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Co-operation offer

DIAMOND MODULE
UNIVERSAL UNIT SYSTEM



Modular Building R&D Lab
Faculty of Architecture
Cracow University of Technology

Modular Building R&D Lab

The Modular Building Research & Development Laboratory (ModularLab) is:

- **the project 'umbrella'** that covers a wide range of interdisciplinary activities, including the design, research, prototyping, teaching, and training that refer to the topic of off-site construction, modular architecture, modular urbanism, and innovation in design processes;
- **the result of a collaboration between science and industry:** the Faculty of Architecture of the Cracow University of Technology (FACUT) and the company, BrilliantModule Ltd. (Diamond-Module);
- **the mobile modular office that the team designed and built;** it consists of students and employees from the FACUT, as well as experts from the company (it will soon be located on the historical grounds of the FACUT);
- **a creative space of innovative technological exchange** that promotes the collaboration of industry and academia.

Objectives:

- To conduct research that will be implemented and utilized by industry partners
- To stimulate interdisciplinary dialogue between students, researchers, and industry stakeholders interested in modular and off-site construction

- To build and broaden awareness of the possibilities and benefits of using modular technology in architecture and urban design
- To encourage students and researchers to search for innovative applications

Current Topics:

- modular social housing for refugees in Germany,
- socio-spatial innovations - modular kindergarten,
- senior-housing unit,
- relocatable modular building in the historical context of Cracow.

We are a highly experienced team of scientists and practitioners that actively collaborates with international experts representing business, industry, academia, and non-governmental organizations. If you are looking for contractors, project partners, or would like to join a research team, please contact us:

Contact details:

Ewelina Woźniak-Szpakiewicz, Ph.D. M.Sc. Arch.
e-mail: ewozniak-szpakiewicz@pk.edu.pl
phone: +48 662 542 580
ul. Podchorążych 1, 30-084 Kraków, Poland
web: www.modularlab.pk.edu.pl



Co-operation offer



Laboratory for Trace Organic Analyses
Department of Chemical Engineering and Technology
Cracow University of Technology



Laboratory for Trace Organic Analyses

Laboratory for Trace Organic Analyses is an integral part of the Department of Chemical Engineering and Technology at Krakow University of Technology. The Laboratory is accredited from Polish Centre for Accreditation that signed EA Multilateral Agreement. PCA has become a signatory of EA MLA

Laboratory is accredited in the area of the determination of PCDDs, PCDFs, PCB (Indicator, dioxin-like) and HCB in the Environmental, industrial, food and feedingstuff samples.

The quality system implemented at the laboratory is based on the principles included in the standard: PN EN ISO/IEC 17025:2005 in relation to research laboratories accreditation.

Every year since 1996, the laboratory has been taking part in international inter-laboratory comparisons in determination of dioxins, PCB, HCB and PBDE in ashes, sediments and in other industrial samples.

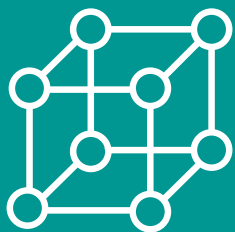
The laboratory manager, Prof. Adam Grochowalski is a member of the European Committee for Standardization for the implementation of standards EN-1948 for the measurements of dioxin emission in thermal

processes and an expert working for UNEP Chemicals in Geneva for creation of documentation: Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases as well as BAT/BEP Guidelines within the Stockholm Convention regarding the reduction of emission of persistent organic pollutants in industrial processes, also as a representative of the Ministry of Environment.

The laboratory has gained experience in measurements of combustion gas emission in industrial processes, mainly from cement kilns, power producing facilities, waste incineration plants and metallurgical industry.

Contact details:

Laboratory for Trace Organic Analyses Chemistry
Department C-1 Krakow University of Technology
ul. Warszawska 24, 31-155 Krakow, Poland
the laboratory: + 48 12 628 2713
laboratory manager: +48 12 628 2112
mobile: +48 881 500 878
fax: 012-628-2036
prof. Adam Grochowalski
e-mail: agrochow@chemia.pk.edu.pl



Co-operation offer



Department of Chemistry and Technology of Polymers
Faculty of Chemical Engineering and Technology
Cracow University of Technology



Department of Chemistry and Technology of Polymers

Our Mission and Goals:

- To perform research works on international level in the area of advanced polymeric materials, including nano- and biocomposites with improved properties,
- To develop further understanding of structure-property relationships in polymeric materials toward design of novel multifunctional materials,
- To yield high quality research that further enhances teaching programmes at both post-grad and PhD level.
- polymers for biomedical applications,
- polymeric thermal energy storage materials,
- polyurethane foams from renewable raw materials,
- novel epoxy polymers,
- structure – property relationships in macromolecular materials.

