



EUROPEAN TECHNOLOGY CONGRESS

Wrocław
12-13.06.2014



Wrocław University of Technology



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The National Centre
for Research and Development

Through Reindustrialisation of Europe
to Leadership in Enabling and Industrial Technologies

European Technology Congress

Wroclaw 2014

12 – 13 June, 2014
Wroclaw University of Technology

Congress Guide

European Technology Congress Wroclaw 2014 is held under the Honourable Patronage of

Deputy Prime Minister of Poland
Minister of Economy
Janusz Piechociński



Minister of Science and Higher Education
Prof. Lena Kolarska-Bobińska



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It is a great privilege for us to welcome you to the European Technology Congress Wroclaw 2014.

The European Union is emerging from its longest-ever recession. But the legacy of the crisis is severe: since 2008 – 3,5 million jobs have been lost in manufacturing, the share of manufacturing in GDP has fallen from 15,5 to 15,1%.

The economic importance of industrial activities is much greater than suggested by the share of manufacturing in GDP. Industry accounts for over 80% of Europe's exports and for almost 80% of private investment in R&D&I. It is now accepted that if you lose manufacturing, you lose R&D.

Worldwide competition is growing rapidly and Europe is in danger of lagging behind. The industrial productivity performance continues deteriorating in comparison to that of the EU's competitors. Europe must turn this trend and remain in the global race. We have to get back to the roots and to make Europe the continent of industry again.

The European Commission has put forward an ambitious target to rise the share of EU's industry contribution to as much as 20% of GDP by 2020. Key Enabling Technologies play an instrumental role in achieving this target. They will decide how Europeans will live and work in the future.

Europe has world-class research capability. European R&D is generally strong in new KET technologies. But the transition from ideas arising from basic research to marketable products is the weakest link. We urgently need to search ways of overcoming this „valley of death“.

For the next two days the Wroclaw University of Technology will be an open forum where debates, on the future of European research and industry, will take place. We hope that this exchange of ideas and experiences will be fruitful.

We welcome you to Wroclaw. The floor is yours.



Prof. Ryszard Pregiel

President

Polish Chamber
of Commerce

for High Technology



Prof. Tadeusz Więckowski

Rector

Wroclaw University
of Technology



Prof. Krzysztof Kurzydłowski

Director

National Centre of Research
and Development

Partners



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On behalf of the Steering Committee I take great pleasure to welcome you to the European Technology Congress Wroclaw 2014. The theme of the Congress „Through Reindustrialisation of Europe to Leadership in Enabling and Industrial Technologies” perfectly suits the ambitious objectives of European industries: to accelerate the recovery of economic growth and jobs, propel Europe to global leadership and competitiveness and move to a low-carbon economy. KET’s-based technologies and products are instrumental to achieve these targets.

Europe has a great tradition of outstanding scientists and intensive dedication to research and development, but it is not enough by itself. We still need to learn how to overcome the „valley of death” between the laboratory and the market, how to transform knowledge into innovation representing real added-value to society and economy. It is not only decisive to our economic success, it is the indispensable means of tackling the societal challenges we face today.

I strongly believe that the European Technology Congress Wroclaw 2014 will provide a great opportunity to discuss these problems and enhance the collaboration between the scientific community and the industry across Europe. I encourage you to take part in the debates and panels of the Congress and I hope that these debates will reinforce the importance of innovation to the economic growth of the European Union.

I wish you a very productive meeting.



Prof. Jerzy Buzek

Prime Minister of Poland 1997–2001

President of the European Parliament 2009–2012

Member of the European Parliament since 2004

Development of new technologies, their implementation in business practice, and building up cooperation between science and business - these are the key issues faced by regions on their way to economic development based on knowledge and innovation. It is no different in Lower Silesia. We are one of the leaders in economic development in the country and we are the most industrialised region with enormous intellectual potential.

Both international corporations and national companies from the SME sector develop rapidly in Lower Silesia. Lower Silesian universities and scientists have many achievements to their credit as well. Using these advantages in the upcoming years, strengthened by the EU funds in the new financial perspective, will allow us to maintain our position as a leader of economic development and, above all, to reduce the gap between Poland and the most developed regions in Europe. The key to this will be investment particularly in the corporate sector based on new or significantly improved products, processes and services. We hope that these innovations will come from Lower Silesia more and more often, and show what potential lies in our residents, research institutes and entrepreneurs.

I think that organising the International Congress of Technology in the capital of Lower Silesia confirms our aspirations and desires to achieve the best position in Europe. We want to be in the centre of the most important debates on economic future of Europe, the use of European funds and development. The Congress is a great opportunity to establish international partnership and cooperation not only between business and academic communities but also administration. I hope that all participants will make the most of this opportunity.



Cezary Przybylski
Lower-Silesia Voivodeship Marshal

The enhancement of the European industry potential is a current debate topic. I'm all the more honoured to take Honorary Patronage over the European Technology Congress 2014 which aims to provide a unique opportunity to debate the reindustrialization of The Old Continent.

Facing the challenges which stand before the European industry, future global action should be taken in order to guarantee its rebuilding and subsequent development. We must recognize the strong contribution of innovativeness and future technologies to competitiveness in global market.

The Ministry of Economy makes every effort to support entrepreneurs and to encourage them to use the technologically advanced achievements. In the period 2014-2020 the primary focus will be the creating of innovation-friendly environment, commercialization of the prototyped solutions and their practical application. Moreover we are still working on framework for simplification of conditions for conducting economic activity. We are especially focused on removing regulatory and administrative barriers.

The last financial crisis affecting many European countries has shown that strong industry is key to a strong economy and stability of modern markets. On account of this, last year I appointed the Minister of Economy Commission for Industrial Policy. Its key tasks include initiatives aimed at increasing competitiveness and monitoring the implementation of EU projects and national industrial policy.

Industry is a very significant branch of the national economy. Therefore it is very important to identify challenges and goals to be achieved in order to guarantee development of the national economy. The European Technology Congress will be an ideal opportunity to conduct a debate on technological development. It is also a perfect forum to share findings, experiences and refine ideas with other stakeholders. I wish you all successful, productive meetings that will generate many positive outcomes in the future.



Janusz Piechociński
Deputy Prime Minister

I am very pleased that this year's edition of the European Technology Congress is taking place in Poland. I am also pleased that this event is hosted by the Wrocław University of Technology, as it is one of those universities, which clearly embodies the great changes taking place in the Polish science. Today, Europe puts innovation first, while research and development have become the flywheel of the European economy. The Horizon 2020 programme has already started – the biggest European support programme for research and innovation in the history. To that end, the European Union will allocate more than 77 billion euros. This is a great opportunity to make a technological revolution, and at the same time it is a challenge, which can be jointly met by scientists and entrepreneurs. Poland is one of the European leaders in the dynamics of growth of expenditure on R & D. Thanks to government policies, we have created the conditions to raise the level of innovation in our economy. The Ministry of Science and Higher Education has introduced solutions and mechanisms to better exploit the potential of Polish scientists and improve their cooperation with the business sector. At the same time, we were able to introduce changes in the structure of financing R & D. The share of entrepreneurs in financing research and innovation continues to grow and it now represents more than 32 percent of all expenditure in Poland. We will continue this policy, aimed at strengthening the links between business and science and the development of enterprise innovation, in the new EU financial perspective. I believe that through a proper use of EU funds we can accelerate the changes that have already occurred. Changes which are vital for Europe at the moment. I am convinced that the European Congress of Technology will be an excellent opportunity to discuss the needs and challenges of the coming years. I wish you inspiring and fruitful discussions, and I wish us all much success of European innovators that will constitute the competitiveness of the European economy.

Yours sincerely



Prof. Lena Kolarska - Bobińska

Minister of Science and Higher Education

Programme

Day 1, Thursday, June 12th

- 13.00–14.00 Registration and Brunch
- 14.00–14.15 Congress Opening
- 14.15–14.35 Introductory Address: The Strategy for Reindustrialisation of Europe
- 14.35–15.45 Introductory Plenary Panel: The way forward: joining forces between political leaders and private stakeholders for the reindustrialisation of Europe
- 15.45–16.15 Coffee Break
- 16.15–18.00 Problem Session 1, KETs for a competitive Europe
- 19.00 Gala dinner

Day 2, Friday, June 13th

- 09.00–10.30 Problem Session 2, How to overcome the KETs "Valley of Death?"
- 10.30–12.00 Problem Session 3, European policies on KETs and Smart Specialisation
- 12.15–12.30 Coffee Break
- 12.30–14.00 Problem Session 4, Building an excellent research base for the Reindustrialisation of Europe
- 14.00–14.30 Closing Session
- 14.30–15.30 Lunch

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Problem Session 1

KET's for competitive Europe

The European Commission selected six Key Enabling Technologies (KETs) for Europe. These KETs are photonics, industrial biotechnology, nanotechnology, advanced materials, micro-/nanoelectronics and advanced manufacturing systems. They are embedded at the core of Europe's innovative competitive products and they underpin strategic European value chains. Competitor regions, notably the US and Asia, recognize the strong contribution of KETs to competitiveness and have launched focused policies based on public incentives which significantly impact the global level playing field. It is therefore essential that Europe adapts its strategy, notably via State Aid and other relevant rules, as well as trade defense instruments, to level the playing field for the European industry. KETs are now a priority under Horizon 2020, with a dedicated budget of 5.9 billion euro, and for the European Structural and Investment Funds. They have also been identified as a priority by the European Investment Bank. However, additional instruments of the Union in the areas of KET research and industry are urgently needed and new initiatives are required for Europe to remain in the global competition.

The session will be dedicated to discussing how to

- Ensure a global level playing field for KETs R&D&I and investment activities
- Implement multi-KETs projects and effective solutions for combined funding mechanisms in particular within the framework of Horizon 2020
- Reinforce the KETs innovation capacity of SMEs and small&mid-cap companies
- Overcome the shortage of skilled KET labor and the mismatch between supply and demand of skills in critical KET-related industries
- Protect and exploit European funded intellectual assets
- Promote the development and deploying of KETs at national and regional level
- Create market pull for KETs
- Increase investor and public confidence in new technologies

Chair

Prof. Gabriel Crean, Vice-President for Technology and Director for Europe, CEA, France, Chairman of the Sherpa Group of the European Commission High Level Group on KETs

Keynotes speakers

Mr Emmanuel Forest, Executive Vice-President, Bouygues Group, France

Prof. Jacek Guliński, Undersecretary of State, Ministry of Science and Higher Education, Poland

Dr. Gernot Klotz, Executive Director Research and Innovation CEFIC AISBL, Belgium

Dr. Giuseppe Tartaglione, President of Volkswagen Group, Italy

Dr. Peter van Staa, Vice-President, Robert Bosch GmbH, Germany

Dr. Andreas Wild, Executive Director, ENIAC Joint Undertaking, Belgium



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Problem Session 2

How to overcome the KET's „valley of death“?

Manufacturing is an indispensable element of the innovation chain: it enables technological innovations to be applied in goods and services, which are marketable in the marketplace and is key to making new products affordable and accessible so as to achieve the desired impacts. Europe has world-class research capability. However, it is not as successful in bridging the gap between its research and product commercialisation through manufactured products and processes. This has resulted in a European “valley of death” on the road to the economic success. It is particularly relevant in the area of Key Enabling Technologies (KETs). KETs are knowledge and capital-intensive technologies associated with high research and development (R&D) intensity, rapid and integrated innovation cycles, high capital expenditure and highly-skilled employment. The complexity of the production process (advanced manufacturing) requires co-locating R&D and production.

