 laser 250 W laser sintering with metallic powders. Laser stereolithography in IR	IZTW Kraków
4	Optical transducer for tectonic motion detection	Kontrast S.C. Warszawa ²⁾	2003	Outdoors laser/telescope system with high quality beam profile for remote, 1000 m spot projection	PS Gliwice
5	3D laser cutting machine	ESLT Warszawa ²⁾ Markon Tomaszów Maz.	2005	100 W compact CO2 laser. 140 W double cavity laser. High performance articulated arm with 13 elbows for flexible robot based operation	BOWI
6	Polarimetric magnetometer for fast variable magnetic field measurement in electric machines	³⁾	2007	SM laser 1550 nm with full polarization control. sampling polarimeter with 10 ⁸ samples/sec	Int. Elektrotechniki Międzyzlesie
7	Laser device to scare the birds away	Bird Control - Bydgoszcz	2007/2009	Proprietary technology sold to BC	Bird Control - Bydgoszcz
8	High precision laser micromachining system ULM-1	IMP PAN Gdańsk ^{2*)} ESLT Warszawa	2008	Planar 2D stage technology. Proprietary system controller	IMP PAN
9	Laser Direct Imaging system for high density PCBs	IMP PAN Gdańsk ^{2*)}	2008	375 nm laser. Planar 2D stage technology. Proprietary system controller	IMP PAN
10	Confocal fluorescence probe for high pressure gauging	Kontrast SC Warszawa	2009	High resolution micro spectrometer. Proprietary high speed ptical system	Dpt. of Chemistry UJ

- 1) Project partners
 2) Leading Project Partner
 3) Design and assembly by Eurotek Int. using components by Thorlabs Inc.
 *) Plasma and Laser Application Center at IMP PAN Gdansk



POLISH FEDERATION OF ENGINEERING ASSOCIATIONS - NOT

FSNT - NOT is a public non-profit and non-governmental organization with 160 years history; the first Polish Engineering Association founded in 1835 in Paris, those time named the Polish Poly-technical Society.

FSNT - NOT is a federation which affiliates 37 branch Engineering Associations (more than 125.000 individual members altogether). FSNT - NOT is a federation having double network structure: branch and regional ones.

There are 51 Houses of Technology (T JO) all over the country providing their members with modern technology equipment ready for rendering different service.

FSNT - NOT has its permanent headquarters - THE HOUSE OF TECHNOLOGY in Warsaw. FSNT - NOT is a member of 46 international non-governmental organizations, including: FEANI - EUROPEAN FEDERATION OF NATIONAL ENGINEERING ASSOCIATIONS and WFEO WORLD FEDERATION OF ENGINEERING ORGANIZATIONS. On the initiative of the NOT Federation the ACADEMY OF ENGINEERING IN POLAND was established. A weekly Technical Review (in Polish "Przegląd Techniczny") published since 1866, is a press organ of FSNT - NOT.

FSNT - NOT provides complex supporting service for Polish enterprises. The main innovative programs are located in four domains: promotion, training, consultancy and direct support. Additionally, FSNT-NOT supports the development of regional innovation strategies and regional partnerships. Through these various levels of activities, the enterprises are stimulated to actively use social research as a resource in their development. On the other hand, the researchers produce scientific material and publications to increase the general knowledge in the field of work life research and work innovation as well as special applications (good practice).



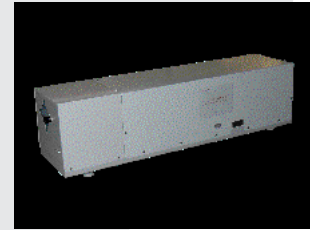
INFRAMET

INFRAMET is a SME (Small and Medium Enterprise) that specializes mostly in three fields:

Equipment for testing electro-optical systems (thermal cameras, night vision devices, TV/LLLTV cameras, laser range finders) and detection modules (IR FPAs, image intensifier tubes, CCD/CMOS sensors), Computer simulators of electro-optical imaging systems, Services in field of testing electro-optical imaging systems.

Landmarks of technical competence:

Blackbodies of 1 mK temperature resolution
Polychromatic light sources of 100000:1 dynamic and 1 mlx resolution
Test stations capable to measure all important parameters of image intensifier tubes
Computer simulators that enable realistic simulation of thermal imagers
Wide range test equipment that enables testing all types of electro-optical imaging systems



Landmarks of commercial competence:

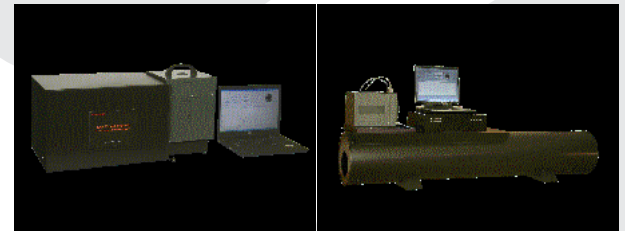
Inframet equipment or test services have been delivered to over 20 countries all over the world (red color),

Exemplary customers of our test equipment:

Thales Angenieux - France, Wuhan Guide Infrared Technology Inc. - China, Hamamatsu Photonics - Japan, Kongsberg Gruppen - Norway, Aselsan - Turkey,

Optix Corp. - Bulgaria, Carl Zeiss Optronik - Germany, Harder Digital - Germany,

Optikos Corp. - USA, Changchun Institute of Optics, Fine Mechanics and Physics -China, FGAN Research Institute for Optronics and Pattern Recognition - Germany, etc.



Commercial offer:

DT systems: for testing thermal imagers at laboratory/depot conditions

LAFT system: for testing thermal imagers at field conditions

NVT systems: for testing night vision devices

TVT systems: for testing TV cameras (CCD/CMOS/CCD/EMCCD)

LT systems: for testing laser range finders

ITS test stations: for testing image intensifier tubes

FPAT test station: for testing IR FPA sensors

ET temperature chambers for testing/calibration of IR FPA modules (thermal engines) and thermal imagers

HTCB Series high temperature cavity blackbodies

TCB Series low temperature area blackbodies

CDT Series off-axis reflective collimators

DAL Series calibrated light sources

Simterm simulator: for simulation of complete thermal imagers

Vircam simulator: for simulation of thermal imagers at design stage

Virttest simulator: for simulation of test process of thermal imagers

Nightmet simulator: for simulation of image intensifier tubes



Second generation of systems for testing thermal imagers, Calibrated polychromatic light sources of ultra-high dynamic, Modular system for testing laser range finders, Module for control of CCD/CMOS chips, System for semi-automatic testing CCD/CMOS sensors, Computer simulator of night vision devices. INFRAMET is interested in cooperation with any university group, company or individual working in field of design, testing, and computer simulation of electro-optical imaging systems. Forms of cooperation: research projects, delivery of our high-tech test equipment; jobs for specialists, training periods, etc. If you are interest in cooperation with INFRAMET please contact us: info@inframet.com.