Research Areas:

- Preparation of novel biocomposites with cellulose,
- polymer nanocomposites with modified layered silicates,
- organic-inorganic hybrid materials with POSS,

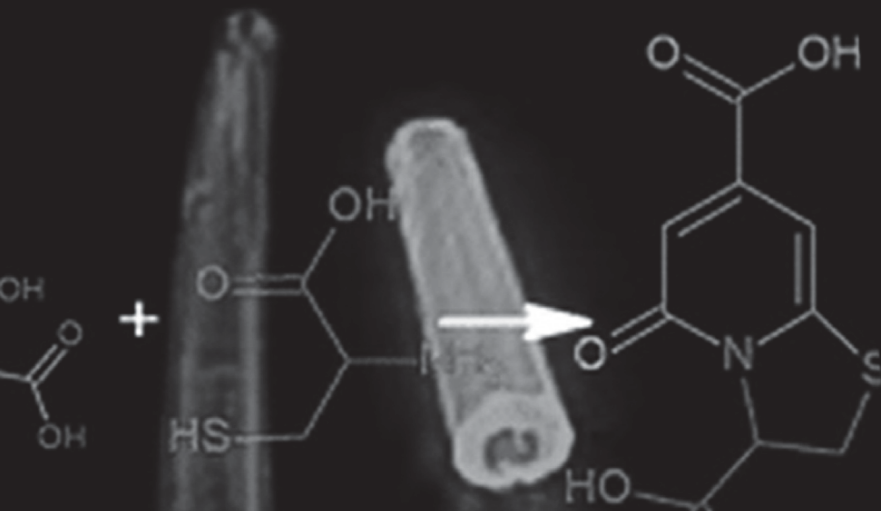
Contact details:

Prof. Krzysztof Pielichowski
Head of Department of Chemistry
and Technology of Polymers
Cracow University of Technology

ul. Warszawska 24
31-155 Kraków, Poland
phone: +48 12 628 27 27
e-mail: kpielich@pk.edu.pl



Co-operation offer



Department of Biotechnology and Physical Chemistry
Faculty of Chemical Engineering and Technology
Cracow University of Technology



Chemical Processes Intensification Laboratory

Areas of Expertise

Intensification of chemical processes (ICP) is nowadays commonly mentioned as one of the most promising development paths for the chemical industry and one of the most important progress areas for chemical engineering research. The use of alternative energy forms e.g. plasma, UV, microwave or ultrasound waves is one of the key approaches of ICP. We use these techniques to synthesis of organic compounds, and preparation of polymers and nanomaterials. We are experts in:

- Microwave assisted synthesis of polymers and organic compounds
- Identification of structure of unknown organic and polymeric compounds
- Investigations of fluorescent dyes and nanoparticles
- Synthesis of biodegradable polyesters

Our Current Research Area

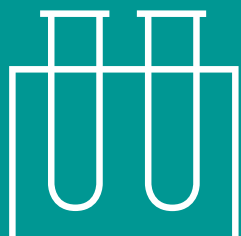
- Microwaves in nanoparticles synthesis
- Conversion of biomass and bioproducts to value-added chemicals and polymers
- Fluorescent compounds
- Alternative solvents

Contact details:

Prof. Dariusz Bogdał

Department of Biotechnology and Physical Chemistry, Faculty of Chemical Engineering and Technology, Cracow University of Technology

ul. Warszawska 24
31-155 Kraków, Poland
phone: +48 126282700
e-mail: pcbogdal@cyf-kr.edu.pl



Co-operation offer



Nanostructured Materials Technology
and Bionanotechnology Team
Faculty of Chemical Engineering and Technology
Cracow University of Technology

Nanostructured Materials Technology and Bionanotechnology Team

Offered technologies obtaining of:

- nanometals (Ag, Au, Cu, Pt, Ni, Ce, Pd)
- nano non-metals (Se)
- nanostructured metal oxides (ZnO, CuO, Fe₂O₃, ZrO₂, Ce₂O₃, Ge₂O₃)
- nanocomposites for specific applications:
 - dental,
 - hydrocolloids,
 - polymer composites,
 - anti-corrosion coatings with nanomaterials

We increase the level of innovation by:

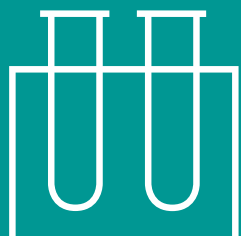
- development of technological scenarios
- selection of process parameters
- physicochemical characteristics of nanomaterials and nanocomposites
- scientific consultation in nanotechnology and related fields
- developing of innovative solutions to meet the needs of companies and their development strategies
- issuing of opinions on innovation for technology currently used

Targeting research on the theme, which affects economic development can benefit both the scientific units and enterprises. A chance to transfer the research results and implementation them in the profile of companies creates the prospect of common benefits. Exploitation of research results in practice contributes to the development of a knowledge-based economy, which is an integral part of development activities.