The session will address the following main topics

- Identification of cross-cutting KET's industrial and market needs, key nodes and value chains
- Criteria for the selection, evaluation and management of future KETs projects in EU's largest programs – Horizon 2020 and the Cohesion policy 2014–2020
- Horizon 2020: KETs Call of 2014/2015
- Works plans and roadmaps to manufacturing
- Selection criteria for KETs pilot lines, product demonstration projects and early stage prototyping facilities
- Monitoring of implementation level of KETs projects at different Technological and Manufacturing Readiness Levels

Chair

Prof. Jerzy Kącki, President of the Scientific Board, National Centre of Research and Development, Poland

Keynotes speakers

Ms Ilona Galia Antoniszyn-Klik, Undersecretary of State, Ministry of Economy, Poland

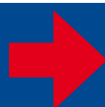
Dr. Rikardo Bueno, Director for Programmes Area, Tecnalia, Spain

Mr Guido Chiappa, Head of Innovation Strategy Unit, Project Coordinator, D'Appolonia, Italy

Mr Robbert Fisher, Managing Director, Joint Institute for Innovation Policy, Belgium

Dr. Sabine Herlitschka, CEO, Infineon Technologies Austria AG,

Prof. Wolfgang Steiger, Director for Future Technologies, Volkswagen AG, Germany



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• **Electronics**

electronic technologies, materials and equipment; printed circuit boards and surface assembly; ultrasound technology; technical process and measurement automation

• **Plastic forming, cutting and cutting technology**

tool and machine component heat processing; protective, technical and decorative coating deposition; plastic surface forming, machining (and specialised software)

• **Applied optics and laser technology**

optical microscopy; holography; optical data processing and image analysis; gradient and fibre optics; diffractive optical elements; measurement techniques with the use of optical methods

• **Environmental engineering and protection**

waste management and clean technology; waste processing and recycling; environmental impact studies of machine tools, equipment and technical fluids

• **Packaging, food and transportation industry**

new (including biodegradable) materials and packages; packaging systems; environmental impact of packages and packaging materials

• **Materials and surface engineering**

material, metal, new alloy and composite processing; tool materials and wear-resistant coatings; nanotechnology and new materials

• **Road, bridge and airport design and construction**

new materials and advanced technologies; traffic safety; road network management systems; road and bridge condition diagnosis methods

• **Logistics and warehousing**

logistics processes, cost analysis and standardization; intermodal transport and intelligent transport systems; supply chain management; tracking and tracing systems; optimization of distribution networks

• **Machine tool design and construction**

specialised machine tools; noise and vibration level testing; certification of machine tools, technical equipment, abrasion tools, technical fluids and mechanised hand tools

• **Metals and plastics processing**

non-ferrous metals processing; production of oxide and composite powder sintered fittings



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Problem Session 3

European Policies on KET's and Regional Smart Specialisation

Owing to their strategic importance for the competitiveness of the European industry and economy, KETs have been identified as a technological priority in a broad range of European policies and programmes. However, individual EU policy initiatives are not mutually supporting and aligned in a common strategic approach. KETs policy coordination between European, national and regional efforts is essential. In this regard, the whole potential of smart specialisation has to be captured by regions and exploited to create synergies across regions to unleash the KETs potential in Europe. Better coordination between the European and the national and regional policies and funding programme complementarity would reduce duplication and focus resources collectively to research and innovation in Europe.

The session will address the following main topics

- Fostering EU competence and competitiveness through smart specialisation
- Interactions and synergies between Smart Specialisation and KETs policy
- The smart specialisation approaches at EU, national and regional levels and their coordination
- The research and innovation activities of the Smart Specialisation (RIS3) initiative which will be funded by Horizon 2020 and the Cohesion Fund

Chair

Prof. Edward Chlebus, Vice-President of National Representatives, MANUFUTURE, Wroclaw University of Technology, Poland

Keynotes speakers

Mr Bert De Colvenaer, Executive Director, Fuel Cells and Hydrogen JU, France

Mr Xabier Goenaga, Head of Knowledge for Growth Unit, JRC-IPTS, Spain

Dr. Georges Kotrosios, Vice-President Marketing and Business Development CSEM, Switzerland

Dr. Eva Majkova, Vice-President, Slovak Academy of Sciences, Slovakia

Mr Marek Przeor, Programme Manager in the Directorate General for Regional Policy, EC

Ms Iwona Wendel, Undersecretary of State, Ministry of Infrastructure and Development, Poland

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Problem Session 4

Building an excellent research base for the reindustrialisation of Europe

The present-day R&D&I is a core part of the modern industry world. Research and development is of great importance in business as the level of competition, production processes and methods are rapidly increasing. Unfortunately, research and development are very difficult to manage. Higher R&D spending is not enough by itself. The session will be dedicated to discussing how European RTOs can support the reindustrialisation of Europe and to presenting leading research organizations in the field of technology in Europe with the focus on creating and transferring novel technologies to the industry.

Chair

Prof. Krzysztof Kurzydłowski, Director, National Centre of Research and Development,
Poland

Research and technology organizations

Alternative Energies and Atomic Energy Commission CEA

Fraunhofer Society

VTT Technical Research Centre of Finland

Polish Main Council of the Research Institutes RGIB

Keynote speakers



Iwona Antoniszyn-Klik,

Undersecretary of State at Ministry of Economy

Since 2010, she served as deputy governor of Silesia. Earlier, from 2008 to 2010 she served as a deputy director of the Department of Regional Development and the Department of the European Funds and the Regional Development Programs in the Lower Silesia Marshal's Office. In 2003–2004, she worked on the project of the European Commission under the PHARE Institution Building Project "Implementation ERDF in Poland". From 2000 to 2004, she was a researcher at the Frankfurt Institute for Transformation (FIT) while also lecturing at the WIPA Schulverbund Frankfurt (Oder). She obtained her Master's degree in political economy from European University Viadrina in Frankfurt. She has also completed postgraduate studies at the Diplomatic Academy in Vienna on issues of institutions and EU law, international relations, diplomacy, the world economy and international law, transatlantic relations. Currently completing her PhD in political economy of international negotiations.



Rikardo Bueno,

Director for Programmes Area, Tecnalía

Dr. Bueno is the Director for the Research Programmes Area at the Business Development division of Tecnalía, he has got a degree in mechanical engineering and a PhD in engineering. He has been active since 1989 in the European research projects, mainly in the fields of manufacturing and industrial systems. He coordinated the integrated project NEXT – Next Generation Production Systems, a big research initiative for the machine-tool sector. He has been working for Fatronik, a non-profit research organization, for twenty-one years, until its merger in Tecnalía to create the biggest RTO in Spain. His responsibilities went from researcher, head of the mechanical engineering department and responsible for the scientific policy to directing the research programmes area, first in Fatronik and currently at Tecnalía. He is active in manufacturing and actively participated in the setting up of the Factories of the Future PPP initiative. During the last four years he co-chaired the FoF AIAG and since 2014 he is co-chairing the Factories of the Future PPP partnership Board.



Guido Chiappa,

**Head of the Innovation Consulting Division of D'Appolonia S.p.A.
(part of the RINA Group).**

Guido Chiappa graduated in Engineering from the University of Genoa in 1996 and joined D'Appolonia S.p.A. in 2004, after receiving significant experience in Accenture (formerly Andersen Consulting); his main focus was innovation and business intelligence.

Today, Mr. Chiappa leads the Innovation Consulting Division, a multidisciplinary team of more than 50 engineers providing consultancy services in the field of Research & Development Strategy, Technological Intelligence and Technology Strategy, Technical Scenario Analysis, Technology Scouting.

Guido Chiappa is an expert in Technology Intelligence and Innovation Management Methods.

Mr. Chiappa advises Start-ups, Small and Medium Sized Enterprises, as well as Large Industrial and Multinational Groups on scientific and technical trends, opportunities related to new and emerging technologies, IPR strategy, Corporate Innovation Strategy, New Product Development and funding instruments supporting Innovation.



Edward Chlebus,

Wrocław University of Technology

Dean of Mechanical Engineering Faculty

Prof. D.Sc. Eng. Edward Chlebus is the Dean of the Mechanical Engineering Faculty at Wrocław University of Technology – Poland, Head of the Centre for Advanced Manufacturing Technologies CAMT and Fraunhofer Project Center, President of Lower Silesia Park for Science and Innovation – DPIN, Representative of Poland in the FP7's NMP (Nanotechnologies, new Materials and Production technologies). His main Research areas are: design methodology and CAx and PDM/PLM systems, rapid prototyping- rapid tooling- reverse engineering, modeling, optimization and simulation of production processes. He is the author of: 6 Books, 280 papers, Promotor of 23 finished Ph.D and

14 current dissertations.; He was a contractor of 6 International Projects in FP6, Leonardo da Vinci, ERA Net and many internal projects and industrial applications, he is a member many Scientific Committees in Journals and Conferences, member of Implementation Support Group of EPT ManuFuture; and a co-ordinator of Polish ManuFuture Technological Platform and Polish ProNet Excellence Network.

Bert De Colvenaer

Executive director – FCH JU (Fuel Cell and Hydrogen Joint Undertaking)

Bert De Colvenaer was appointed as the Executive Director of the Fuel Cells and Hydrogen Joint Undertaking as from 1 September 2010. As Executive Director, he is the legal representative of the FCH JU and the chief executive responsible for the day-to-day management of the FCH JU, in accordance with the decisions of the Governing Board. He is supported by the staff of the Programme Office, whose key responsibilities include: managing the launch of the calls for project proposals and the evaluation and selection of projects; monitoring and update the Multi-Annual Implementation Plan of the FCH JU; coordinating with other relevant programmes at national and regional levels; and communicate information on FCH JU activities.

For more than 20 years, Mr. De Colvenaer has been involved in the automotive industry in the field of power-train production engineering and advanced research. From the early 90's he has been working on fuel cell research and was involved in high level group activities and major EU research projects. In 2002, he established and led the Advanced Technology Division of Toyota Europe, focusing on breakthrough research in the field of robotics, fuel cell and hydrogen and new automotive production technologies.

Bert De Colvenaer's academic background is in mechanical engineering and industrial management.



Gabriel Crean

Vice-President for Technology and Director for European Affairs in CEA Technology, CEA.;

President of the High Level Group on Key Enabling Technologies

Professor Gabriel Crean is the Scientific Director of the Division of Technological Research of the Atomic Energy Commission of France. This division includes three world class research institutes in Micro-NanoTechnologies (LETI), New Technologies for Energy (LITEN) and Information Technology (LIST) in Paris and Grenoble. He is an Advisor to the Administrator General (President) of the Institut National Polytechnique de Grenoble (INPG) on research politics as well as a visiting Professor. He is an invited Research Professor at the Materials Research Institute, Northwestern University, USA. He is a Fellow of the Institute of Engineers of Ireland and a Fellow of the Institute of Physics of the U.K. Prior to his current responsibilities, Professor Crean was Vice President for Research and Innovation at Athlone Institute of Technology and an Adjunct Professor at Dublin City University within the Faculty of Science and Health. He is the Director of the Irish Research Council for Science, Engineering and Technology funded "International Centre for Graduate Studies in Micro- and Nano-Engineering", which is an initiative amongst twelve academic partners in Europe, Asia and the US. He was the Director of the Irish National Microelectronic Research Centre (Tyndall Institute) for six years and Director of the Enterprise Ireland Optoelectronics Research Centre, both at University College Cork, Cork, Ireland and Professor of Microelectronic Engineering in the Department of Microelectronic Engineering at University College Cork. He has been awarded Scholarships from both the French Government and the Centre National des Telecommunications (CNET), France. At an international level, Professor Crean is the immediate Past President of the International Union of Materials Research Societies (www.IUMRS.org). He is President Emeritus of the European Materials Research Society (E-MRS). He was the Irish Representative to the European Science Foundation (ESF) Standing Committee for Physical and Engineering Sciences from 2000–2007 and remains on this committee as an invited observer of the European Materials Forum. He has acted as a consultant for European Governments and the European Union (EU) Research Directorate. Most recently, he was a member of two international panels reviewing the Spanish and Finnish Government programmes in ICT related science, technology and innovation. Professor Crean is a co-founder of three hightechnology start-up companies, FireComms Ltd., Optical Metrology Innovations Ltd and Biosensia Ltd. Professor Crean was a Member of the High Level Advisory Team working with the Private Office of European Commission President Jose Barroso, on a prefiguration of the European Institute of Technology (EIT) during 2006–2007. He was a coordinator of the EU Directorate



General Education and Culture funded pilot project ComplexEIT, to define innovative governance and organisation models for future European initiatives, such as the European Institute of Innovation and Technology. Professor Crean has been Chairman of several international conferences and symposia. Most recently, he was co-chair of the first IUMRS World Materials Summit held in Lisbon, Portugal under the auspices of the Portuguese Presidency of the European Union.



Robbert Fisher,

Joint Institute for Innovation Policy (JIIP)

Robbert Fisher is the managing director of the Joint Institute for Innovation Policy (JIIP) since 2011. JIIP is an undertaking of TNO, VTT, Joanneum research and Tecna-
lia and focuses on policy analysis and advice in the domains of R&D and Innovation.

Robbert Fisher specializes in strategy and policy in the fields of R&D, technology transfer and innovation in general. For more than 20 years Mr. Fisher has been involved in EU R&TD policy assessment and development in various capacities.

He is currently leading several R&D and innovation related studies (Nano-Insight, Major Innovations, Open Innovation) and is involved in several KETs related activities as well as impact assessment and evaluation of the Commission and national programmes and policies. Recently, he was the rapporteur of the CIP ICT PSP interim evaluation panel, the ICT network and Competitiveness study researching the impact of RTD networking in ICT on competitiveness. He was a senior expert in a study looking into Critical Mass in public RTD programmes of DG RTD, was director of and the ERASCOPE study (analysing the effects of scale and scope of research programmes in ERA and the Innovation Impact study, which analysed the innovation outputs of the 5th and 6th Framework Programmes.

Prior to joining JIIP, Mr. Fisher has, amongst others, worked for PwC (Coopers and Lybrand) and as a seconded expert for the Commission. He received a Master's degree in Law, Leiden University, The Netherlands in special subjects of: Intellectual property, Information Systems and Business economics. He holds degrees in marketing and public relations. In addition, he is an alumnus of the PwC International Management Development programme.