THE INSTITUTE OF PHYSICS OF THE POLISH ACADEMY OF SCIENCES

THE INSTITUTE OF PHYSICS OF THE POLISH ACADEMY OF SCIENCES was established on 24th September 1953 by a special Government decision. It was rooted in the physics faculties of seven universities: Warsaw University and Warsaw Technical University, Jagiellonian University in Kraków, Adam Mickiewicz University in Poznań, Nicolaus Copernicus University in Toruń, as well as the University and Technical University of Wrocław. The Institute was relying on their research staff, premises and laboratory facilities. The Institute was established as a country-wide scientific institution conducting research in all areas of experimental and theoretical physics, including educational obligations. The first director of the Institute, Prof. Stefan Pieńkowski, and the first chairman of its Scientific Council, Prof. Leopold Infeld, were the most prominent physicists of that time in Poland. Since the establishment of the National Agency for Nuclear Energy in 1955, nuclear physics has ceased to constitute a part of the research program of the Institute. Those units of the Institute which were specifically active in this field (the Departments of Radioactive Isotopes, Elementary Particles, and Nuclear Physics in Krakow) formed the kernel of Nuclear Research Institutes. The fast rate of development of the Institute has led, in the course of years, to the formation of independent research units grown on its basis. In 1975 the Department of Ferromagnetics, Department of Dielectrics, together with the Radiospectroscopy Laboratory created in 1966 in Poznań, became incorporated into the Institute of Molecular Physics of the Polish Academy of Sciences. The Wrocław branch of the Institute became a part of the Institute of Low Temperature and Structural Research, of the Polish Academy of Sciences. The Institute of Physics was also the founder of the Department of Solid State Physics in Zabrze. The industrial, high-tech centers of the Academy of Sciences, such as "UNIPAN" (specializing in scientific electronic instruments) and "WILMER" (humidity meters), as well as the High Pressure Research Center "UNIPRESS", are also rooted in the Institute.

In September 2003 the Institute celebrated its 50th anniversary. On this occasion the achievements of the Institute were recognized by the Academy and State authorities: 28 of our scientific and technical staff were decorated by various state medals. Of course, the close connection to the universities determined the initial research activities of the Institute. In particular the pursued fields encompassed:

Atomic and molecular physics studied originally in the Department of Optics and X-rays of the Institute, as a continuation of the work directed earlier by Prof. Stefan Pieńkowski (the first director of the Institute of Physics) at Warsaw University. Research in this field is still conducted in the Division of Radiation and Spectroscopy. Nowadays, several groups in this Division are dealing with atomic and molecular spectroscopies as tools and methodology of investigating fundamental problems in physics as well as in the interdisciplinary areas from the borders between physics, chemistry and/or biology.

Solid state physics has been developed in two main areas:

- physics of semiconductors - research in this field has been initiated at Warsaw University already in 1947 by Prof. Leonard Sosnowski (director of the Institute between 1954-66) and it remained always one of the main activities of the Institute. One of the most outstanding achievements of the Institute in this field were related to the studies of semimagnetic semiconductors (SMS), known alternatively as diluted magnetic semiconductors (DMS). The name SMS was coined by Prof. Robert R. Gałazka in the late seventies of the last century, when the investigations on these materials were initiated in the Institute. At present the main effort of the studies has shifted from the traditional II-VI DMS to their low dimensional heterostructures and the ferromagnetic IV-VI and III-V DMS, in close relation to future spintronic applications. In this lively area the Institute remains to be one of the leading research centers in the world. This is a result of cooperative effort of four Institute Divisions (Division of Semiconductor Physics, Division of Solid State Spectroscopy, Central Laboratory Low-Dimensional Structures and Central Laboratory of Cryogenic Research) but, first of all, is due to the availability of good quality DMS samples, obtained by the crystal growers in the Institute, either by different "conventional" methods or by MBE growth, which is often supported by electron lithography.

- physics of magnetism -

the subject was first introduced by Prof. Szczepan Szczeniowski in the Department of Ferromagnetics of the Institute of Physics created in 1953 in Poznań. In the main branch of the Institute in Warsaw, the studies on this subject were started in 1970, when two groups dealing with magnetism were transferred to the Institute of Physics from the Institute of Electron Technology of the Polish Academy of Sciences. These studies are continued in the Division of Physics of Magnetism, which now concentrates its investigations on magnetic properties of materials exhibiting colossal and giant magnetoresistance, superconductors, nanoscopic magnetic structures and biological structures. The Institute of Physics achieved its present structure and moved to the location at Al. Lotników under the directorship of Prof. Jerzy Kołodziejczak (1970-1981). Presently, the Institute employs over 300 people and is composed of four scientific divisions, three laboratories and the cryogenic unit running the Institute's own helium and nitrogen liquefiers. The Institute of Physics in Warsaw is now a very active center. In the last 10 years more than 3000 articles in internationally recognized scientific magazines were published by authors affiliated in the Institute. Many of our researchers are chosen as members of international scientific organizations, committees and are often invited to give talks at international conferences.

The Institute of Physics conducts theoretical and experimental research both basic and applied. The research is focused mainly on:

- Physics of condensed matter, including physics of semiconductors, magnetic materials, diluted magnetism (so called semi-magnetism), superconductors, especially high-temperature superconductor, physics of nanostructures, spintronics, and structural studies;
- Crystal growth and material studies, including crystallization of bulk crystals, thin layers, and low-dimensional structures;
- Molecular physics and quantum optics, laser spectroscopy;
- Low temperature physics, which includes studies of low-dimensional quantum structures in subkelvin temperature range, cryogenics and cryoengineering;
- Bio-physics.