Contact details:

Marcin Banach, PhD., DSc., Eng.
phone: +48 12 628 28 61
mobile: +48 602 423 222
e-mail: marcinbanach@chemia.pk.edu.pl
web: nanoinnov.wix.com/nanoinnov

Jolanta Pulit-Prociak, PhD., Eng.
phone: +48 12 628 20 92
mobile: +48 669 033 091
e-mail: jolantapulit@chemia.pk.edu.pl
web: nanoinnov.wix.com/nanoinnov



Co-operation offer



Laboratory of Photochemistry and Optical Spectroscopy
Faculty of Chemical Engineering and Technology
Cracow University of Technology



Laboratory of Photochemistry and Optical Spectroscopy

Design and synthesis of new photoinitiators dedicated for cationic, free-radical and hybrid photopolymerization. The research are performed to improve the speed of the curing processes of polymer coatings by developing innovative polymerization photoinitiators having a very better parameters than those already used in industry. The search for more effective initiators are fully justified from the practical point of view in industry photocurable polymer coatings.

The search for new luminescent molecular sensors for the innovative Fluorescence Probe Technology (FPT) that may be successfully applied in coatings industry. Design and synthesis of new luminescent probes, based on organic compounds and also complexes of rare-earth metal cations. Spectrophotometric study of the compounds in the role of luminescent probes for monitoring chemical reactions, such as photopolymerization reactions, by FPT method. The performance of the newly developed luminescent probes are investigated both in free radical and cationic polymerization. Luminescent probes are tested under real photopolymerization conditions, used in industry for production of polymer coating.

Develop of new materials for applications in industries where light is used, such as the electronics industry (materials for photolithography), in industry

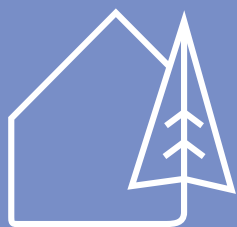
photosensitive materials (for optical storage of digital information, phototherapy), the lighting industry (to modern sources of light, photoelectric sensors).

The area of cooperation with:

- **polygraphic industry** (printing inks, adhesives, transparent top-coats or varnishes, etc)
- **furniture makers** (polymer-based furniture coatings)
- **automobile industry** (automotive lacquers and paints)
- **electronic industry** (various electroluminescent devices, such as OLEDs, or integrated circuits packaging)
- **optoelectronic industry** (photovoltaic devices, and devices used for imaging and information transfer)
- and in **general all other branches of industry, where polymer coatings are used.**

Contact details:

Joanna Ortyl PhD Eng.
ul. Warszawska 24
31-155 Kraków, Poland
phone: + 48 12 628 31 36
e-mail: jortyl@chemia.pk.edu.pl
web: www.joannaortyl.pl
web: www.fotopolimeryzacja.pl



Co-operation offer



Małopolska Laboratory
Of Energy Efficient Building
Cracow University of Technology

Expert leadership in the field of energy efficient building in Poland

The Laboratory is the first place in Poland to do such large-scale research on energy efficient technologies and the comfort of the occupants of low-energy buildings. This interesting project gives the University the leading position in the sector of energy efficient building.

The innovative building is situated on the University campus in Warszawska street. It has 5 floors (built area is 258,41 m², utility space is 1039 m², the front elevation is 17,02 m wide and 19,24 m high). It is a slab and column construction with self-supporting external walls and glass elevations. Owing to this, materials and construction can be changed to meet research needs. Inside there is 14 climate and energy zones where researchers study properties of materials and technologies in relation to climate conditions.

The object has an intelligent control system and relies on varied systems of heating and ventilation. Energy supply also comes from different sources including renewables.

All installations such as heating, cooling and ventilation have meters so as to allow current monitoring. The object comprises of 14 thermal zones working independently of one another so as to make their comparative analyses possible.

The laboratory is supplied with specialist research equipment for testing and implementing new technologies, material and construction solutions and installations.

Thermal comfort of the occupants is studied and analyses of air quality are made for the tested technologies. The laboratory has:

- a chamber for climate testing of building partitions and installations,
- a chamber for studying thermal comfort while using different HVAC installations,
- thermal imaging cameras,
- a 3D scanner,
- thermal manikin,
- a PIV system to examine air flow in relation to the ventilation system used.

The Laboratory building allows research to be carried out in real conditions. The building is equipped with some 3 thousand sensors placed in the building construction.

Contact details:

Director: Marcin Furtak PhD

e-mail: mfurtak@pk.edu.pl

Małopolska Laboratory of Energy Efficient Building

web: www.mlbe.pk.edu.pl, e-mail: mlbe@pk.edu.pl



Co-operation offer



Department of Building and Building Physics
Faculty of Civil Engineering
Cracow University of Technology



Low energy building design and thermal refurbishment of existing buildings.

Our main goals

Tools and good practice procedures for low energy building design, enabling to reduce demand on heating and prevent cooling demand while maintaining high indoor air quality.

Because of the big volume of poor quality prefabricated apartment buildings, that still exist in Poland, one of our goals is also to elaborate a scenario of holistic revitalisation of those buildings in accordance with the requirements of sustainable development.

Specific research interests:

Low energy building: passive solar energy use, rational window sizing strategy, passive measures of indoor climate control to avoid overheating, influence of thermal storage on heating and cooling demand, use of PCM to reduce demand on cooling energy, air tightness of building. Integrated approach to low energy building design. Design tools for low energy integrated design.