Emmanuel Forest,

Executive Vice-President, Bouygues group

Emmanuel Forest is the Executive Vice-President, European and Public Affairs for the Bouygues group. He is responsible for the Group's institutional relations, particularly with EU institutions, and is the Chief Executive Officer of Bouygues Europe SA in Brussels. The 55 years old Emmanuel Forest is a graduate of both École Polytechnique (1975) and ENA (1981). He started his career in the French Ministry of Education and then became a technical advisor to the Secretary of State in charge of universities. He then joined the French Ministry of Foreign Affairs in 1986 as a specialist advisor to the cultural, scientific, and co-operation counsellor. In 1989, Emmanuel Forest joined the Bouygues group as a Director reporting to senior management before becoming Corporate Secretary of Bouygues Bâtiment International in 1990 and of Bouygues Telecom in 1994, after the operator was awarded its licence. He was subsequently appointed Executive Vice-President in 1998 and Deputy CEO & Deputy Chairman of Bouygues Telecom in 2007.



Xabier Goenaga

Head of the Knowledge for Growth Unit at the Institute for Prospective Technological Studies; Joint Research Centre, European Commission

Xabier Goenaga is responsible for the Knowledge for Growth Unit of the JRC-IPTS of the European Commission. Using a broad range of qualitative and quantitative economic tools, this Unit supports mainly innovation, cohesion and digital agenda policies. For example, this Unit:

- runs the smart specialisation platform that supports regions and Member States developing research and innovation strategies for smart specialisation as well as digital growth strategies. It also contributes to developing further the concept of smart specialisation,
- assesses the impact of innovation factors on company performance and issues annually, the industrial R&D scoreboard, and
- develops and maintains a unique system of regional economic models for evaluating the im-

part of Cohesion Policy expenditure (e.g. infrastructures, R&D and innovation, human capital) on growth and employment.

Prior to this he was at DG RTD where he was Head of the Units responsible for (i) the economic and policy analysis of research policies and support to the open method of coordination, (ii) the measures to support the participation of SMEs in the Framework Programme and (iii) agro-industrial and agricultural research.

He graduated from the Basque Country University in 1982, holds a PhD in chemical engineering from the University of Wales and a Master degree in Public administration from the École Solvay in Brussels.

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Jacek Guliński,

Under Secretary of State, Ministry of Science and Higher Education

Prof. Jacek Guliński was born in Poznań in 1950. He specialises in silicon-organic chemistry and issues connected with innovation and technology transfers. He is a professor of the Faculty of Chemistry at the Adam Mickiewicz University in Poznań. In 1973, he received his MSc in chemistry (Faculty of Chemistry, AMU), and in 1978 the title of engineer in horticulture (University of Agriculture, Poznań). In 1983, he received a doctorate in chemical sciences (Faculty of Chemistry UAM), and in 1996 the title of doctor habilitatus. In the years 1995–2008, Jacek Guliński was the Vice-Director of the Poznań Science and Technology Park of the AMU Foundation – the first science and technology park in Poland. In the years 2004–2008, he was the Head of the University Centre for Innovation and Technology Transfer at AMU. From September 2008 to January 2012, he was the Vice-Rector for European programmes and cooperation with the economy at the Adam Mickiewicz University in Poznań. In the years 1985–1987, Jacek Guliński was a fellow at the Department of Chemistry, the University of British Columbia, Vancouver (Canada), and later at numerous short research visits abroad. In the years 1999–2005, he was the President of the Board of the Polish Business and Innovation Centres Association. He is a member of the Polish Chemistry Society. In 1994, he received the Gold Cross of Merit.



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Sabine Herlitschka,

Member of the Management Board of Infineon Technologies Austria

Dr. Sabine Herlitschka is a Member of the Management Board of Infineon Technologies Austria, as of 2012 responsible for Technology & Innovation. Her professional career includes: industrial biotechnology research; international cooperation and financing in research technology and innovation; internships at leading organizations in the USA incl. NSF-National Science Foundation, AAAS-American Association for the Advancement of Science; cooperation with the first Science Advisor in the US Department of State; Fulbright Scholarship at George Washington University and Johns Hopkins University/SAIS; as well as founding Vice-Rector for Research Management and International Cooperation at the Medical University of Graz/Austria. Before joining Infineon, Herlitschka was the Director of the Division European and International Programmes in the Austrian Research Promotion Agency with responsibility for implementation of European & international Research and Technology Programmes, particularly the 7th EU Framework Programme in Austria. For almost 15 years she has been involved in European Research as advisor, project coordinator & proposal evaluator, as well as participant chairperson in various European & international expert groups. Herlitschka holds a Ph.D. in Food and Biotechnology with Postdoc specialization in molecular biology and genetic engineering and an Master of Business Administration (MBA) in General Management.



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Jerzy Kącki

President of the Board of the National Centre for Research and Development

Prof. Jerzy Kącki is the President of the Board of the National Centre for Research and Development. Born in 1953 in Sosnowiec, he graduated from the Faculty of Mechanical Engineering at the Warsaw University of Technology (specialized in semiconducting materials technology). In 1982 at Warsaw University of Technology (Institute of Materials Science) he defended his PhD thesis where he investigated crystallographic perfection of silicon ribbons for solar cells. In 1986–1987, he worked as a postdoctoral fellow at the Department of Materials Science and Engineering, Cornell University, Ithaca, NY, USA. Research on crystal lattice defect generation in



processed semiconducting devices brought him to habilitation thesis. He was awarded the degree of Habilitated Doctor of Technical Sciences in 1990. He received a title of Professor in Technical Sciences in 2000.

He has authored/co-authored over 150 articles published in international scientific journals and presented at numerous conferences on semiconducting materials science, nanotechnology and materials testing methods.

Since 2005 he has been the Vice-director for Research and Development of the Institute of Electron Technology. The Institute conducts research in the field of semiconductor electronics and physics in order to develop and commercialise innovative micro- and nanotechnologies and their applications in semiconductor microelectronics and photonics.



Gernot Klotz,

Executive Director for Research and Innovation for the European Chemical Industry Council (CEFIC)

Dr. Gernot Klotz studied Biology and Microbiology at the University of Aachen (Germany). After having worked for the US based pharmaceutical company Armour, he joined Bayer in various business sections (pharmaceutical, animal health and crop protection/product development). Since February 2007 G. Klotz is the Executive Director for Research and Innovation for the European Chemical Industry Council (CEFIC). He is a member of the CEFIC Leadership Team, which has the overall responsibility for coordinating and steering the activities of the organization. Specific key areas of his responsibility are innovation (technology development, innovation policies, societal acceptance of new technologies and products), emerging science-policy issues (Health and Environment) and nano risk benefits and testing risk assessment within the CEFIC Long Range Research Initiative (LRI), as well as managing the CEFIC Research and Innovation Board. He is also a Board Member of the EU Technology Platform for Sustainable Chemistry (SusChem). G. Klotz has been called on to various advisory and steering committees at OECD, WHO and EU Commission level in areas like: innovation, technology development, testing and assessment, impact on environment on health and sensitive subpopulations. He is currently chairing the Group on Nanotechnologies and he is responsible for the Value Chain topic within the High Level Group Key Enabling Technologies (HLG KETs).

Georges Kotrosios

Vice-President Marketing and Business Development CSEM

Georges Kotrosios is member of the Executive Board of CSEM, in charge of commercialisation of R&D. His everyday concern is to optimize the usefulness of the R&D for the industry. His background is in optical fiber sensors and lasers. Presently, he sits in boards of R&D Alliances as HTA (Alliance of Fraunhofer-microelectronics, CEA-VTT), EARTO and EREA, he is member of the Board of CSEM do Brazil and sits in Executive and Advisory boards of R&D related associations in Switzerland, France and Russia.

He has published numerous articles in peer reviewed journals as well as in conferences. He is one of the co-authors of the Genessys, the European White paper on Nanotechnology.

He holds a Ph.D. Degree in Optoelectronics, Institut National Polytechnique de Grenoble (Fr), an Executive MBA in Management of Technology, HEC – Université de Lausanne/EPFL (CH) and an Electrical Engineering Degree from the Aristotle University of Thessaloniki (Gr).



Krzysztof Jan Kurzydłowski

Director of the National Centre for Research and Development

Prof. Krzysztof Jan Kurzydłowski graduated from the Warsaw University of Technology. He was granted the title of Professor in 1995. From 1993 to 1999 he acted in the capacity of Vice-Rector of the Warsaw University of Technology, while in 1999–2003 he was the Dean of the Faculty of Materials Engineering. He is a member of many international associations and organisations, among others, the International Advisory Board of NIMS National Institute of Materials Science (Japan).

Professor Krzysztof Jan Kurzydłowski gained extensive experience in public administration. He was the Chairman of the Council of the Technology Agency, acted in the capacity of the President of the Research Commission for the Development of the Economy and the Vice- President of the State Committee for Scientific Research, as well as

the Vice-President of the Scientific Council. From November 2005 to December 2007 he held the position of the Under-Secretary of State at the Ministry of Science and Higher Education.

As of 1 January 2011, he was appointed as the Director of the National Centre for Research and Development by the Minister for Science and Higher Education.

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Eva Majkova,
Vicepresident
Slovak Academy of Sciences

Eva Majkova, D.Sc., completed her studies at the Comenius University, Bratislava, Slovakia in 1972. She is working at the Institute of Physics of the Slovak Academy of Sciences, and she was the director of the Institute of Physics in the period 1999 – 2007. At present, she is the head of the Department of Multilayers and Nanostructures NANOLAB and since 2009 the vicepresident of the Slovak Academy of Sciences responsible for research. She is active in the field of nanoscience and nanotechnology, preparation and properties of metallic nanoparticles and ultrathin film multilayers. She is national representative in IUVSTA, member of the Steering Committee of M-ERA Net program and Socius ordinarius, Academia Europaea Scientiarum et Artium, Vienna.



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Marek Przeor
Programme Manager
General Directorate for Regional Policy

Marek Przeor is a Programme Manager in the General Directorate for Regional Policy in the European Commission responsible for the national Operational Programme Innovative Economy and Regional Operational Programmes in Lower Silesia and Silesia.

He has a university degree in finance and banking and international economic and political relations, earned at the Warsaw School of Economics in 1997. Two years later he was awarded the degree of Master of Business Administration by the consortium of Warsaw University and the Free University of Brussels. He also completed a PhD study programme in the Faculty of Management at Warsaw University. Since 1996 he has worked in the banking sector and top-management consulting services where he was in charge of a number of business development and restructuring projects. He joined the European Commission in January 2004 as a policy officer in DG ENTR, where he stayed for five years working on legislation proposals in the field of climate change, environment, energy and transport, and was responsible for the evaluation of the Polish structural reforms in the implementation of Lisbon strategy.

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Wolfgang Steiger,
Director Powertrain Research
Volkswagen AG

Wolfgang Steiger is the director of Future Technologies within the External Relations department for the Volkswagen Group. His skills are in powertrain development and design.

During his career he was involved with Robert Bosch GmbH, Battelle Institute and Adam Opel AG, finally being responsible for diesel engine development and testing. In 1997, he joined the Volkswagen AG group research department. Until December 2008, for more than eleven years, he had been responsible for the powertrain research, including diesel and gasoline engines, transmissions, hybrids, batteries, fuel cells, engine electronics and fuels.

He delivered more than 100 publications, presentations and lectures in several universities, including in China.

Wolfgang Steiger is engaged in several European organizations:

- Chairman of the European Road Transport Research Advisory Council ERTRAC
- Chairman of the European Green Car Initiative EGCI Advisory Group of the European Commission
- Steering team member of the Energy Science Center ETH Zürich

Wolfgang Steiger graduated from the Technical University Darmstadt with a degree in mechanical engineering and holds a PhD (Dr.-Ing.) from the same university. In 2008, he was appointed Professor Coburg University, Germany.

In 2005 Wolfgang Steiger was rewarded with the “Prof. Ferdinand Porsche Prize”.





Giuseppe Tartaglione,
President
VOLKSWAGEN GROUP ITALIA

Mr. Tartaglione graduated in Law from the University of Turin. From 1978 to 1988, he was the Commercial Director at Carello Spa. In 1988, he became Managing Director at Magneti Marelli Deutschland. Since 1999, Mr. Tartaglione is a Member of the Board of Magneti Marelli SpA. In 2001, he became the Managing Director at Comau Deutschland and Member of the Comau Spa's Board. In 2004, he became the Head of Marketing and Customer Relations at Fiat Powertrain Technologies Spa, and a Member of the Company's Board. In 2006, he was the Executive Vice President Sales & Marketing of SEAT SA in Barcelona. From 2007 to 2012, he was the President and CEO of Volkswagen Group Italia Spa. In 2012, Mr. Tartaglione became the Chairman Corporate Relations Italy in Volkswagen AG.



Peter van Staa
Vice-President,
Robert Bosch GmbH, Germany

Peter van Staa studied Physics at the Universities of Göttingen and Münster, where in 1977 he received the diploma, and in 1983 – the Dr. rer. nat. with a thesis on semiconductor physics.

Subsequently, he joined the Microelectronics Division of the Robert Bosch GmbH in Reutlingen.

After different management functions in EDA, IC qualification and Test, today he heads the cross-functional department which has to provide enabling technologies for the ASIC-design, namely new tools and methods for automated IC design, EDA-support as well as technology assessment, library development, and IC packaging.

In addition, he is a member of the Sherpa-Group of the High Level Group for Key Enabling Technologies, Support Groups of the μ E-focussed industrial led Research programs like: CATRENE (EUREKA) and ECSEL (EU Joint Undertaking).