Fig. 1. Molecular Beam Epitaxy laboratory for growth of nitride and oxide quantum structures. The Institute conducts research in physics branches that are recognized worldwide as a high-tech. The studies are conducted in the fields necessary for future applications in areas like spintronics, quantum communication, natural environment protection or medicine, according to priorities set by the Polish National Development Plan and the 6th and 7th Framework Programmes of the European Community.



Fig. 2. Four-wave mixing set-up for holographic studies.

Institute of Physics is well recognized in the international scientific community, as shown by the number of publications (over 300 publications per year in the leading scientific journals with high impact factor), high number of citations, and invited lectures on the most important international conferences under patronage of EMRS (European Materials Research Society).



Fig. 3. Scanning electron microscope image of zinc-oxide quantum wires grown by molecular beam epitaxy.

Scientists from the Institute of Physics not only succeed to join into realization and development of existing scientific fields but also create new important branches of research, such as spintronics and studies of mechanisms of photostability of biological systems.

A distinctive example of the Institute's role in promoting the high position of Polish physics all over the world is the election of Prof. Maciej Kolwas for President of European Physics Society. The EPS confers a number of awards; the most prestigious being the Agilent Technologies Europhysics Prize. About half of the laureates of this award received Nobel Prize in Physics in the past. In 2005 Prof Tomasz Dietl, member of the staff of the Institute of Physics, Polish Academy of Sciences, as a first Polish scientist was awarded the Agilent Technologies Europhysics Prize. In 2006 and 2007 the laureates of the most prestigious Polish scientific award, the Foundation of Polish Science Prize, were Prof Tomasz Dietl and Prof Andrzej Sobolewski, both employees of the Institute of Physics of the Polish Academy of Sciences. The 2008 laureates of the Scientific Award "Copernicus" for remarkable scientific achievements, that are the result of over 20 years of cooperation, were Prof Andrzej Sobolewski and Prof Wolfgang Domcke from Germany. "Alexander von Humboldt research Award" for outstanding scientific achievements was given to Prof. Grzegorz Karczewski. The Institute of Physics, Polish Academy of Sciences, also obtains additional research grants from various foreign sources, mainly from the European Union, but also from NATO, Japan or the USA. For example, in 2007 nine research projects conducted in the Institute were financed by foreign countries, in addition to 42 individual research projects and 3 projects financed by the Polish Ministry of Science and Higher Education.

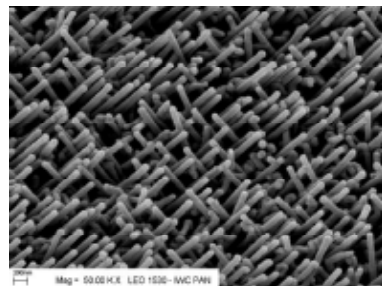
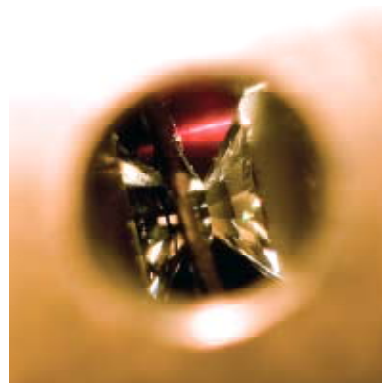


Fig. 4. The diamond-anvil cell for high-pressure studies

The Institute collaborates with many institutions all over the world, including the best European, American and Japanese research centers. The Institute received additional financing from the structural funds of the European Community for several projects in the framework of the Operation Programme Innovative Economy for years 2006 – 2013. Three Centers of Excellence and the Center of Advanced Technology for Opto- and Microelectronics, funded also from the Structural Funds of the European Community, were established in the Institute.



In addition to scientific activity the Institute is also active in education, mainly on post-graduate level such as International Post-graduate Studies. The Institute's staff cooperates with several universities in Warsaw (Warsaw University, Cardinal Stefan Wyszyński University, Warsaw Technical University, and Warsaw University of Life Sciences).

The education of young people and popularization of science (lectures for schools, participation in Science Festivals, Science Picnics, organization of Physics Olympiads, Young Physicists Competition, and International Competition "First Step to Nobel Prize in Physics", commitment in the creation of "Copernicus" Science Centre) are elements of the Institute's social mission of science knowledge dissemination among the society.

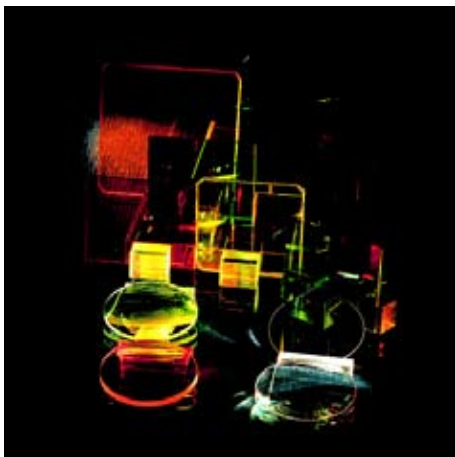
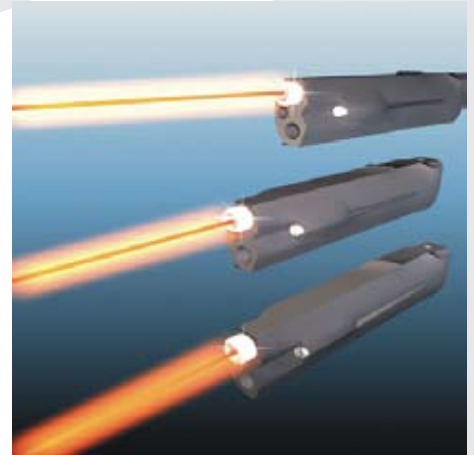
OVERVIEW

The Institute of Optoelectronics (IOE) is an interdisciplinary academic institute at the Military University of Technology (MUT) in Warsaw with a mission to support research and education in the optoelectronics. The institute is engaged in research and development in the fields of optical, electrical and mechanical processes, components and systems. The research efforts of IOE are integrated with the education mission providing comprehensive student courses, instructions to graduate students and guidance of PhD students. The institute has permanent staff of 168 including 85 scientists and 83 engineers and technicians.