Thermal refurbishment of the existing buildings: reduction of thermal losses, air tightness control,

maximization of solar gains, moisture aspects of thermal refurbishment, building shell diagnostics in-situ, protection against overheating.

Modeling and simulation of building components and the whole objects (EnergyPlus). Experimental testing in climate chamber and in-situ. Infrared diagnostics and testing. quantitative infrared testing.

At present, the main and unique thermal research facility of the department is the climate chamber with hot-box, sample dimension 1.8 by 1.8 m. This chamber is not only used for a standard steady state testing but also for dynamic tests (e.g. PCM use efficiency). Besides, we use dozens of standard research equipment, as thermal imaging cameras, thermal conductance meters, thermal comfort meter etc.

Contact details:

Tomasz Kisilewicz, Ph.D., Associate Professor
Department of Building and Building Physics,
Faculty of Civil Engineering,
Cracow University of Technology
e-mail: tkisilew@pk.edu.pl, mobile : +48 502302952



Co-operation offer



Department of Transportation Systems
Faculty of Civil Engineering
Cracow University of Technology



Department of Transportation Systems

Department of Transportation Systems Cracow University of Technology carries out the research in the framework of transportation planning at regional and local level, operation of urban public transport, bike traffic, innovative urban transport solutions (demand responsive transport, public transport priorities, etc.), trip modelling and forecasting (including simulation methods), functional and economical effectiveness of road investments, road and public transport safety, mobility management, integration of transport and land use planning, optimization of transport network, road freight transport, integration of transport systems, application of multi-criteria decision aid methods in assessment of transport solutions.

Experience in EU co-funded projects:

- CiViTAS CARAVEL "Travelling Towards a New Mobility", 2005÷2009;
- MAX "Successful Awareness Campaigns and Mobility Management", 2006÷2009;
- TRACIT "Transport Carbon InterCities", 2009÷2012;
- POSMETRANS "Policy measures for innovation in TRANSport sector with special focus on Small- and Medium sized Enterprises", 2009÷2011;
- GSP "Galileo Signal Priority", 2012÷2014;

- CiViTAS CAPITAL "Making the best of CiViTAS!", 2013÷2016;
- SmartMove "Active mobility consultancy focusing on feeder systems to increase awareness and use of public transport", 2014 ÷2016.

We are the Secretariat for CiViNET POLAND network, supporting cities in implementation of sustainable mobility solutions.

We look for:

Partners to participate in joint projects in following fields: transportation policy, operation of urban public transport, bike and pedestrian traffic, innovative urban transport solutions, trip modelling and forecasting, traffic simulation, functional and economical effectiveness of road investments, road and public transport safety, mobility management, integration of transport and land use planning, road freight transport, integration of transport systems, evaluation of transport solutions.

Contact details:

Andrzej Szarata Ph.D., D.Sc. Associate Professor
e-mail: aszarata@pk.edu.pl
web: www.zsk.pk.edu.pl



Co-operation offer



Institute of Thermal Power Engineering
Faculty of Civil Engineering
Cracow University of Technology

Institute of Thermal Power Engineering

Institute of Thermal Power Engineering is providing research and education in the field of energy technologies. The Institute covers a wide area of energy research, from expert works for the power sector, to investigations of the most advanced technologies for energy generation, such as:

- thermal power engineering,
- clean coal and gas technologies,
- renewable and sustainable energy sources.

The advantage of the Institute is the experienced scientific, engineering and technical staff as well as numerous modern laboratory facilities. Institute research team is involved in the realization of various international (COST 538 – High-Temperature Plant Lifetime Extension, TEWI IT Platform – EU Operational Program) and over 40 nationwide research projects.

Scientific activity of the Institute of Thermal Power Engineering results in cooperation with many industrial and scientific partners, at home and abroad, and providing numerous implementation for industry involving

- design, optimization, and monitoring systems for power boilers and critical boiler components,
- inverse heat conduction methods,
- numerical modeling of steam boiler's superheaters by CFD simulations and own codes,
- design, optimization and CFD analysis of heat exchangers
- identification of actual working conditions (measurements: temperature, heat flux, heat transfer coefficient, thermal conductivity, thermal stresses, pollutants emission),
- thermal optimization of AC/DC High and Extra-high Voltage underground transmission lines.

Contact details:

Prof. Jan Taler
Al. Jana Pawła II 37,
31-864 Kraków
phone: (+48) 012 628 37 40
e-mail: taler@mech.pk.edu.pl



Co-operation offer



Institute Of Building Materials And Structures
Faculty Of Civil Engineering
Cracow University of Technology

Technology offer

Building and Architectural Acoustics Laboratory (BAAL) Building and Structure Physics Division L17

Building and Architectural Acoustics Laboratory (BAAL) is a part of Building Physics Lab. Our mission is to help architects and structural designers make their buildings acoustically better. We also help building material manufacturers to develop or improve acoustical performance in their products. We offer consulting services in the field of acoustics from the design phase until final building or product testing.