Iwona Wendel
Undersecretary of State at Poland's Ministry of Infrastructure and Development

In 1989, Iwona Wendel completed master's degree study at humanistic faculty at the Pedagogical University. In 2003 she graduated from Postgraduate Studies of European Administration at the School of Banking and Management in Kraków. She served as a director of IT Department in Krakow's municipal office. For many years she has researched the development of the Information Society as well as information and communications technology. She has participated in legislative procedures, drafting process and implementation of strategies and programs realizing large informatics projects therein EU projects. From 2011 to 2013 she served as Undersecretary of State at Ministry of Infrastructure and Development.



Andreas Wild,
Executive Director
ENIAC JU (proposed ECSEL JU)

Dr. Andreas Wild is the Executive Director of the ENIAC Joint Undertaking, a public-private partnership on nanoelectronics established as an autonomous European Union body. Prior to joining ENIAC JU, Andreas Wild has been the European R&D Director for Freescale Semiconductor and Motorola Semiconductor Products Sector; before that, he managed Motorola R&D laboratories in U.S.A., Latin America, and Germany. He has an MS degree from the University "Politehnica" of Bucharest, and a Ph.D. degree from the Institute of Atomic Physics in Bucharest, Romania, co-authored 28 patents and more than 50 technical publications.

INNOVATIVE POLAND



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RADWAG Wagi Elektroniczne

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**Institute
of Non-Ferrous Metals
Gliwice**

Instytut Metali Nieżelaznych

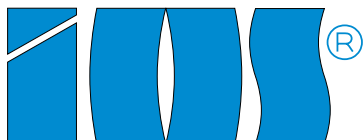
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**Instytut
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Instytut Zaawansowanych Technologii Wytwarzania

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EUROPEAN TECHNOLOGY CONGRESS

Wrocław
12-13.06.2014



PCO S.A. is the leading Polish manufacturer of optoelectronics for the military and uniformed services. The company was founded in 1976 under the name of "Przemysłowe Centrum Optyki w budowie". In 1994 it was transformed into a company wholly owned by the State Treasury under the name of Przemysłowe Centrum Optyki Spółka Akcyjna. In December 2013 the name of the company was changed to PCO S.A.

The primary activities of PCO S.A. consist of the production and sale of optoelectronic observation and aiming devices, employing laser, night vision and thermal vision technologies sup-

plied to military and other uniform services. The company's offer includes both soldier's individual and combat vehicle equipment. Apart from manufacturing, the company renders repair and maintenance services. PCO S.A. also deals with research and development, as well as implementation works.

PCO S.A. is an innovative enterprise. In the course of its existence it has proven its ability to implement cutting-edge technological solutions and adjust them



Ryszard Kardasz,
CEO of PCO S.A.



SCT RUBIN



Wrocław University of Technology



POLISH CHAMBER OF COMMERCE
FOR HIGH TECHNOLOGY



The National Centre
for Research and Development



MU-3M KOLIBER

to the situation of the changing market and client needs. The business activity of the company serves the purpose of increasing effectiveness and raising the safety of Polish soldiers participating in military missions, as well as building the strong position of the national defence industry.

Over the years of its existence, PCO S.A. has repeatedly played the role of a leader and coordinator of various initiatives and programmes. At present, the company leads the consortium responsible for the execution of the Polish Future Soldier Programme, which is one of the most important strategic programmes of the Ministry of National Defence. The company is responsible for the coordination of the project works and for integrating the individual parts into a system. Additionally, PCO S.A. plays the role of a coordinator of

Polska Platforma Technologiczna Fotoniki (Polish Technology Platform of Photonics) – an entity gathering representatives of institutions and universities as well as enterprises active in the sector of photonics.

Our products:

Individual equipment:

- Night vision monoculars, goggles and binoculars
- Aiming sights

Combat vehicle equipment:

- Periscopes for combat vehicles
- Fire control systems
- Laser detecting systems
- Fire detection and extinguishing system
- Terrain imaging systems
- Integrated optoelectronic modules
- Optoelectronic heads.

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Offer within consortium:

- Individual combat system for future soldier
- Flight parameters display system
- GIEWONT laser based force on force training

Among the most modern products of PCO S.A. are:

MU-3M KOLIBER miniature Night Vision Monocular

- MU-3M KOLIBER is currently the lightest night vision device in the world. MU-3M without batteries weights only 250g. Thanks to modern aspherical optics the device is also much shorter than the previously produced monocular – the overall length of it is 97 mm. MU-3M night vision device can work with an infrared attachment ClipIR, thus allowing observations of the scenery in fusion mode: night vision and thermal modes blended together.

SCT RUBIN



SCT RUBIN thermal imaging sight

Thermal imaging sight SCT is designed for observation and firing using small arms. This allows detection and identification of targets, regardless of the lighting conditions and unfavourable weather conditions.

ZMO-1 SFINKS Integrated Optoelectronic Module

ZMO-1 Integrated Optoelectronic Module is intended to be used in remote-controlled weapon modules and stationary observation systems.

- The module enables the detection, recognition, identification and distance measurement to the detected target.

PLS-1M GIEWONT laser-tag

Giewont laser-tag is a system that allows individual soldier training, tactical and fire training of soldier groups, sections, battle/assault groups, individually and collectively using the devices and military equipment, which the Land Army and Special Forces are equipped with.

PLS-1M GIEWONT





Selvita Group is an integrated drug discovery services provider from Krakow, Poland. The company was established in 2007, and ever since our mission has been to serve our clients with a comprehensive panel of products and solutions targeted at lowering the cost of, and accelerating, the introduction of new drugs to the market. Selvita employs almost 200 professionals, including over 60 PhDs, mostly in the field of biology, biotechnology and chemistry, which makes it the largest drug discovery services provider in the Central and Eastern Europe region.

Selvita Group offers its clients drug discovery support at every stage of the early discovery phase up to preclinical

research. Selvita Group has experience in several areas of life sciences, and offers the following types of projects:

- Integrated drug discovery projects which include in silico drug design, and synthesis of a target-focused library, SAR and ADME-driven lead optimization and toxicity prediction, followed by complex preclinical in vitro development.
- Chemistry services, including contract synthesis, synthesis pathway design and optimization, synthesis scale-up, physicochemical analyses including stability studies and impurity



Paweł Przewięźlikowski
Chief Executive Officer
of Selvita Group





profiles, as well as drug form development support.

- Biology services, including assay development, ADME and toxicity studies, DMPK studies, as well as pharmacokinetic and pharmacodynamic analyses.
- Comparative studies of biosimilar medicinal products
- Advanced protein modeling solutions, based on our proprietary protein modeling platform, virtual screening and focused library design, as well as other services in computational chemistry.

• Our projects and customers

Our approach – outstanding customer service and commitment to scientific excellence through best-in-class products, services and procedures – has led to long-standing relationships with many of our customers.

Selvita Group engages in projects of all types of complexity, operating on the basis of different sorts of agreements including FTE-based and flat fees, as well as success-based contracts.

Our customers include many pharmaceutical and biotechnology companies from Europe, USA and Asia.

Scientific Team

Selvita Group employs a team of highly qualified specialists from the field of chemistry, pharmacy, molecular biology, biotechnology and information technology. Our employees have graduated from the best Polish and international universities, as well as gained experience in numerous global pharmaceutical companies such as Pfizer, Evotec, Johnson & Johnson, Eisai, Novartis, OPI, Bristol-Myers Squibb, Pliva/Barr, Sanofi-Pasteur, Synfine, Teva and others.

Many of our employees have enjoyed excellent academic careers, before joining Selvita, demonstrated by publications in papers such as Nature Biotechnology, Science, Cell, or Journal of Medicinal Chemistry.

Research and development

Selvita develops its own innovative drugs, which originate from research at Polish universities and later com-

mercializes them with partners from the pharmaceutical industry. Selvita is involved in several research projects at the pre-clinical stage. Our current projects are in the area of oncology, central nervous system and autoimmune disorders. The development of those projects is financed by the Group's own funding along with the support from the EU and Polish governmental grants.

Innovative research activity is focused on characterization and validation of protein, development and selection of chemical molecules, optimization of hit and lead structures to the preclinical stage. The main area of Selvita's interest are kinases. Dysfunction of kinase activity can cause very frequently many human diseases. Protein kinases are critical initiators, mediators and amplifiers of multiple signaling pathways associated with malignant transformation and aggressiveness of the disease.

Selvita started its first kinase discovery program in 2008 and, over the last six years, has built a premium scientific team with one of the world's most robust kinase discovery platforms. Such set of research tools developed within kinase discovery platform enables the first fast validation of new targets and secondly, the rapid and effective development of small molecule kinase inhibitors that potentially could be used in the treatment of cancer.

• **Selvita pipeline**

2013 was a breakthrough year for Selvita. The company signed two strategic collaboration agreements in the field of oncology.

In September 2013 H3 Biomedicine Inc., a biopharmaceutical company specializing in the discovery and development of precision oncology treatments, and Selvita announced that they entered into a strategic collaboration to develop breakthrough precision medicines for cancers. The companies will seek to validate the importance and druggability of several kinase targets in specific genetic contexts and to generate multiple novel drug candidates against those targets.

In October 2013 Selvita announced collaboration with Merck Serono, the biopharmaceutical division of Merck. The companies are going to discover jointly small molecule based drugs targeting proteins involved in cancer cell metabolism. The partners plan to target key metabolic pathways involved in sustaining growth and proliferation of cancer cells.

Services

The area of services activity encompasses three main fields: biology, chemistry and bioinformatics.

Biological research

Selvita Group provide services in the field of analytical chemistry for drug

discovery and QA/QC purposes, protein chemistry (including protein production) as well as in vitro preclinical research encompassing ADME, toxicity, functional cell-based assays and genotoxicity studies.

Selvita offers also in vitro analyses of biosimilar products, including in vitro pharmacodynamic studies, proliferation tests and impurities analyses of medicinal products (HCP, DNA). In addition, the company performs comparative structural analyses and physico-chemi-

cal properties of tested and reference products.

Selvita team has rich experience in development and quality control of small molecules drugs as well as biological and biosimilar drugs.

Contract chemistry

Our chemists specialize in synthesis of compounds of complex structures, often with chiral characteristics and high purity (98-99%). We perform difficult syntheses, time consuming and multistep processes under increased pressure. Participating in R&D at the synthesis stage and providing analytical solutions, Selvita's Chemistry Department supports a client to reduce the time and cost of development.

Selvita Contract Chemistry Department specializes in design and optimization of synthetic routes of organic substances, process optimization and scale-up, elaboration of purification methods, analyses of physicochemical characteristics and patent literature search.

Bioinformatics

IT Department at Selvita specializes in a complex service of IT and bioinformatics projects, aiming to improve the laboratory management for our customers from industry, science and services sector.

Selvita provides its customers not only with a world-class LIMS system, from STARLIMS Solutions Corporation, but also assists in choosing the optimal software (analysis of profitability, training and consulting services), and a full range of implementation and support



services, with ISO 9001:2008 certified quality.

Selvita Group 's Laboratories

Selvita Group owns a 1600 m² research facility located in a modern life science park in Krakow. Facilities are fully equipped with the most advanced and modern technical equipment.

Selvita Group's laboratories are GLP certified, as well as possess Polish Main Pharmaceutical Inspectorate accreditation. The laboratory is also fully integrated with STARLIMS laboratory information management system both for control of the analytical equipment and for data reporting and processing, enabling remote access to results of measurements for our customers via a web-browser interface.

All computer systems have 21CFR11-compliant software (GMP compliant) which ensures IP/content protection, as well as ensures credibility and quality of our services.

Awards and recognitions

Since establishment of the company Selvita has received many awards and recognitions for innovation. In 2011 it became the winner of "Masters of Innovation" competition, organized at the Central European Forum of Biotechnology and Innovative BioEconomy – BioForum 2011.

In 2012 Selvita won the award for the SME in the Science and Medicine category for a Polish company most actively investing in research and development. The company was also ranked the no. 1 Rising Star in Deloitte Technology Fast 50 Central Europe.

In March 2014 Selvita was awarded for STARLIMS LIMS system, the best offer at XVI Eurolab International Fairs.

Advantages of working with Selvita Group

- Kraków in Top 10 of best outsourcing locations in 2013
- Attractive location in the centre of Europe - only a two-hour flight range from all major pharma/biotech hubs in the Western Europe
- Cost advantage – up to 50% off the average Western/US-based CRO
- Country with a long-standing tradition of excellence in classical synthetic and medicinal chemistry, biology, theoretical physics, mathematics and informatics
- High quality of service, superior scientific training
- Quality assurance level set according to the EU-standards
- Stable and continuously developing economy
- Adequate IP protection under the regulations of European Patent Convention.





RADWAG BALANCES AND SCALES is a Polish company which was established in Radom in 1984 as a single-member workshop. RADWAG's founder was Dr.Eng. Witold Lewandowski who holds the managing director position until now.