RESEARCH INTERESTS

The research interests of the Institute of Optoelectronics cover the spectrum from basic science to prototype development. The main fields of the research activity involve disciplines of optics, atomic and solid state physics, material science, electrical and mechanical engineering. The research and development projects carried out at IOE in these fields include the following:

- design and analysis of optical systems
- optical materials
- optical technologies
- optical metrology
- thin film technologies
- biomaterials
- laser optics and electronics
- new solid state lasers
- laser systems
- laser-matter interactions
- laser cleaning
- medical lasers
- biochemistry
- x-ray and EUV optics
- optical spectroscopy
- laser ranging and sensing
- detection of optical signals
- dynamic materials studies
- security systems
- image processing
- infrared physics and technology
- computer modeling



The Institute of Optoelectronics offers the M.Sc. Graduate Studies in Electronics and Telecommunication. The students can specialize in lasers and optoelectronics systems. The B.Sc. Studies in optoelectronics are performed in collaboration with Faculty of Electronics. Moreover, at the Institute are organized the Summer training practicals for students who can participate in research works.

Institute of Applied Optics (INOS) was established in 1948. We are the government R&D organization active in optics and optoelectronics. Many years of experience in this field, skilled and experienced research teams, well equipped labs plus optical and mechanical workshops make INOS a key RTD player in photonics in our country and an important player within the European Research Area (ERA). Partnership in many EU and domestic RTD projects, active membership in research and advanced technology networks, consortia and platforms confirm our strong position among RTD organizations.

Brief description of activities of the institute:

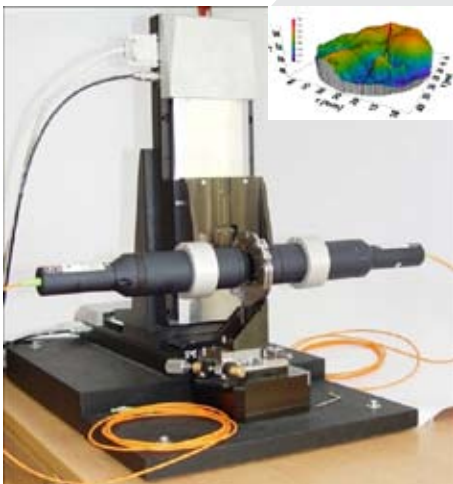
- research & development
- design
- final products
- measurements & testing
- consulting
- other services

In particular we offer solutions for:

- specialist inspection, measurement and observation for industrial and scientific applications
- microscopy, refractometry, interferometry, spectrophotometry, image analysis, illumination
- specialist testing and measurements holography, diffractometry, interferometry, refractometry, photometry, optometry
- computerized optical system design and optimization
- quality testing and certification
- optical technology development
- specialist optical components design and manufacturing lenses, mirrors, prisms, interference filters, retarders, polarizing optics, beam-splitters, holographic diffraction gratings, etc.,
- thin-film coating
- short courses training for optical instruments users



Technological device for central sticking and mounting optical components



Acousto - optics analyser for identification of RF signal



Thick hologram gratings



Technological device for central sticking and mounting of optical components

INSTITUTE PROFILE

ITME is the leading Polish government research and development centre of electronic materials, structures and devices technology. It's staff is more than 250 and it is entitled to deliver the PhD degree in Material Engineering. We are growing semiconductor (Si, III/V, SiC, others), and oxide (optical, piezoelectric) materials and also working on nanomaterials, materials for thin film electronics, active glasses and optical fibers, composite materials and active and transparent nanoceramics, which have unique properties for a wide range of applications. In the Institute epitaxial and other thin film structures and state of art electronic and optoelectronic devices are also developed. Many of these works have highly innovative character, confirmed by collaboration agreements with many leading Research Institutes and Industrial Companies world-wide. ITME coordinates FP 7 Programme on selforganising materials with nonconventional electromagnetic properties, is a scientific coordinator of the FP 7 Programme on micro and nano crystalline functional gradient materials and participates in several other international and national research projects, coordinating the national project on SiC technology and its applications. Elaborated technologies are offered for interested customers to realize their designs, transferred to the industry or utilized in small scale production of advanced materials, devices and components within the Institute

In the area of Sustainable Energy ITME is working on:

- Multijunction photovoltaic cells with optical concentrators,
- materials and components for fuel cells and Li batteries,
- SiC for power electronics for energy saving.

ITME R&D activity covers following areas:

Materials:

silicon growth (wafers-substrates of sensor grade Si, high grade, precisely oriented, up to 6" diameter) Si epitaxial layers, (high resistivities and thicknesses,) porous Si, epi-silicon on porous Si, bonded Si, SOI's III/V semiconductor compounds (GaAs, InP, InAs, GaP), wafers, epitaxial structures GaN epitaxial structures on Sapphire and SiC
SiC wafers and epilayers Various nanomaterials: self organized materials, metamaterials, photonic crystals

Processing:

mask shop (smallest feature 0.5 micrometer)
thin film deposition of: dielectrics (SiO₂, Si₃N₄, AlN, multiplayer metallisations)
lithography: hard contact deep UV, e- beam direct writing
etching (RIE and ICP RIE), sidewall control, deep trenches of tenths of micrometers

Materials and components characterization:

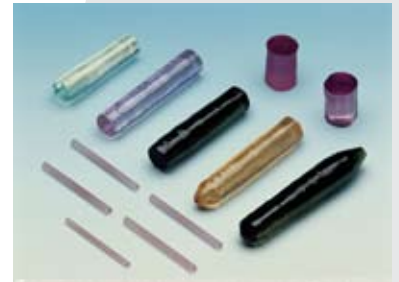
material characterization, full range
I-V, C-V, RF measurements and analysis
impedance and RF scattering matrix elements up to 20GHz
low noise measurements up to 100kHz
laser and photodetector measurements

Components:

optical guides, filters and lenses, photonic crystal fibres
passive elements on membranes (sensors)
SAW filters, resonators, sensors, actuators
active devices (lasers, photodetectors, transistors, diodes)