Research:

- Speech intelligibility in rooms
- Relations between sound insulation and thermal properties of materials
- Sound focussing in rooms - prediction and measurements methods

Consulting:

- acoustical design of buildings
- product development (sound absorption and sound insulation)
- simulations of noise emission in building interiors
- room acoustical simulations
- BREEAM / LEED certification in acoustics

On-Site measurements:

- Airborne sound insulation (PN EN ISO 140-4 & PN EN ISO 16283-1)
- Facade sound insulation (PN EN ISO 140-5 & prEN ISO 16283-3)
- Impact sound insulation (PN EN ISO 140-7 & prEN ISO 16283-2)
- Noise level
- Reverberation time (PN EN ISO 3382-1 & 3382-2)
- Speech Transmission Index STI (Speech Intelligibility PN EN ISO 3382-3 & PN EN 60268-16)

Laboratory measurements:

- Sound absorption of materials (incl. small scale samples - Impedance Tube)
- Sound insulation of materials and composite panels (incl. small scale samples - Impedance Tube)
- Sound absorption of materials for scale model tests
- Scale model testing for architectural acoustics (concert halls, theatres, auditoriums, etc)

Contact details:

Andrzej K. Klosak (PhD, MSc, Ing.)
ul. Warszawska 24, 31-155 Kraków
e-mail: aklosak@pk.edu.pl, phone: +48 606 626 660



Co-operation offer



Laboratory of Medical Reverse Engineering
Production Engineering Institute
Cracow University of Technology

Laboratory of Medical Reverse Engineering

Equipment:

- 3D structured light scanner for medical application,
- 3-axis milling centre,
- 3D printer,
- medical software: Mimics,
- CAE system: Catia V5

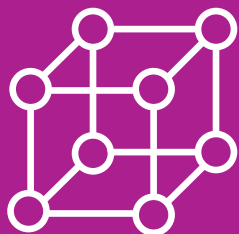
Main topic of investigation:

- implants for maxillofacial surgery,
- planning of maxillofacial surgery,
- 3D scanning of human body,
- designing of medical equipment,
- analysis of computed tomography images,
- preparing of part of human body models.

Contact details:

Al. Jana Pawła II 37, 31- 864 Kraków
phone: (+48) 012 374 32 47
fax: (+48) 012 374 32 02

Prof. Krzysztof Karbowski
karbowski@mech.pk.edu.pl



Co-operation offer



Laboratory of Applied Research
Mechanical Engineering Faculty, Production Engineering
Institute, Cracow University of Technology



Laboratory of Applied Research

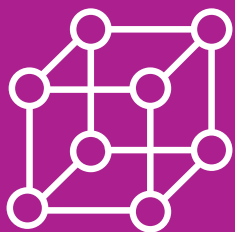
- Since 1996 the main area of activity of the Laboratory is application of the method of acoustic emission in assessment of the process of degradation of the structural materials and testing the technical condition of industrial objects.
- Laboratory also offers studies and analyses of fracture mechanics, experimental analysis of residual stresses, and investigation of shape resistance.
- Laboratory studies the development and implementation of new research techniques, technologies and modern structural materials for special applications.
- Laboratory staff coordinate and conduct different kind of research national and European projects as well research industrial projects.
- Laboratory staff have high qualification in the acoustic emission field, confirmed by European certificates (AT2 according to EN ISO 9712) and works in Polish (PKN) and European (CEN) Committee for Standardization.
- Laboratory personnel is also members of EWGAE and AEWG organizations (European and American)

OUR OFFER INCLUDES:

- laboratory and field AE tests
- testing of pressure installations - pressure vessels, spherical pressure vessel, reactors, industrial pipelines – performed in accordance with procedure approved by the Office of Technical Inspection (Subcontractor certificate of UDT No LB – 213/12)
- inspection of the technical condition of the above-ground and underground storage tank bottoms performed in accordance with procedure approved by the Office of Technical Inspection (Subcontractor certificate of UDT No LB – 213/12)
 - failure mechanics and mechanical testing of structural materials,
 - measurement of deformation in structural members by resistance extensometry
 - determination and analysis of residual stresses in structural members done by the blind hole-drilling strain gage (Mathara) method,
 - fracture mechanics and related testing of materials,
 - application of new structural materials,
 - failure mechanics and mechanical testing of composites.

Contact details:

Ireneusz Baran, PhD
al. Jana Pawła II 37, 31-864 Kraków
phone: +48 12 374 37 45, e-mail: baran@mech.pk.edu.pl



Co-operation offer



Department of Materials Engineering
Faculty of Mechanical Engineering
Cracow University of Technology



Department of Materials Engineering

Department of Materials Engineering Cracow University of Technology focuses its activities on complementary solutions of issues strictly touching the material problems. Vast range of issues including materials processing, failure analysis or improvement of manufacturing process are of typical activities undertaken in the Institute. Highly competent and multidisciplinary research teams comprising of experienced scientists solve issues based on materials engineering, alloys design, polymers processing, ceramics manufacturing, welding processes design and optimization as well as many others.

Clear and short decision ladder guarantee rapid communication with partner entities as well as clear responsibility range. Standardized agreement of confidence guarantee safe flow of strategic information including know-how and patented solutions between cooperating entities.