RADWAG is a manufacturer of electronic weighing instruments, design of which is based on technologically advanced concepts where the most modern and innovative solutions are used. Today RADWAG is a global market company and with regard to the measuring branch it has been recognized as one of the world leaders. The company employs almost 400 people; wherein about 100 of the employees work in a department of R&D.

The key company segments are engineering, design and control departments equipped with top-class control and measurement instruments. Company structure comprises professionally equipped Research and Development

Laboratory where components and prototypes of products prepared for type approval are tested. Additionally, the Research and Development Laboratory conducts specific expertise being an answer to individual needs and demands of a client.

Research and Development Laboratory performs number of different measurements, among many these are electrical measurements (tests on products safety – EMC LVD etc.), research on influence factors and their impact on mass measurement (temperature, humidity, pressure, air blasts, vibrations, electrical interference and other) as well as complex metrological tests of electronic equipment.

Mass measurement is present in every single area of public and private life – to begin with mass measurement performed in trade, through medicine to laboratory, where the greatest precision and accuracy is required.



Dr. Witold Lewandowski
Managing Director

Calibration of the piston pipette in the laboratory



Calibration of the weights in RADWAG Measurement Laboratory

Great selection of products offered by RADWAG meets almost every single requirement of a demanding client in terms of mass measurement. First of all RADWAG provides the highest precision laboratory balances "ultra-microbalances" which allow for unique readout of measurement – 0.1 µg, offered only by three world-wide known manufacturers as well as mass comparators used in most renowned calibration laboratories. RADWAG's wide range of checkweighers used for Packaged Goods Control offers unprecedented speed and accuracy thanks to unique electromagnetic measuring system designed by RADWAG's engineers. Last but not least, the company supplies its clients with a wide variety of system solutions used in numerous branches of industry. The whole assortment comprises over 300 different standard models and multiple individual solutions.

RADWAG is a company which continues rich Polish tradition of mecha-

nical analytical balances production. Development of electronics and experience contributed to invention and implementation of Radwag's own electronic analytical balance. One of the instruments used for weighing low mass with a great precision is micro- and ultra-microbalance. Such instruments can perform measurements with readout accuracy of 1 µg or even 0.1 µg. For laboratory measurements, where the precision is expected to be the highest possible (resulting in the lowest measurement uncertainty at the same time) such balances become more and more popular among the users. One of the most specific applications of microbalances may be calibration and verification of piston pipettes. It is the balance that constitutes the basic measuring instrument in the process of pipettes calibration performed by means of a gravimetric method.

To optimize the process of calibration and verification of piston pipettes, Rad-

wag has developed an innovative, professional measuring workstation aiming at elimination of any problems occurring during piston pipettes calibration. The core of such workstation is a microbalance with a reading unit 0,001 mg. Additional features of this balance constitute sensors monitoring the environmental influence factors (ambient temperature and temperature of liquid, relative humidity, barometric pressure). An integral part of a measuring workstation is a software for pipettes calibration – RADWAG PIPETTES. The software was developed by RADWAG software programmers in cooperation with specialists of RADWAG Calibration Laboratory.

Another highly specific group of devices are mass comparators. These in-

struments, like ultra-balances and micro-balances, are manufactured only by three world-wide known manufacturers. Mass comparators are used in laboratories performing calibration of mass standards, weights and any other kind of ballasts. These devices are mainly used where there is the highest measuring accuracy required, that is in laboratories of national metrology institutes, laboratories providing metrology services (calibration laboratories), internal calibration laboratories and measuring departments of various factories.

Mass comparators are simply electronic balances designed with a special care. Thanks to the use of innovative mechatronic solutions they allow high resolution, namely a resolution



Electronic microbalance
with a readability
of 0.001 mg

of tens of millions of reading units and are characterized with high repeatability – which is not typical of standard electronic balances. Both, high resolution and repeatability allow for standard calibration and for comparative weighing performed on a mass standard and a sample; even when the difference is really insignificant.

The main concern when analysing adjustment of weights is the measurement uncertainty, therefore it is RADWAG's constant attempt to decrease it. This forced manufacturers to positively influence the measuring accuracy and readout repeatability which in turn resulted in adjustment process automa-

tion. Machine-performed repeatability is three times higher due to elimination of error being an effect of human imprecision (centricity of a weight), human is not able to put a weight on a weighing pan with the same speed each time. Since mass comparators are prestigious products RADWAG engineers are constantly working on improvements of these devices. This proves that the company deserves to hold one of the leading positions regarding the weighing market. Only technologically advanced companies, which have both, experience and professional engineers are able to design and manufacture such complex instruments.

New headquarter
of RADWAG -
visualization.



EUROPEAN TECHNOLOGY CONGRESS

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Constant technological development of companies, new emerging markets and disappearance of borders as far as economic cooperation is concerned contribute to steady development of manufactured products quality wherein the production cost is reduced. To meet requirements of these two seemingly contradictory demands precise systems that measure and simultaneously control are utilised. Such devices on one hand ensure the correctness of the production process, on the other hand they restrict the number of people needed for production lines operation. Automatic weighing systems – checkweighers are especially valued as far as the above is taken into consideration. Checkweighers are presently the most advanced, in terms of technology, weighing systems used for industry. RADWAG offers such solutions where systems operation is based on magnetoelectric force transducer, which provides both, high weighing speed and accuracy. Systems for single loads measurement equipped with aforementioned transducers are present in almost every single factory these days ensuring automatic monitoring of the production process.

Cooperation of these devices with devices that carry out a packaging process contributes to optimal operation of dosing devices. These on the one hand,

reduce excess packaging, and on the other, do not allow to dose less than it has been declared.

Over the last decade RADWAG has developed global sales network comprising 8 sales offices and service centres located in Poland, 7 sales offices located all around the world and nearly 150 distributors to be found on each of the continents. The company takes part in the most prestigious trade fairs and congresses. To attract new customers and to exchange experiences with the users RADWAG organizes trainings and seminars for foreign and local clients.

RADWAG would not be able to develop it if it did not cooperate with research and science centres. The company is a participant of research projects founded by the National Centre for Research and Development. Through this, the company may exchange information and experience with Industrial Research Institute for Automation and Measurements and with Warsaw University of Technology. Additionally RADWAG cooperates with Institute for Sustainable Technologies – National Research Institute located in Radom, West Pomeranian University of Technology located in Szczecin and with Kazimierz Pułaski Technical University of Radom.

RADWAG is an innovative company promoting Polish technological solutions all around the world.





Institute of Non-Ferrous Metals Gliwice

Institute of Non-Ferrous Metals is a large research institute, with staff of 500 employees, and activity focused on development of technology and innovation in non-ferrous metals industry.

The Institute is a research and development centre of a unique character due to the wide and complex scale of the conducted studies. The Institute performs studies in eight departments covering the complete research cycle, from the laboratory to the pilot scale, in the field of all non-ferrous metals, especially Cu, Al, Zn, Pb and Ag, in such specializations as:

- ores, other minerals and secondary materials treatment,
- pyrometallurgy,
- hydrometallurgy,
- scrap and waste processing,
- environmental protection,
- analytical chemistry,
- metals processing,
- material science – new materials,
- chemical power sources.

The research and development works carried out by the Institute of Non-Ferrous Metals have applicable character mostly, what enables direct implementation of the results in the non-ferrous metals industry and in other industrial branches connected with non-ferrous metals production and application, and are used also in IMN small-scale production.

The IMN greatest assets are: employees, whose expertise and experience are used in implementation of scientific and also R&D projects performed on the national and international level, modern certified laboratories, specialized measurement equipment.

The Institute's strength lies in its invention-related activity. The patents obtained by IMN cover inventions in all the fields of its activity, from ore treatment to processing of all non-ferrous metals and also in the field of environmental protection, thermal techniques, automation and analytical chemistry.



Prof. Zbigniew Śmieszek,
Ph.D.
Managing Director

Set of flotation machines

Thermoelectric semiconductor compounds with buffer cermet layer manufactured by Spark Plasma Sintering technique



The most significant Institute's solutions are, among others: new flotation machines, intensification of the process of copper and lead production, electro-refining of copper and technologies for recovery of by-product metals, development of new zinc alloys for galvanising, new solders and amorphous materials.

The latest Institute's developments focused on the modern composite materials.

Growing global demand for electricity, combined with necessity of its generation from renewable energy sources, determine approaches for development of new technologies. Many countries conduct research programmes connected with application of thermoelectric materials for recovery of waste heat energy from different types of combustion process (e.g. combustion gases in the motor vehicles) and also geothermal energy or energy generated in solar cells operation.

One of the methods for increase of

efficiency of the devices based on thermoelectric materials, so called thermoelectric generators, is increase of the figure of merit of this material. Institute of Non-Ferrous Metals participates in this global research direction and developed composite material based on semiconducting thermoelectric compound with addition of graphene. The developed material indicates about 20% higher effectiveness of energy conversion when compared to a pure semiconducting material, obtained by application of the same technology.

One of the latest inventions addressed an innovative on the worldwide scale technology for production, with application of soft magnetic amorphous materials, of the stator for high-speed Permanent Magnet Brushless DC Motors operating with a rotary speed over 30 000 rpm. The high-speed electric motors have found many applications in: engineering industry, production of electrical energy

from biogas or vapour, automotive in-

dustry, military industry and other special applications.

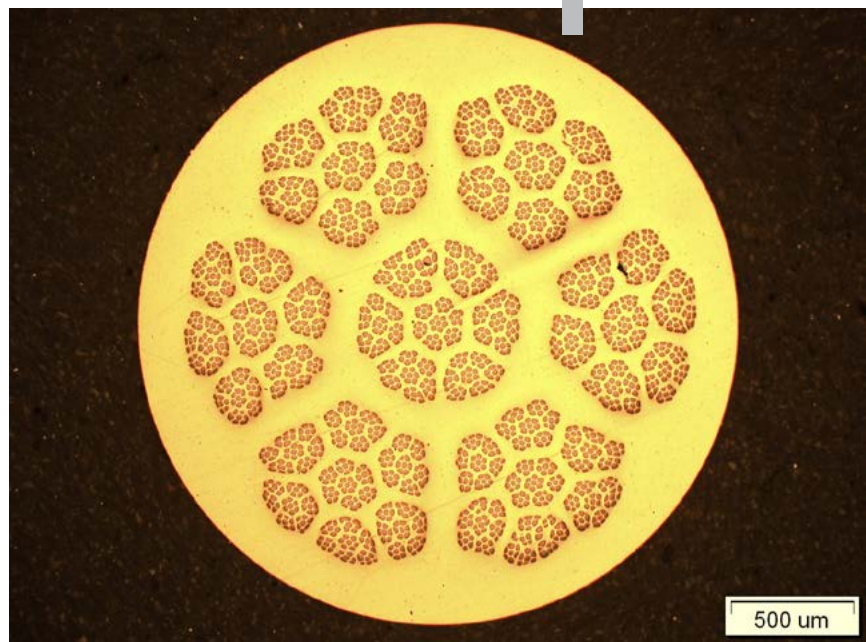
The Department of Functional Materials has worked in the field of magnetic refrigeration since 2008. Magnetic refrigeration is an emerging technology using solid, non-volatile magnetic materials as the active components and fluid as the medium for heat transport. It holds great potential for low energy consumption and environmentally friendly cooling at a competitive price. We cover all aspects of magnetic refrigeration, including materials research and characterization, systems design and construction. Like other cooling technologies, magnetic refrigeration can be used "in reverse" as a heat pump. This is also a promising application of the technology. Throughout the years the activity of the Department spans over the whole of these technology and was awarded several national research grants from the National Centre for Research and the Development and National Science Centre in Poland.

Cu-Nb multilayer composite wires of high functional properties

Cu-Nb multilayer composite wires are characterized by high strength properties and high electrical conductivity, what enables their application in production of high magnetic field generators. High strength is necessary in order

to resist Lorentz forces and high electrical conductivity is needed to minimise Joule heating resulting from high exciting current. These materials are also characterized by high plasticity enabling production of wires of the required section and also prevention of the material breakage during winding on the coil. These materials are used in production of electrical transformers, strong electromagnets for metals transport and equipment for plastic deformation

Microstructure of CuNb composite wire, 4th bundling



with application of magnetic field. The multi-layer composites are produced by methods of multiple drawing of niobium wires in the copper tube. After 7 packaging operations of 7 wires in Cu tube, the produced wire consisted of 800 000 continuous Nb fibres.

The Institute takes part in the international projects performed within the European Framework Programmes and deals with the export sales of specialized equipment and products, what assure it the significant position on the European and worldwide market.

IMN has three Divisions: Light Metals Division in Skawina, Central Laboratory of Batteries and Cells in Poznań and IMN Legnica Division.

Light Metals Division in Skawina (IMN-OML Skawina) is the leading research and development centre of Polish light metals industry and for consumers of semi-finished products and final products made from aluminium, aluminium alloys and magnesium alloys.

The activity of IMN OML in Skawina comprises:

- fundamental, technology and applied research,

- innovation and implementation works for Polish light metals industry,
- scientific and technical services and expert works,
- construction of devices used by metallurgical plants operating in the steel and foundry industries, and in the light metals processing industry,
- production of high-quality products made of light metals,
- trainings and internships for employees of light metals industry and students from technical schools.