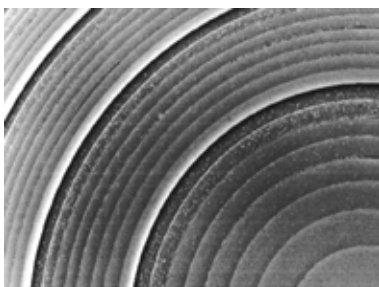
Oxide single crystals, Single crystal substrates for HTSc layers, Quartz and SAW substrates



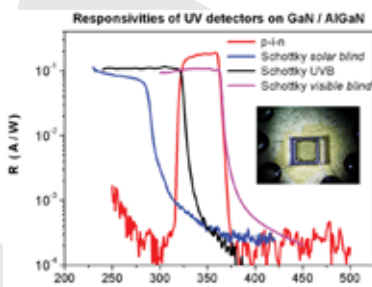
Single crystals for different laser applications Y3Al5O12: Nd, Ho, Tm, Cr, Er (YAG) YVO4:Nd (yttrium orthovanadate)



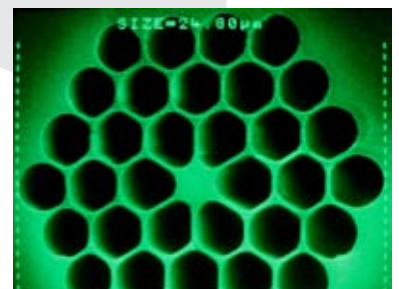
Substrate materials for GaN – blue optoelectronics, Neodymium gallate, sapphire, mixed perovskite (La, Sr)(Al, Ta)O₃(LSAT)



Diffraction optical element – eight-phase-level quatero microlens designed for $\lambda = 632.8\text{nm}$



Ultraviolet detectors built on GaN/AlGaIn



Photonic Crystal Fiber (PCF)
material: multicomponent glass fiber diameter 125 μm , structure diameter 98 μm , core diameter 9.8 μm , structure holes (d) 5.2 μm , lattice constant (Λ) 7.5 μm , filling factor (d/ Λ)

CORPORATION EAST

Corporation East is engaged in implementation and scientific research in the field of high-end technology as well as in production and distribution of the following professional equipment for Border Guard, Customs and Secret Service:

- portable and stationary X-ray equipment for radiography of people and baggage,
- technical endoscopes (flexible and semiflexible endoscopes, boroscopes),
- videoendoscopes,
- devices for document authenticity control,
- devices for the non-destructive tests,
- optical and electronic devices (e.g. integrated gyro-stabilized platforms with night vision, thermal vision and laser sensors),
- contraband prevention detectors,
- detectors of electronic devices and metals,
- detectors of explosive materials and narcotics.

We also provide warranty and post-warranty service.



EXPLOSIVE DETECTORS



DEVICES FOR DOCUMENT AUTHENTICITY CONTROL



MICROSCOPE



ORCA



ORCA



ORCA

OPTOLAB Ltd.

OPTOLAB LTD. OFFERS TWO TYPES OF NEBULIZERS:

- microcapillary pneumatic nebulizers NAR and NAR-duo and
- ultrasonic nebulizers NOVA and NOVA-duo.

The Institute of Applied Optics established Optolab Ltd. in 1999. The main purpose of the company is the commercial implementation of research projects carried on at the Institute. Optolab Ltd. offers innovative top quality solutions for optics, optoelectronics, precision mechanics, optical spectrometry and mass spectrometry.

The NAR nebulizers features extremely high efficiency within the range 60% - 80%. It allows to reduce the use of a sample to around 0.1 ml/min with the average droplet size around 2 μm which leads to better evaporation and excitation processes. The NOVA nebulizers sport similar features of extremely high efficiency of up to 95%. Also, the NOVA nebulizers allow for generation of an aerosol independent of the velocity of a working gas. Patented solutions in these nebulizers guarantee extreme robustness and prolonged endurance. The duo variants of the nebulizers allow for parallel nebulization and chemical reactions in a nebulizer's spray chamber, e.g. hydrid generation of several elements creating volatile hydrids, which leads to even better precision and sensitivity. All the above unique features of both types of the nebulizers increase the precision and sensitivity of readings of around 5 times with the 10-fold reduction in the sample use.

One of the projects resulted in the new top quality solutions for nebulizers turning a liquid analytical sample (solutions) into an aerosol injected together with the working gas into the flame (in case of the flame atomic absorption spectrometry, FAAS) or into the plasma (in case of emission spectrometry or mass spectrometry with inductively coupled plasma sources, ICP-OES, MIP-OES, ICP-MS, MIP-MS).



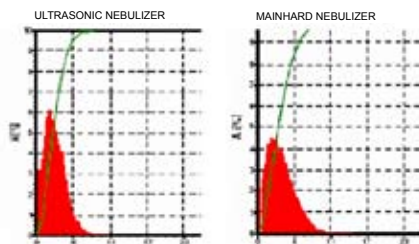
ULTRASONIC NEBULIZER NOVA



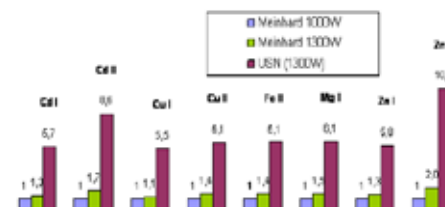
NOVA CYCLONIC SPRAY CHAMBER



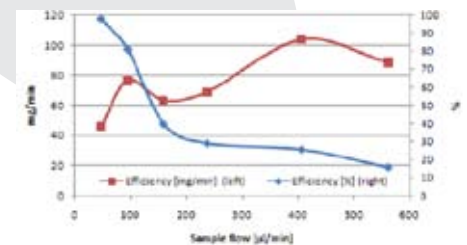
NOVA SYSTEM



DROPLET DISTRIBUTION FOR NOVA VS MAINHARD NEBULIZER



SIGNAL GAINS FOR SOME ELEMENTS (NOVA VS MAINHARD)



EFFECTIVENESS OF NOVA

PRZEMYSŁOWE CENTRUM OPTYKI S.A.