The high-tech and continuously improved laboratories and research areas joint with the newest development in computer aided design of materials allow to receive satisfactory results in acceptable time.

Multiple successfully finished projects including industrial applications, patented technologies,

high-impact publications are the bricks of success of Institute of Materials Engineering. Among many others, the best already successful projects are:

- ZAMAT (resulted in patented technology and its industrial application)
- GEKON (already resulted in few patents and in starting a Spin-Off company)

We seek for:

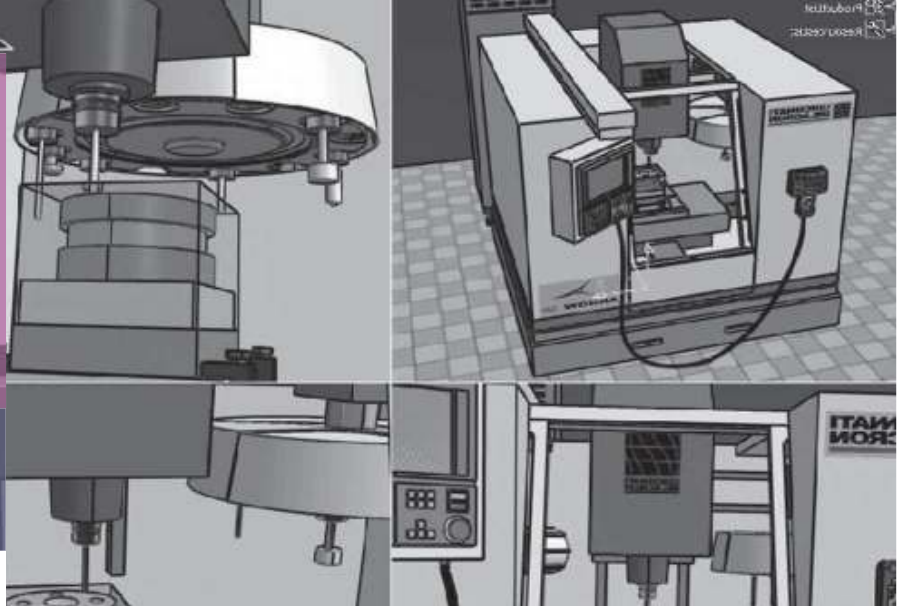
Industrial partners interested in short- and long term cooperation focused on finding solutions in fields areas of our exceptional specializations i.e. Metallic materials processing, testing and joining; Sintering and powder technology of metals and ceramics; Polymers design, manufacturing and testing; Structural ceramics for civil engineering; Thermal analysis and characterization.

Contact details:

Mateusz Skałoń PhD Eng.
Al. Jana Pawła II 37, 31-864 Kraków
e-mail: mateusz.skalon@mech.pk.edu.pl
web: www.iim.mech.pk.edu.pl



Co-operation offer



Division For Manufacturing System Design
Faculty of Mechanical Engineering
Cracow University of Technology



Division For Manufacturing System Design

Faculty of Mechanical Engineering (FME) Cracow University of Technology (www.pk.edu.pl) is one of seven faculties of CUT. Its activities are mainly focused on research and technology development in the field of applied mechanics, material engineering, machine design, thermal and process engineering, production engineering, computing sciences, power engineering and computer sciences. FME employs about 250 research and teaching staff. It offers the following fields of studies: power engineering, machine design and operation, automatics and robotics, management and production engineering, computer sciences, biomedical engineering and industrial design. Currently there is more than 4000 of students at FME and 250 teaching staff.

Division For Manufacturing System Design is one of ten organization units of FME. The research works focuses on:

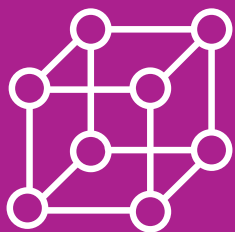
- computer integrated design of products, manufacturing processes and systems including the optimisation of machining and assembly systems using different criteria, as for example the energy costs in the concurrent engineering (CE) environment, the product development strategies, product development modelling, and PLM applications,

- Computer Aided Process Planning (CAPP), Computer Aided Assembly Process Planning (CAAPP) and CNC machine tool programming including the use of artificial application (AI) technologies like expert systems and neural networks, manufacturing knowledge modelling and storage, and manufacturing feature recognition
- Lean Manufacturing approaches to production organization including analysis of nowadays states and calculations of Lean Manufacturing indices.