The scope of IMN OML activities includes technology development to prepare the liquid metal for casting, casting of aluminium, magnesium and their alloys into ingots by semi-continuous (DC) process and by Rapid Solidification method for further plastic working. Another area of the IMN OML activity

Aircraft battery



is related to various methods for the plastic working of light metals such as consolidation, extrusion, rolling, forging and stamping, with manufacture of decorative and protective coatings and hard coatings on products made from Al and Mg, production of new, environment-friendly advanced materials based on light metals, processing and disposal of waste.

Many years of experience and high quality of the research conducted by the staff of the Light Metals Division (OML) in Skawina was confirmed by:

- Polish Centre for Accreditation (PCA) – accreditation for the Laboratory of Physical Metallurgy and Chemical Analysis (certificate no. AB 394), granted in 2002,
- Det Norske Veritas (DNV) - IMN-OML in Skawina meets the requirements of ISO 9001: 2008 for Quality Management System and has got the Certificate no. 109415-2012-AQ-POL-RvA.

Central Laboratory of Batteries and Cells is specialized research centre, which for over 65 years has been dedicated to conduct research works and application studies in the field of chemical power sources.

Basic areas of CLAiO activity comprise: lead-acid batteries, lithium-ion and lithium-polymer systems, nickel hydride batteries, reserve batteries

(special batteries), fuel cells, electrochemical capacitors, new materials and new chemical power sources production technology as well as materials for primary and rechargeable batteries. IMN CLAiO performs also studies focused on the aspects of environmental protection related to harmful substances contained in the waste chemical power sources.

IMN CLAiO is the only Polish producer of nickel-cadmium alkaline batteries for aircraft powering, special batteries and reserve batteries.

IMN CLAiO provides training and consultancy services in the field of construction and operation of power generating systems, assistance for implementation of new or modernized products and technologies of their production, development of technical documentation concerning technological processes in the chemical power sources industry.

Modern equipment and unique measuring apparatus combined with the experienced staff allow IMN CLAiO to conduct complex physical and chemical studies into materials and raw-materials as well as electrochemical and electrical studies of batteries. The Chemical Power Sources Testing Laboratory operating within IMN CLAiO, accredited by the Polish Centre for Accreditation, offers complex testing of all types of parameters including electri-

Rotary - rocking furnace for the lead alloys production



cal, mechanical, climatic and safety and transport tests of all types of batteries.

IMN Legnica Division

The main activity of the Division is to join science with industry and shorten the „valley of death“, i.e. the distance from scientific solutions for their practical applications, through development of technologies for recovery of non-ferrous metals and other valuable components from industrial waste coming from metallurgical industry and non-ferrous metals processing industry, in a form of commercial products. The main research and development activities are focused on recovery of tungsten, lead, zinc, copper, precious metals

and rare earth metals in a form of metal alloys, oxides, chlorides, sulphates, carbonates and other chemical compounds based on national and foreign primary and secondary raw materials.

IMN Legnica Division has currently at its disposal pyrometallurgical installations for production of tungsten oxide, lead alloys, non-ferrous metals oxides and hydrometallurgical installations for production of tungsten salts, ammonium perrhenate, installations for recovery of precious metals, non-ferrous metals in the form of salts and installations for mechanical and heat treatment, including production of abrasive materials used for metal surfaces blasting and also production of drinking water mineral conditioners.

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Instytut
Farmaceutyczny

Pharmaceutical Research Institute

(PRI) is Poland's only scientific institution dealing comprehensively with the subjects related to pharmaceutical studies and at the same time greatly involved in research and implementation projects. The PRI's statutory activities involve interdisciplinary studies on both generic and originator drugs within a broader scientific discipline known as the drug research. The Institute's interdisciplinary character is reflected in various specializations of its scientific staff, internal departmental structure, specificity of real-

ized research projects and the broad thematic scope of the obtained results. Our scientific potential allows us to render services in the full research and implementation cycle, including: the therapeutic needs analysis against the backdrop of rising treatment costs and the development of new generation drugs; generic drugs analysis; comprehensive development of the technology for the synthesis of com-



Prof. Łukasz Kaczmarek
Director IF



Reactors for synthesis in
Pilot Plant Department



650-L reactor in grey controlled area

plex medicinal substances, i.e. laboratory scale – semi-technological scale – experimental production and Drug Master File preparation; drug form technology development both in the laboratory and semi-technological scale (according to GLP & GMP standards); bioavailability and bioequivalence studies of drugs according to GLP standards (as the first company in Poland); and experimental batch production of specialist drugs.

The company's structure and internal organization chart reflect our policy of maintaining highest standards in every area of applicatory activity, from drug design, through synthesis, analytical testing, development of the technology for the substance synthesis and drug

form, pre-clinical and clinical studies, to complete registration documentation and production of the finished product. Our research projects result in the development of API and drug form technologies offered to both domestic and foreign pharmaceutical companies. Our technologies as well as bioequivalence studies meet the appropriate EU legal requirements.

The key condition of conducting all R&D studies effectively is compliance with international quality standards, especially when it comes to manufacturing and normalisation of pharmaceutical substances as well as quantitative biological activity assessment in the pre-clinical research stage [appropriate laboratory practice (GLP), validation of technological processes, analytical methods and measuring instruments]. Constant improvement of quality control systems in drug research remains one of the main priorities of PRI.

Research and technological solutions developed by the Institute have met with the acclaim of numerous both Polish and foreign institutions involved in the appraisal of technological work and won several awards at various domestic and international innovation trade fairs.

The Institute's role in pharmaceutical business, its development and strategic perspectives

As far as implementation is concerned, Pharmaceutical Research Institute has for several years been one of the leading R&D institutions in Poland. The developed technologies can then be used to manufacture effective and modern ge-

neric drugs whose therapeutic efficiency will significantly improve the quality of the following treatments: oncological, cardiovascular (arteriosclerosis, peripheral artery disease, pulmonary hypertension, deep vein thrombosis, heart failure) and ophthalmic (allergic conjunctivitis, ocular inflammatory diseases linked to allergies and eye surgery, glaucoma), hopefully resulting in the increased safety and improved wellbeing of patients.

Apart from research and development projects, the Institute is also involved in innovative drug research. Within The Innovative Economy Operational Programme 2007-2013 (POIG) PRI is currently working on a project called "Research on innovative endothelium medicine among novel escin analogues". The aim of this project is to obtain an innovative endothelium drug from novel escin analogues and develop a technology that would allow its manufacturing in large laboratory scale. Various other research studies are also carried out in PRI, e.g. on new analogues of vitamin D metabolites and anti-cancer indoloquinoline derivatives.

Top R&D achievements

- Development of technology pharmaceutical substance applied to brain cancer therapy
- Development of technology pharma-

ceutical substance applied to breast cancer therapy

- Development of technology anti-glaucoma prostaglandins.
- Development of determination method of genotoxic impurities traces in antileukemia pharmaceutical substance
- Innovative procedure impurities determination in unstable API solutions with mathematical amendment
- Development and validation determination antidepressant substance method in human plasma

Top innovative implementations

- Brinzolamide – the active substance applied to glaucoma and increased intraocular pressure therapy
- Capeticabine – the active substance applied to chemotherapy of malignant tumour
- Duloxetine – the active substance applied to depression and pain in diabetic peripheral neuropathy therapy
- Ezetimibe – the active substance decreasing blood cholesterol level
- Temozolomide – the active substance applied to chemotherapy of malignant tumour
- Latanoprost and timolol – eye drops applied to glaucoma therapy
- Exemestane – the active substance applied to advanced nipple cancer therapy

- Paricalcitol – the active substance applied to chronic renal failure therapy in patients on dialysis

Chosen patents and patent applications

Patents:

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- "Process for preparation of 13,14-di-

hydro-PGF2 α derivatives", US 7,897,793 B2, J. Martynow, J. Szyk, W. Szelejewski, O. Achmatowicz, A. Kutner, K. Wiśniewski, J. Winiarski, O. Zegrodzka-Stendel, P. Gołębiewski

- "Analogues of human growth hormone-releasing hormone, their preparation and use (GH-RH)", US 7,928,063 B2, J. Izdebski, D. Kunce, A. Orłowska, E. Witkowska, W. Szelejewski, A. Kutner, K. Bańkowski, E. Frąckiewicz
- "New peptides – analogues of human growth hormone-releasing hormone

Production laboratory
of Minisynthesis
Department



(GH-RH)", CA 2,465,667C, J. Izdebski, D. Kunce, A. Orłowska, E. Witkowska, W. Szelejewski, A. Kutner, K. Bańkowski, E. Frąckiewicz

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- "Non-racemic cyclopropane synthons, starting compounds and the methods for preparation thereof", PL 210106 B1, J. Martynow, M. Chodyński, A. Kutner, W. Szelejewski, H. Fitak, M. Krupa
- "Process for preparation of esters of quinolone carboxylic acids", PL 211000 B1, Ł. Kaczmarek, K. Badowska-Rostonek, M. Glice, W. Szelejewski
- "Process for preparation of docetaxel", PL 210984 B1, O. Achmatowicz, K. Bańkowski, W. Szelejewski, O. Michalak, B. Szechner

Patent Applications

- "Process of preparation of tadalafil", US2011/24866A1, Łukasz Kaczmarek, Paweł Pyć, Katarzyna Badowska-Rostonek
- "Process for preparation of intermediates in the synthesis of nepafenac and the impurities reference standards", P-395328, M. Cybulski, J. Winiarski
- "Process for preparation of

2-amine-N-tert-butyl-2-cyanoacetamide hydrochloride ", P-395425, B. Cichy, K. Gabarski, Ł. Kaczmarek, G. Lipner, M. Rasińska

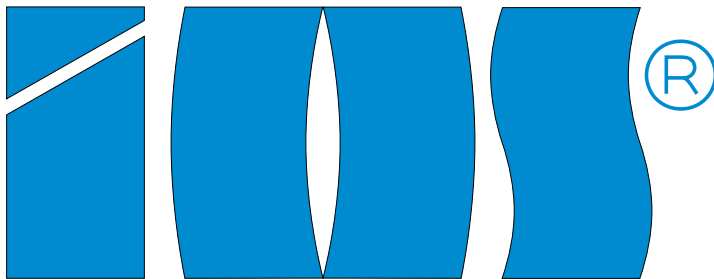
- "Antipsoriatic emulsion composition", P-396159, E. Pesta-Dynda, O. Walentynowicz, E. Wojtowicz, G. Huszcza, A. Kutner
- "Preparation of protoescigenin from escin", PCT/PL2012/000102 M. Grucha, O. Zegrocka-Stendel, T. Giller, G. Gryniewicz, M. Łaszczyk, K. Jatczak
- "Process for preparation of prostaglandin F2 α analogues", PCT/PL 2012/000028, twórcy: I. Dams, A. Kutner, M. Chodyński, M. Krupa, A. Pietraszek, M. Zezula, P. Cmocho, M. Kosińska
- "N-substituted amides of the cyclic ureido dermorphin analogues and the methods for their preparation", P-399299, J. Izdebski, K. Bańkowski, E. Witkowska, O. Michalak, B. Antkowiak, K. Sidoryk, E. Szymanek, K. Filip
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- "Process for preparation of brinzolamide eye drops suspension and the ophtalmic formulation prepared by that method ", P-402330, M. Melissa, G. Huszcza, W. Maruszak, Ł. Kaczmarek, A. Kutner, M. Dąbrowska



INSTYTUT
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The Institute and its role in industry

The Institute of Advanced Manufacturing Technology (IAMT) in Kraków, Poland is a research institute specialising for 65 years in cutting and abrasive technologies, unconventional technologies of advanced decremental and incremental product shaping, micro- and nanotechnology, materials engineering, technical metrology, assembly and automation of manufacturing processes, and since 2009 in packaging of liquids and solids as well.

From the economy perspective, research services for enterprises led by the Institute laboratories play the essential role. The Institute Laboratory has been possessing the Accreditation No. AB 197 of Polish Centre for Accreditation according to the requirements of PN-EN IOS/IEC 17025. The Laboratory includes sections carrying out the tests of cutting and erosive machine tools and other technological machines, cutting and abrasive tools, machining instrumentation, technological liquids and sections of materials testing, and length and angle measure-

ments. The Laboratory has the long-standing experience in tests of vibrations and noise, electrical, energy and electromagnetic compatibility tests, tests of machine tools' and tools' safety, geometrical quantity measurements, measuring and analysis of surface topography and in materials tests. Due to certification activity, the Institute has contributed to place over 300 machine tools and devices meeting European Union requirements on the EU market, and the tests carried out by the Institute allowed to limit the noise emitted to the natural environment by over 100 types of machine tools and devices.

Since 2007 the Institute has got the Quality Management System Certificate from the Polish Centre for Testing and Certification. Presently the Institute is authorised by Certificate No. 1970/3/2013 to conduct research and development, implementable and innovative works, laboratory testing,



Dr Maria Zybura-Skrabalak,
Director



Automatic dressing strip
coiling machine type
AZT1

research and development services, design and manufacturing, consulting, trainings, scientific and technical information services including the packing of liquids and solids – meeting the requirements of PN-EN ISO 9001: 2009.