We are the leading polish producer of optoelectronic (visual, night vision, thermovision), aiming and observation sights for military use, meeting safety requirements of the modern battlefield and global development tendencies in military technical equipment together with demands by the police and rescue formations. Due to possessed research and technical infrastructure we continuously modernise our products and introduce new based on the most modern technologies, according to global trends. All products of the PCO S.A. are an effect of activities of our own constructional department.



Self Covering and Laser Warning Systems



Laser rangefinders



Thermovision day and night sights



Night vision goggles



Night vision goggles



Day and Night periscopes for armoured vehicles



Night vision day and night sights



Night vision goggles



Day and Night periscopes for armoured vehicles

SEMICON

SEMICON Company was established in 1987 and since then has been present on electronic market. We are an official representative or distributor of well-know manufacturers of measuring instruments and accessories, electronic and electromechanical components, materials and tools. Semicon also specializes in laser modules and laser line generators production. We offer PCB's assembly in the SMT and THT technology. Semicon employs 46 people currently.



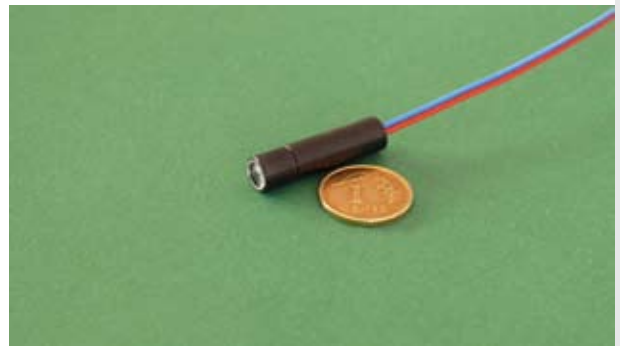
EXAMPLE OF A THREE LASER MODULE ASSEMBLY ALONG WITH MOUNTING ELEMENTS.



GREEN LASER MODULE ML-45 WITH A VERY SMALL BEAM DIVERGENCE ASSIGNED FOR DISTANT RANGE APPLICATIONS.



RED CROSS GENERATOR ML-27.



MINIATURE RED LASER POINTER ML-45 WITH AN APC LASER DIODE INSIDE A BLACK ALUMINIUM HOUSING.



LASER PROTECTIVE GLASSES ASSIGNED TO WORK WITH VISIBLE RADIATION IN 635NM - 680NM WAVELENGTH RANGE.



YAMAMOTO LASER PROTECTIVE GLASSES.

Sensomed was established in 1990 as family owned company dealing with optoelectronic business mainly oriented into Polish market. We are manufacturer of the Laser Positioning System successfully introduced into almost all oncology hospitals in Poland for proper positioning of patients during gamma or X-ray treatments. We also have small export of the System to selected countries in Europe and Central Asia. Other product of our company is Optoelectronic Set designed for high schools as helpful tool for experimental teaching of optics at elementary level. We are also dealing with implementation of new ideas in photonics, optoelectronics and optics into real unique market products. It concludes from our good relationships with laboratories of the Warsaw University of Technology.

Laser Positioning System

Laser Positioning System (LSP) was designed for precision and accurate patient alignment during X-ray and γ -ray treatment. The System consists of three boxes in which there are five modules with long life laser diodes (Sanyo, Japan). The System can work continuously for years without special service. Two boxes with help of special cylindrical lenses generate light crosses on both sides of table with patient, third one with light lines is for control of the table axis. The System is safely powered from 5 V DC (special adapters 220V AC/5 V DC are included). Fine mechanical positioning rails are helpful for adjustments of the System during installation and after that no special service is necessary.

Technical data of LSP-1 model

Laser beam

- Laser wavelength 635 nm (red light)
- Maximum optical power less than 1 mW
- Width of laser line less than 1.5 mm
- Beam divergence less than 1 mrd
- Angular beam divergence 0.5 rd
- EC laser Class 2 (EN60608 and EN60825-1)

Electrical data

- Power supply 5 V DC/220 V AC
- Total current consumption - less than 0.4 A
- Continuous work is acceptable; no limits for number of switch on/off
- EC electric Class IIB (EN60601-1)

Mechanical data

- Dimensions of case of each box -120x120x120mm
- Possible adjustments:
 - Parallel movement of laser crosses
 - Thickness (sharpness) of laser lines
 - Angular alignment of laser crosses
 - Linearity of laser lines

Optoelectronic Set ZO3 for investigating the optical phenomena
The set consists of following elements:
laser diode module with stand which emits collimated light beam at 655 nm wavelength (red color)
power pack with input voltage of 5 V used for supplying the laser module

optical elements

- Lenses (3 pcs) each with different focus: 2 convergent and 1 divergent
- Standard diffraction grating with a constant $d = 10.0 \text{ } \mu\text{m} \pm 0.1 \text{ } \mu\text{m}$
- Diffraction grating of unknown constant (destined for investigations)
- Glass Plates (3pcs)
- Polarizing foil (2 pcs)

holders

- mechanical holder for diffraction grating, polarizers etc. with a stand
- mechanical holder for lenses with a stand

detection set UD 1

- Photodiode with a stand
- Multimeter

The Set allows to carry out several optical experiments like:

- 1 measurements of the parameters of the lenses
- 2 polarization of light by absorption and verification of Malus law
- 3 polarization of light by reflection and measurements of Brewster angle
- 4 polarization of light by refraction
- 5 optical activity of sugar solution
- 6 single-slit diffraction and measurement of thickness of hair
- 7 diffraction and interference by example of diffraction grating and evaluation of its parameter
- 8 measurements of refractive index of the prism
- 9 measurements of critical angle for air-glass boundary using a prism

In order to help in experiments a special 25 pages handbook is added in which there is theoretical background for experiments as well. Price of the Optoelectronic Set is 450 EURO plus 50 EURO as a cost of delivery via Express Mail. The order may be sent directly to Sensomed Company by fax. The Optoelectronic Set will be delivered within one week as an Express Mail parcel with original invoice attached. The payment should be made within two weeks as a bank transfer of money.