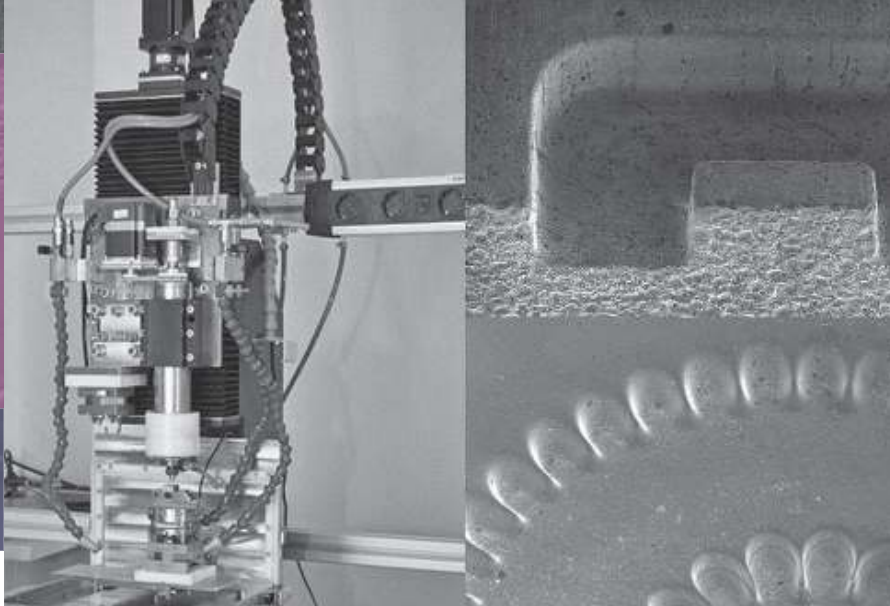
IPE makes expertises for many companies in Poland, including Grupa Kęty S.A., Essel Propack Polska Sp. z o.o., AluTeam Polska Sp. z o.o., Schneider Polska Technika Samochodowa i Kontenerowa Sp. z o.o. and others.

Contact details:

Assoc. Prof. Jan Duda, D.Sc., Ph.D
Al. Jana Pawła II 37
31-864 Kraków
phone: (+48) 12 374 32 50
e-mail: duda@mech.pk.edu.pl



Co-operation offer



Laboratory of Precision Unconventional Machining
Institute of Production Engineering
Cracow University of Technology



Laboratory of Precision Unconventional Machining

The Laboratory of Precision Unconventional Machining operates since 2008 and specializes in research in the field of unconventional manufacturing technologies (loss and additive). In this area we are focused on electrochemical and electrodischarge machining, precise laser machining of difficult to cut materials and hybrid manufacturing processes. The Laboratory is equipped with: electrochemical and electrodischarge micro-machine tool, DPSS Nd:YAG laser to machine diamond, PCD and other hard and brittle materials and hybrid - micro lathe. This specialized equipment is especially adapted for mezo- and micromachining and was designed and developed by Laboratory personnel.

Our highly qualified research team have many years of experience in research on unconventional machining methods. The Laboratory personnel cooperates with institutes in the whole Poland and in the world. The cooperation with Universities i.e. Warsaw Technical University or Magdeburg University in Germany mainly concerns mathematical modelling, process simulation and research in the field of unconventional manufacturing technologies (especially electrochemical and electrodischarge machining). Our scientific activity

concerns also local and worldwide cooperation with industrial partners at scope of feasibility studies, development of processes and technologies as well as technological advise.

We look for partners to participate in joint projects in following fields:

- Precision machining
- Unconventional manufacturing technologies (electrochemical machining, electrodischarge machining, laser machining of difficult to cut materials, hybrid processes)
- Modelling of unconventional manufacturing processes

Contact details:

Sebastian Skoczypiec, Assoc. Prof., PhD, DSc.
The Institute of Production Engineering
Cracow University of Technology
Al. Jana Pawla II 37, 31-864 Krakow, Poland
e-mail: skoczypiec@mech.pk.edu.pl



Co-operation offer



Laboratory of Coordinate Metrology
Faculty of Mechanical Engineering
Cracow University of Technology

Laboratory of Coordinate Metrology

Laboratory of Coordinate Metrology is one of the most advanced research centers in the Polish technical universities.

The calibration of coordinate measuring machines (CMMs) and the calibration of artefacts are the main activities of LCM's pursued for nearly 30 years. LCM performed several hundred works and calibrations on behalf of companies and research entities, including the Polish Central Office of Measures and companies Hexagon, Zeiss, Volkswagen, Fiat, Valeo, Comau, NSK Iskra Kielce, ELMOT Swidnica, Alstom Elblag, PMP Councils and many others. Several applications were implemented in the measurement industry. The laboratory is strongly oriented to cooperation with industry and implementation of innovative solutions for quality control, training, and implementation of technical cooperation in science and innovation. LCM participates and is invited to major research projects carried out by the major laboratories and measurement authorities in Europe.

LCM is the accredited calibration laboratory (No. AP 132) for:

- calibration of coordinate measuring systems,
- calibration of artefacts.

The laboratory operates in accordance with the implemented management system according to **PN-EN ISO / IEC 17025:2005**.

Research topics / Fields of cooperation:

- calibration techniques for calibration of measuring systems and material standards,
- accuracy assessment methods for coordinate measurements,
- modeling of measuring systems (construction of virtual systems),
- contact and contactless acquisition of points,
- multisensor measuring systems,
- large volume measuring systems,
- portable measuring systems (laser trackers, articulated arm CMMs),
- interferometric measurements of geometrical errors (using classical interferometer and Laser-Tracer system),
- construction and implementation of automated systems for quality control,
- systems of measurement accuracy prediction,
- 3d scanning of objects (using laser triangulation and fringe optics),
- adaptation of industrial robots for quality control systems.