Since 2008 it has been operating the Centre of National Service System (KSU) registered in the Polish Agency for Enterprise Development (PARP) under the register number 06/13/2008/233 providing the services for SME in the area of general and pro-innovative consulting, trainings and information.

The Institute's activities

Technological solutions worked out by the Institute scientific and engineering staff are implemented in enterprises operating within the automotive, aviation,

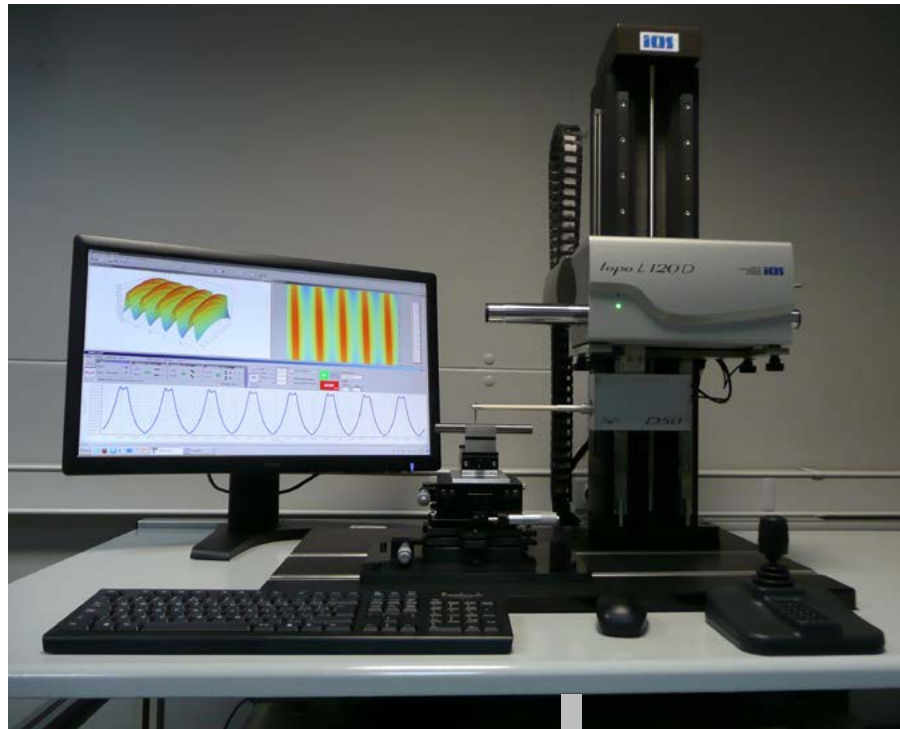
machine tool, cutting tool, machining, electronics, electrical engineering, defence, medical equipment, household appliances, steel, power, foodstuffs machinery industries and they are appreciated by technical colleges, R&D centres and the PAS Institutes.

Long-standing cooperation with foreign research centres including commonly realized projects, attendance in scientific conferences, stuff exchange and experience exchange in the range of research and implementations is the guarantee of high level of works carried out in the Institute.

Innovative technologies developed in IAMT

Significant in the Institute activities there are tasks to develop new hard and superhard materials, especially

materials dedicated to cutting tools' edges, such as for example ceramics and diamond or cBN composites. Development of the works is possible due to unique equipment of Centre for Materials Research and Sintering Technology – SINTERCER, which disposes of the latest generation of sintering furnaces, modern equipment for materials testing and apparatus to very broad spectrum of tests, i.a. HP-HT press with toroidal Bridgman chamber, furnace for sintering in vacuum, Struers device for the preparation of sintered samples, X-ray diffractometer. In 2013 the Centre obtained the project in the frame of FP7 EU REGPOT-2012-2013-1. Development of a sintering centre and know-how exchange for non equilibrium sintering methods of advanced ceramic composite materials". By 2016 project tasks will be operated together with 9 reputable scientific institutions from Europe.



TOPO 02 modular system for the measurement and analysis of surface topography

Innovative technologies elaborated in the Centre are i.a. technology of manufacturing of silicon nitride composite of average grain-size of $0,6 \mu\text{m}$ with aluminium oxide and yttrium trioxide nanopowder based on free sintering in nitrogen atmosphere meth-

Metal elements prepared by SLS method





Special grinding tools
with regular CBN with
ceramic bond



Special segmented and
solid hobs

od, which is used to manufacturing abrasive resistant profiles like nozzles, rollers, rings and plates; technology of manufacturing of ceramic composite $Al_2O_3 - ZrO_2 - Ti(C,N)$ based on raw materials available on market by means of isostatic densification method; technology of manufacturing of ceramic composite Al_2O_3 with carbon-nitride and boride reinforce phase by means of FAST method, used to manufacture of multi-edged cutting plates; technology of manufacturing of diamond composite with bonding phase of enhanced temperature resistance by means of HP-HT method, which is used to manufacturing profiles made from diamond with titanium-silicon carbide and ends of slide burnishing tools. Material technologies elaborated in the Centre were appreciated and gained many prestigious prizes and awards like Gold and Silver Medals at The International Trade Fair for Technological Innovation Brussels INNOVA and Awards of Polish Ministry of Science and Higher Education prof. Lena Kolarska-Bobińska

The Institute carries out the research on optimization of modern technologies of products shaping, including works concerning i.a. slide and ball burnishing technology, which enables to eliminate or to limit laborious operations of finishing process; uncon-

ventional and hybrid technologies of product shaping from hard-to-machine materials, of complicated shapes, requiring particularly high quality of machined surface. Works carried out at the Institute focus on elaborating of the most beneficial manufacturing param-

Microstructure of CuNb composite wire, 4th bundling



eters in processes of electro-discharge drilling and wire cutting, texturing of complex surfaces and electroerosion micromachining including small holes drilling of diameter in range from decimal parts to a couple of millimetres, and milling of hollows and convex cutting tools elements by means of electrodes of diameter from 45 μm to 3 mm with positioning accuracy of $\pm 2 \mu\text{m}$ and surface roughness of $R_a = 1 \mu\text{m}$. Developed for many years technology of electrochemical machining (ECM) is the process of shaping of products from electrically conductive metals and its alloys by means of electrochemical dissolution, which enables processing of elements of complicated shapes, made from hard-to-machine materials or unshapeable by other methods (e.g. titanium alloys, nickel alloys, hardened steel of any hardness) with relatively high process efficiency (a few times higher than by means of electroerosion machining). In that way there can be manufactured for example tools for plastic machining (moulds) and elements for automotive and aircraft industry.

Widely applied technology of product shaping is Rapid Prototyping by means of selective laser sintering (SLS) technique.

Innovative products of IAMT

New tools, special machine tools and devices for surface topography measurement and analysis as well as assembly, packaging and dosing equipment for pharmaceutical and automotive industry are the compliment of above technologies.

TOPO 02 modular system for the measurement and analysis of surface topography is a new product of IAMT, which obtained a main prize – Big Dragon in category of "Measuring and control apparatus" at EUROTOOL Fairs 2013. The TOPO 02 system can compete with the best measuring equipment in the range of broad spectrum of possible measurements and its quality.

The result of practical implementation of research carried out in the Institute and worked out technologies to production conditions it is manufacturing of tools' and devices' prototypes and its single production to customers' order.

Strategic perspectives of IAMT

The strategic aim of the Institute is to reinforce the position and prestige of the research institute, which activity is concentrated around innovative manufacturing technologies by knowledge and technology transfer to industry. It is the base to increase R&D works efficiency, what is impliedly resulting in Institute's competitiveness gain on common EU market.

In recent years there have been carried out works like i.a. design and implementation works in the range of unconventional machining methods (special electroerosion and electrochemical machine tools), special assembly and control devices mainly for automotive and pharmaceuticals industry and geometrical quantity measurements.

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KOMAG Institute of Mining Technology focuses on realization of scientific as well as research and development projects in mechanization of mining processes and minerals processing associated with environmental protection, work safety and adaptation of the project results to practical use. The projects realized by the Institute concern man-machine-environment relationships and they are oriented onto scientific, research and technical activities to develop and implement innovative solution for the industry. The projects cover mechanical and mechatronic systems, machines and equipment for underground mining as well as mechanical processing of minerals, con-

trol systems, diagnostics and monitoring. KOMAG develops concepts, designs and technical documentation of machines and equipment and it offers expert opinions on optimization of selection of the machines, which are best in the given mining conditions. KOMAG Accredited laboratories provide services in testing the powered roof supports and hydraulic actuators as well as in environmental tests, industrial metrology and research projects on material engineering and environmental engineering. Scope of the Institute research work also includes



Małgorzata Malec,
Ph.D.Eng. Director



GAD-1 Battery drivetrain
Implementing Company:
NAFRA Polska Sp. z o.o.



Lds-100K-EMA Under-ground diesel locomotive for mines with hydraulic transmission of torque
Implementing Company:
ENERGOMECHANIK
Sp. z o.o.

analyses, designing and special reports in the air and soil protection as well as wastes management, transfer of technology and standardization. KOMAG as the Notified body (No. 1456) assesses and certifies machines and equipment within the following four directives:

- 2006/42/EC Machinery Directive,
- 94/9/WE ATEX Directive,
- 2006/95/EC Low Voltage Directive,
- 2006/48/EC Toys Safety Directive.

Collaboration of KOMAG with many Polish and foreign scientific and research organizations like leading research centres of Austria, Spain, Germany, UK and Slovakia, determines strong position of KOMAG in the Polish and European Research Area.

KOMAG has accreditation of Polish Centre for Accreditation in the scope of: laboratory tests, products certification and certification of management systems (AC 023, AC 165, AB 039, AB 665, AB 910).

KOMAG realizes many theoretical-and-cognitive and R&D projects. The most important projects are as follows:

- Intrinsically safe system for control of mining machines based on CAN and CANopen protocol.
- Longwall shearer innovative, chainless haulage system - KOMTRAK
- Air-water spraying system used in roadways.
- State-of-the-art diesel engine fittings designed for operation in areas threatened with methane and/or coal dust explosion hazard.
- Recreation of man-machine-environment relationships in a virtual working environment.
- Reduction of noise at the work stand with use of combined methods: passive and active.
- Control system based on wireless bluetooth system.
- Identification of dynamic loads of

mining machines during underground transportation.

- Increase of work safety by using the Virtual Reality technology.
- Assessment of possibility of ignition caused by electrostatic discharge from nonconductive materials on the basis of measurements of electric surface charge distribution.

KOMAG closely cooperates with industrial partners. In the result of this collaboration, about 50 innovative solutions were implemented in 2013.

European projects

In 2013, KOMAG participated in realization of five projects within collaboration with the European R&D organizations:

Within 7th Framework Programme, the following project was realized:

- i-Protect – Intelligent PPE system for personnel in high-risk and complex environments. Within LEONARDO action, the following project was realized:
- LAPFORM – Online vocational training course on laparoscopy ergonomics for surgeons and laparoscopy instruments designers. Within Research Fund for Coal and Steel, three projects were realized:
- MINFIREX – Minimising risk for and reducing impact of fire and explosion hazards in underground coal mining.
- INREQ – Enhanced effectiveness and safety of rescuers involved in high risk

activities by designing innovative rescue equipment systems.

- M-SMARTGRID – Development and implementation of mining smart electric al grids.

Patents and patent applications

From 2009 to 2013, KOMAG submitted 113 patent applications and obtained 89 patents. In 2013, 20 inventive designs were submitted, 19 of which as patent applications and one as application for utility model. At the same time, 47 exclusive rights, including 43 patents and 4 protection rights for utility model, were obtained.

Awards and distinctions

Within last three years KOMAG's solutions were awarded with 30 prizes and medals at Polish and international exhibitions and fairs. These awards were granted during such important events as: IWIS International Warsaw Invention Show, iENA International Trade Fair – Ideas – Inventions – New Products –, Brussels Innova World Exhibition on Inventions, Research and New Technologies, as well as Concours Lépine Fair.

There are some of the awards granted in 2013:

- "Product of the Year 2013" Competition – medal in the category "New technology" – "FS-60 self-cleaning filter",

- Innosilesia 2012 Competition – 1st prize for “BRYZA air-and-water spraying equipment”,
- Poznan International Fair – “Innovations-Technologies-Machines” – Transfer of Tests Results to Industry – gold medal for “GAD-1 Battery Drivetrain”,
- XVI International Salon of Inventions and Innovation Technologies “Archimedes” 2013, Moscow – gold medal for “GAD-1 Battery Drivetrain”,
- 112th Concours Lépine Fair, Paris – bronze medal for “FS-60 self-cleaning filter”,
- 64th iENA International Trade Fair “Ideas – Inventions – New Products” 2013, Nurnberg – gold medal for “GAD-1 Battery Drivetrain”,
- Brussels Innova World Exhibition on Inventions, Research and New Technologies 2013 – gold medal for “GAD-1 Battery Drivetrain”.

Publishing activity

KOMAG publishes monographs in the following four publishing series presenting significant problems associated with its research and scientific activity:

- “Scientific work – KOMAG Monographs”,
- “Innovative Mechanization Technologies”
- “Machines and Equipment”,
- KOMEKO, KOMTECH, CYLINDER, MINE HOISTING.