The Optoelectronic Set has one year guarantee. Sensomed was established in 1990 as family owned company dealing with optoelectronic business mainly oriented into Polish market. We are manufacturer of the Laser Positioning System successfully introduced into almost all oncology hospitals in Poland for proper positioning of patients during gamma or X-ray treatments. We also have small export of the System to selected countries in Europe and Central Asia. Other product of our company is Optoelectronic Set designed for high schools as helpful tool for experimental teaching of optics at elementary level. We are also dealing with implementation of new ideas in photonics, optoelectronics and optics into real unique market products. It concludes from our good relationships with laboratories of the Warsaw University of Technology.

SENSOR-NET Ltd.

Sensor-Net Ltd was established in 2002. We offer designing and manufacturing electronic control-measurement units. Series of piezo-electric and tensiometric transducers for measurement of mechanical magnitudes as acceleration, pressure and forces were worked-out and realized and used in industry. Actually company Sensor-Net offer following elements of industry automatic:

- tensiometric transducers of forces and relative pressure
- micro processing measurement systems for physical units.
- control systems for feeder of friable and fluid materials
- piezoquartz converters of fast changing pressure for internal combustion engine
- converters with acoustic surface wave for measurement low forces
- analyzers of logical states

At present, also Sensor-Net offer designing, installation and service of safety buildings integrating systems, control systems, telecommunications networks and electric power supply circuits. Company is specialised :

- Intruders detection systems
- Gas and fire detection systems
- CCTV
- Access control
- Integrated systems
- Evacuation system
- Window , door and gate control system



SOLARIS LASER

Solaris Laser is a world-leading manufacturer of industrial Fiber and CO2 laser coding, marking and engraving systems. We specialize in development of laser systems for Static and Dynamic product coding while products are in movement. We offer high quality, flexibility and reliability through our products, which give us our strongest market advantages. We are developing our laser system's line continuously, following the market demand. In many countries around the world we offer our products cooperating with highly professional local companies, which provide high quality support to end-users of our equipment. Company Strategy: high flexibility and fast market response, most advanced and most reliable laser products, cost-effective products, recognizable product trademark, global activity, independent market position.

PRODUCTS

Our products are simple to install, easy to use and maintenance-free over thousands of operational hours. We offer advanced, high quality cost-effective products for industrial and packaging markets.

e-SolarMark HD

HIGH SPEED CO2 LASER CODING/MARKING SYSTEM

- Smooth, vector-quality codes on a wide variety of materials: paper, cardboard, foils, coated metals, plastics, wood, glass and many others
- Permanent alpha-numeric texts/dates/timers, serial numbers, barcodes, 2D codes and graphics
- "On-the-Fly" and Stationary coding capability
- Unauthorized access protection
- Full size graphical display with print content preview
- Local programming and job preparation via Touch Screen Controller
- Remote programming and data transfer via local network
- Variable code formats and sizes
- Low operation cost / No maintenance / No consumables
- Shock / Temperature tested
- Water cooled, IP 65
- OEM versions available

e-SolarMark CFL

LASER SYSTEM FOR CODING ON PACKAGING FOILS

- Revolutionary solution for permanent coding on packaging foils which is offering Vector-quality code in stationary and "On the Fly" marking / coding.
- System is capable of coding of alphanumerical texts / dates / timers, serial numbers, barcodes, 2D codes and graphics on wide variety of packaging foils.

e-SolarMark FL

LASER MARKING/CODING SYSTEM FOR METALS AND PLASTICS

Solution for permanent coding on packaging foils, various plastic / metal products and packages which is offering Vector-quality code in stationary and "On the Fly" marking / coding. System is capable of coding of alphanumerical texts / dates / timers, serial numbers, barcodes, 2D codes and graphics on wide variety of materials.

System features

- Integration friendly design
- High flexibility of system due to large number of options
- Unauthorized access protection
- Shock/Temperature Tested
- Low operation cost/No maintenance/No consumables
- OEM versions available
- Different languages versions: English, German, French, Spanish, Italian, Dutch, Portuguese, Chinese

eMark

AN AFFORDABLE LASER CODING SYSTEM IN ONE COMPACT PACKAGE

- Most inexpensive laser system for permanent marking/coding
- Vector-quality codes in stationary and „On the Fly“ operation
- All-type marks like alphanumerical texts/dates/ timers, serial numbers, barcodes, 2D codes and graphics
- Complete list of options for quick installation and simple operation
- Easy integration with new and existing production lines due to multiple I/O signals and field configurable beam exit direction
- Simple local and remote system control via USB, network and WiFi module
- Marking on wide variety of materials: paper, cardboard, foils, coated metals, plastics, wood, glass and many others

e-SolarMark

LASER CODING/MARKING SYSTEM

- Marking on wide variety of materials: paper, cardboard, foils, coated metals, plastics, wood, glass and many others
- Vector-quality code at high line speed
- Both stationary and "On the Fly" marking/coding
- Permanent and flexible coding of alpha-numeric texts/dates/timers, serial numbers, barcodes, 2D codes and graphics on the products
- Integration friendly design
- High flexibility of system due to large number of options
- Unauthorized access protection
- Shock/Temperature Tested
- Low operation cost/No maintenance/No consumables
- OEM versions available

e-SolarMark Light

LASER CODING/MARKING SYSTEM

- Marking on PET plastics and packaging foils
- Vector-quality code at high line speed
- Both stationary and "On the Fly" marking/coding
- Permanent and flexible coding of alpha-numeric texts/dates/timers, serial numbers, barcodes, 2D codes and graphics on the products



E-SOLARMARK laser system

PET bottlers marking, cartoon box marking, Car Block marking, Caps marking.



WORKSTATION PRO

SOLARIS OPTICS

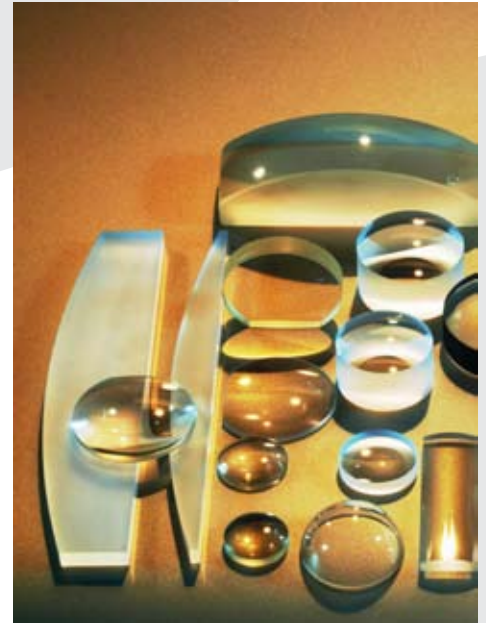
Solaris Optics produces precision components, optical subassemblies and assemblies such as lenses, windows, prisms, dividers, polarizers, optical filters as well as Pockels cells. Our firm produces elements used in laser technology, medicine, lithography, telecommunication, metrology as well as aircraft and space industry. Solaris Optics specializes in producing of prototypes, untypical precision elements in short series. We also produce elements in long series.