Contact details:

al. Jana Pawła II 37, 31-864 Kraków
phone: +48 12 374 32 16, mobile: +48 501806917
e-mail: mkrawczyk@mech.pk.edu.pl



Co-operation offer



The Geotechnical Laboratory
Department of Environmental Engineering
Cracow University of Technology

The Geotechnical Laboratory

The Geotechnical Laboratory at Department of Environmental Engineering of Cracow University of Technology is equipped with the following devices:

Triaxial apparatus ELE

This apparatus is designed to set strength, stiffness and seepage parameters of soils. Three types of triaxial tests can be conducted ie. CD, CU and UU. This apparatus consists of a pressure cell (up to 1700 kPa) in which soil samples with 38mm to 100mm of diameter can be tested, actuator that allows displacement controlled loading programs with 9,99999 mm/min to 0,00001mm/min speed, two oil pumps that may generate max 1700 kPa of pressure, set of sensors (pressure, displacement, change of volume), ADU recorder and device for water venting.

Rowe's consolidometer (ELE)

This device allows to measure stiffness properties of soils, seepage coefficient and consolidation coefficient for different drainage and loading conditions. It allows also to measure pore water pressure at any stage of loading program. Results are registered by the ADU recorder.

Rowe's consolidometer (ELE)

The CPTU system consists of the probe Memocone MKII produced by Swedish company ENVI AB (probe+recording system) and hydraulic actuator completed by GEOMOR-TECHNIK SP Z O.O. company

The Memocone probe is an electric probe that registers cone resistance q_c , sleeve friction f_s and pore water pressure u_2 .

This device allows to set stratification of subsoil and to set up all major geotechnical properties like effective friction angle, undrained shear strength, densification ratio and stiffness moduli.

Contact details:

MSc. Marek Wawok
Institute of Geotechnics,
Department of Environmental Engineering
Cracow University of Technology
ul. Warszawska 24, 31-155 Cracow, Poland
e-mail: marwaw00@poczta.onet.pl



www.cut-dic-lab.pl



**Joanna Kolodziej PhD in Computer Science (with tenure)
Associate Professor**

Department of Computer Science
Faculty of Physics, Mathematics and Computer Science
Cracow University of Technology

Technology portfolio

Data Intensive Computing Lab at Cracow University of Technology (CUT DIC-Lab)

Business and science co-operation

Our Mission:

- To conduct international quality research on exploring, development and study of data intensive scalable reliable and intelligent complex systems and models, future generation technologies in artificial intelligence and biologically inspired data intensive computing, large-scale, parallel and distributed computing, Big Data related areas, cognitive sciences and allied disciplines.
- To support comprehensive evaluation, grassroots incubation, and seamless adoption of computational Intelligence technologies for educational, commercial, and research purposes.
- To collect together the expertise and resources needed to help students experience the excitement of research.
- To promote group visibility and dissemination of the research results of the group members and students in the relevant international forums.

Research Topics:

- Models of Data Intensive (DI) enabling infrastructures and middleware
- Parallel programming models for DI problems
- DI management and processing models in large scale distributed systems
- Algorithms and applications for Big Data and DI Computing
- Network architectures to support Dianalytics
- Network and resource provisioning approaches
- Big Data and DI visualization techniques
- Big Data storage and management in the cloud, many-cloud and fog systems
- Security and trust in DI management
- Energy-awareness in Big Data management
- HPC- and DI-enabled modelling for Life Sciences
- HPC- and DI-enabled modelling for Socio-economical and Physical models

Contact Information:

Prof. Joanna Kolodziej
Department of Computer Science
Faculty of Physics, Mathematics and Computer Science
Cracow University of Technology
ul. Warszawska 24
31-155 Cracow, Poland
E-mail: jokolodziej@pk.edu.pl



Business and science co-operation



Scientist + Entrepreneur = Success

If you are planning to develop your company on the basis of the latest scientific findings and you would like to collaborate with experienced scientific experts check the offer of Cracow University of Technology for the industry www.s2b.transfer.edu.pl.

Our online database includes:

- technology offers, patents and industrial designs
- listing of University commercial services including laboratory expertise and research
- database of experts with experience in the implementation of services for the industry

As an internal unit of Cracow University of Technology, our team of consultants is specialized in the commercialization processes. On the other hand long term active cooperation with entrepreneurs allows us to identify precisely industry needs and expectations. Experiences gained through the last two decades on the edge of industry and science collaboration, let TTC formulate optimal models of commercialization and suitable methods of development projects support.



Contact:
Technology Transfer Centre
Cracow University of Technology
ul. Warszawska 24, 31-155 Kraków

Mrs Magdalena Wójtowicz
tel. +48 12 628 28 45
s2b@transfer.edu.pl
www.transfer.edu.pl
www.facebook.com/CTTPK



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i Szkolnictwa Wyższego



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