POCKELS CELLS



PROTOTYPES



PRISMS



LENSES



MIRRORS



BEAM SPLITTERS

Medium-to high power GaN laser diodes and laser modules for your advanced application in blue-violet-UV spectral range. World unique Plasma Assisted Molecular Beam Epitaxy (PAMBE) wafers made on high-pressure grown GaN substrates used for nitride laser structures manufacturing. TopGaN is a manufacturer of blue/violet GaN laser diodes constructed using unique and proprietary technology developed at Unipress - Institute of the Polish Academy of Sciences. The company offers high power (up to 500 mW) pulse current operated laser diodes and laser modules for applications in spectroscopy, medicine, pollution detection and many other fields.

We also offer:

- custom made epitaxial wafers of (AlGaIn)N for optoelectronics and electronics,
- free standing GaN substrates,
- cw laser modules 405nm.

TopGaN Ltd. is a company incorporated in January 2001 as a private spin-off from Unipress (Institute of High Pressure Physics of the Polish Academy of Sciences directed by Prof. Sylwester Porowski). The Institute was founded in 1972 thanks to the previous impressive results of the Polish Academy of Sciences in high pressure semiconductor physics (eg.: discovery of Groves-Paul band structure for HgTe 1967). Since then the Institute has become world renowned as a center of excellence: Discovery of new forms of electron states bound with crystal lattice 1972; discovery of resonant states in semiconductors 1978; thermodynamic equilibrium curve for GaN - Ga-N in 1986.



VIGO SYSTEM S.A.

VIGO System S.A. is a leading designer and manufacturer of high performance uncooled IR photodetectors and accessory products. Our mission is to replace the present generation of cryogenically cooled photodetectors in the middle and far infrared by a new generation of detectors without cryogenics. VIGO is ISO9001 certified. We offer: IR photodetectors, research and development in IR technology, related optoelectronic accessories microprocessor controlled instrumentation, technical consultation, distribution of components, devices and optoelectronic systems.

Infrared detectors manufacturing.

VIGO System S.A. is known worldwide for innovations in the field of uncooled photodetectors operating in the middle and long wavelength range (2 to 16 μm) of the infrared spectrum. We produce high performance detectors for a wide range of applications including industrial, scientific, medical and military purposes. The constantly increasing demand for our detectors from international and domestic customers is the best indicator of our success. We are constantly improving the parameters of our detectors while at the same time decreasing the costs of manufacturing. Our achievements in the field of IR photodetectors:

- of semiconductor heterostructures grown by ISOVPE and MOCVD methods
- studies of optical and photoelectrical phenomena in semiconductor heterostructures
- development and manufacturing of advanced photoelectric devices based on HgCdTe and InGaAs
- development of microoptics
- development and manufacturing of infrared photodetectors:
 - operating at ambient temperature or on thermoelectric coolers
 - optimised for any wavelength in the range from 2 to 16 μm
 - with detectivity approaching the theoretical limit
 - with very short, even subnanosecond, response time
 - convenient and cost effective for practical applications

Research and development in infrared technology

- high reproducibility
- low background carrier concentration and well controlled dopant concentration
- high uniformity
- compound substrates application (GaAs, Si, Sapphire and others)

Examples of research and development work

- compact thermographic camera VIGOCAM v50
- the thermographic camera V-20 for contactless temperature measurement and imaging
- design and manufacture of a module for ultrafast, contactless temperature measurements
- development of wide bandwidth transimpedance preamplifier (0 to 1GHz), recommended for VIGO System S.A. detectors
- development and manufacture of several calibrated sensors and test stations for monitoring flame and smoke
- an infrared homing seeker head



RESEARCH AND DEVELOPMENT IN INFRARED TECHNOLOGY



COMPACT THERMOGRAPHIC CAMERA VIGOCAM V50



IR PHOTODETECTORS

Distribution of components, devices and optoelectronic systems in Poland. VIGO System S.A. is an authorised distributor of measurement equipment supplied by worldwide manufacturers.

International representatives and agents Products of VIGO System S.A. Are available internationally through a network of distributors and agents.

WAMED, The Producer of Medical and Laboratory Equipment

WAMED (formerly NYSA) is a Polish factory of medical and laboratory apparatus with a long history. Our company was established over half a century ago, in 1949. From the very beginning, our company specializes in the manufacture of top quality medical and laboratory equipment. Our offer addressed to the medical sector comprises autoclaves, cans and medical containers, and laser biostimulators. A wide spectrum of our products delivered to testing laboratories includes incubators, temperature test chambers, dryers, sterilizers, autoclaves and electrolyzers.

WAMED IS A DESIGN AND PRODUCTION COMPANY.

Our experience and product modification potential, already in the design phase, provide opportunities for continuous development of our services. The devices we offer are adapted to the changing market trends and expectations. Flexibility and long-term experience are the company's main assets, an additional safety warrant and evidence of trustworthiness. All our products have been attested and certified.

Through the Quality Management System ISO 9001:2001 and ISO 13485:2005, implemented in WAMED, we express our concern about the quality, safety, reliability and durability of our products. The devices produced by our company are exceptional in terms of durability and reliability. Laboratories and medical units have been using our equipment for decades. We provide all our customers with the access to an authorized service centres offering warranty and post-warranty services. Moreover, our products are distributed through a network of dealers and commercial enterprises all over Poland. The WAMED showroom is located in Warsaw.



INCUBATORS



Containers of sterilization



Climatic Compartments



PROCEDURAL PROBE TO THE LASER BIOSTIMULATORS



SCANNERS



Laser Biostimulators

NOTES