The Institute also issues scientific-and-technical quarterly “Mining Machines” (“Maszyny Górnicze”). To disseminate information on the latest publications on mining industry and related industries, KOMAG administrates the INTE computer base and issues bibliographic monthly “Novelties in World Mining Literature” (“Nowości w Światowej Literaturze Górniczej”).

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Each year KOMAG employees publish articles in Polish and foreign magazines as well as in conference proceedings, presenting not only their own scientific output, but also the achievements of the Institute. 145 publications were issued in 2013, while 513 were issued from 2009 to 2013.

Technological platforms and Centres of Technology

KOMAG participates in work of different organizations, activity of which covers research areas important for the Institute. In 2013 KOMAG participated in work of the following organizations:

- Polish Technology Platform "Industrial Processes",
- Polish Technology Platform "Work Safety in the Industry",
- Polish Technology Platform "Environment",
- European Technology Platform "Industrial Safety",
- Silesian Centre of Advanced Technologies.

Standardization

For many years, KOMAG Institute of Mining Technology realizes the tasks associated with co-creation of Polish, European and international Standards through its active participation in a standardization work.

At the European level, KOMAG participates in work of the following groups:

- Safety of Toys,
- Equipment Explosive Atmospheres.

At the Polish level, KOMAG takes part in standardization activity as the member of the Polish Committee for Standardization (PKN). KOMAG has its representatives in six PKN technical committees.

Clusters

Recognizing the role of clusters in the innovative economy, KOMAG initiated



in 2011 raise of Mining Machines Cluster. The Cluster currently groups 17 institutions and entrepreneurs involved in manufacture of the machines for winning the minerals.

Mission of the Cluster is a possibility of creation of new quality production lines, which are competitive on the Polish and Foreign markets as well as development of innovative and safe mining machines designed in collaboration with the Cluster members.

KOMAG is also a member of three following clusters:

- Cluster of Culture and Industrial Tourism,
- Cluster of Design,
- Cluster Creative Businesses.



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Mission of knowledge – a unique model for technology transfer

Poznań City has a unique model of academic and business synergies. At the core of the model is the development of the Wielkopolska Center for Advanced Technologies (WCAT) – a multidisciplinary center of high international ranking focused on new materials and biomaterials which through its activity and industrial surroundings simultaneously constitute an important element of knowledge-based regional economy in Wielkopolska. The center will cooperate with both Polish and International R&D centers, but of key importance for the transfer and commercialization of the new technologies is the short distance to the Poznań Science and Technology Park with the group of incubators for innovative spin-off firms. The incubators and the firms are the necessary link needed for the effective transfer of the technologies of new materials to technology-industrial parks and high-tech industry.

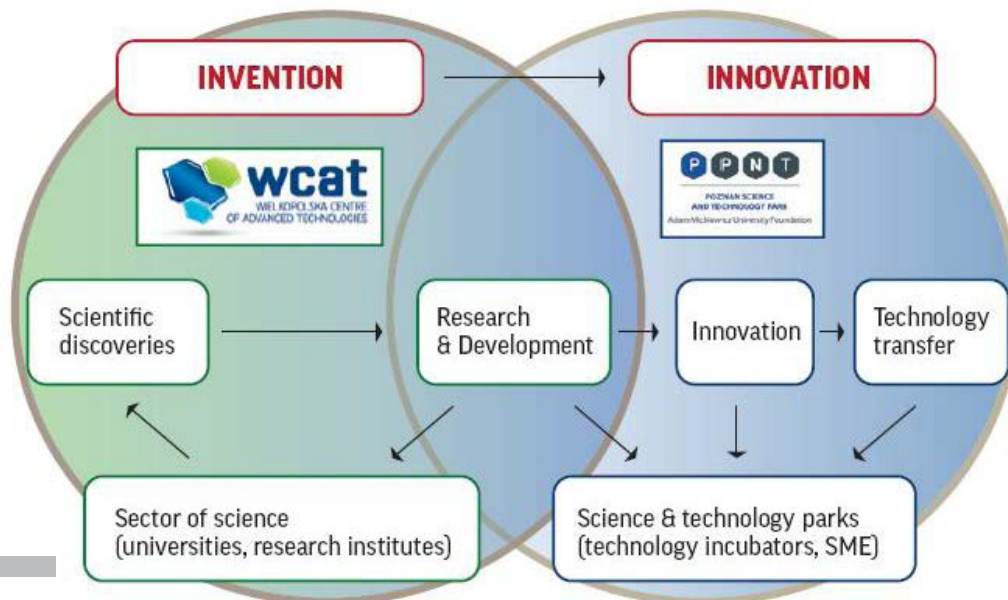
Scientific discoveries, such that are held in high esteem and enjoying prestige in society, create new knowledge, which goes into international circula-

tion on a non-commercial basis. When applied commercially they enrich the economy. Apart from being an element of scientific policy, innovation should also be regarded as part of economic and social policy because its main goal is to intensify the process of applying new technological and organizational solutions in the sphere of production and services. The aim of this lecture is presenting a unique model for regional integration of science and technology and simultaneously its transfer to innovation firms realized mainly by Poznań Science and Technology Park - the oldest ST park in Poland.

At the core of the model is the development of the Wielkopolska Center of Advanced Technologies (WCAT) in Poznań, a multi-disciplinary center of high international status focused on new materials and biomaterials of multiple applications and many other branches of industry and technology (see Scheme 1.).



Prof. Bogdan Marciniak,
Director WCAT



Scheme 1. Poznań model of knowledge transfer

Wielkopolska Center of Advanced Technologies (WCAT) – Cluster of Science and Technology

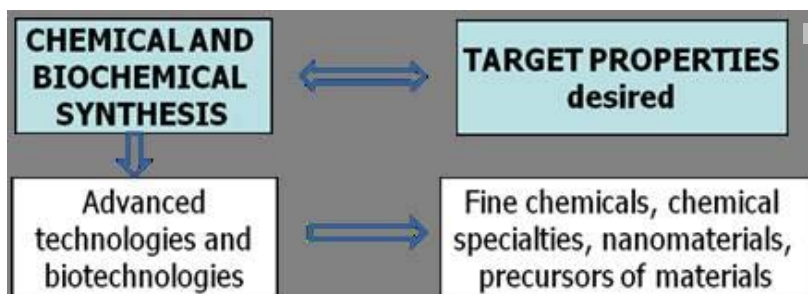
The WCAT brings together the best specialists in exact, natural and engineering sciences and is an infrastructural venture of the Poznań scientific community. The Center is a consortium of five universities: the Adam Mickiewicz University, which is the project coordinator, Poznań University of Technology, Poznań University of Life Sciences, Poznań University of Medical Sciences and Poznań University of Economics; four institutes of the Polish Academy of Sciences: the Institute of Bioorganic Chemistry, Plant Genetics, Human Genetics, and Molecular Physics; Institute of Natural Fibers and Medicinal Plants; and the Poznań Science and Technology Park of the Adam Mickiewicz University Foundation and City of Poznań.

The objective of the multidisciplinary activity of the center is to develop original methods for synthesizing chemicals, biochemicals and agrochemicals, called fine chemicals, and a new generation of biomaterials and nanomaterials and their precursors, formulated in cooperation

• synthesis and the recipients commissioning the target products of specific properties followed by the development of advanced technologies and biotechnologies for the production of these fine chemicals and precursors of materials with the aim of using them in optoelectronics, ceramics, medicine, pharmacy, agriculture (see Scheme 2.) and other fields of high-tech industry.

The purpose of the research is also to create a technological basis for a number of applications for bioorganic chemistry and biotechnology in healthcare, that is molecular and cellular therapies and medical diagnostics, as well as applications in agricultural engineering and in the food industry – DNA tests in plant and animal production, biodegradable packaging and so on.

The multidisciplinary center will carry out major research and research-and-development projects. Some of these will be pursued in cooperation with other businesses and institutions as part of Technology Platforms and EU framework programs. The center will also implement strategic programs coordinated and managed by the National Center for Research and Development. WCAT will offer jobs to over 200 research workers as well as



Scheme 2. Mission of chemical and biochemical synthesis

400 PhD and MD students recruited mainly from universities and institutes based in Poznań. There will also be jobs for experts from other European countries.

The Laboratory will have highly specialized equipment which will be available for use by the scientific community and small and medium enterprises. The Service and Technical Facilities with the Technology Transfer Center (D) will ensure efficient collaboration among all parts of the WCAT

In terms of an international cooperation with foreign R&D partners the members of the WCAT have already started to cooperate with well recognized initiatives, such as RAMIRI (Realizing and Managing International Research Infrastructures) and RAMIRI2 projects, coordinated by Imperial College London and Elettra Synchrotrone Trieste. In consequence, this cooperation will lead to a strong position of the Regional Laboratory of Unique Equipment as a part of the European Road Map of R&D infrastructures.

The WCAT project is co-financed (85%) by the European Regional Development

Fund under the Operational Programme Innovative Economy 2007-2013 with total budget 63 million EUR. The construction of the WCAT infrastructure (buildings) started in the fall of 2010 and the operational phase of the research centre is scheduled for the mid of 2014.

WCAT - Poznań Science and Technology Park (PSTP) cooperation

The WCAT is going to cooperate with the research and development centers of Polish and European corporations but the Poznań Science and Technology Park of Adam Mickiewicz University Foundation (PSTP) with its departments presented below is playing the key role in the transfer of technologies and their commercialization. The Park, with R&D and Innovation and Promotion Centers as well as group of business and technology incubators for innovative spin offs and start ups, is the necessary link needed for the efficient transfer of new materials technologies to practice, especially to industrial parks and high-tech industry (see Scheme 3).

PSTP made a very unique proposition for academic researchers which is

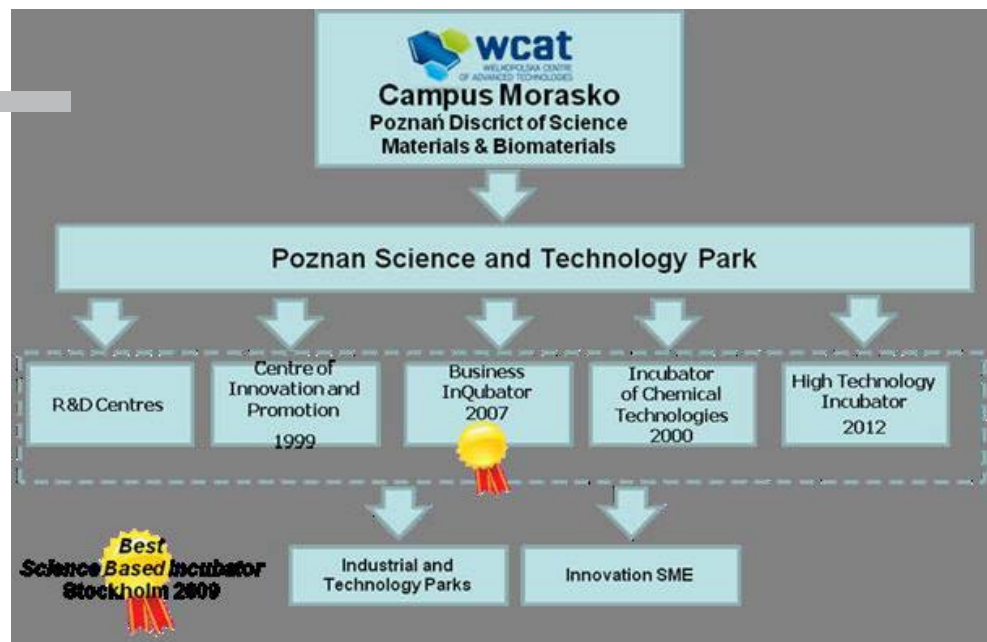
the ability to create R&D centers within the park. Their activity is based on an agreement between the university and the park. These projects supported with PSTP offer to the market research and development services conducted by experts from universities, using research facilities of the park or university. It's a simple way that the researchers could use their knowledge and experience not only for scientific purposes, but also to support the business. This does not require the participation of the university, on the other hand, does not require the company. Examples are:

- Advanced Chemical Technology Center offering design and facilitate the existing technologies of the synthesis of chemical compounds and solving synthetic, technological and analytical problems for different companies from a chemical sector.
- Waste Management Center "Waste Park" – offering complex consulting services related to environmental preservation

- Poznań Radiocarbon Laboratory – carrying out ^{14}C tests with the most modern accelerator technique (AMS).
- The Center for Optics and Optometry – offering optical and optometric measurements and trainings

Of special significance in presented model is support to the development of relations between universities and business, that is transfer of innovation and technologies at national and European level. Spin-offs in the PSTP have been supported by Centre of Innovation and Promotion. The Centre employs specialists in IPR strategies, technology transfer, market studies, research funding and project management. It is involved in international networks of Enterprise Europe Network and European Research Programmes national contacts points having a large regional (not only STP intramural tenants) clients base and helping them to participate in the international knowledge flows and collaboration. This PSTP's department has developed comprehensive

Scheme 3. Model for Cooperation of WCAT with PSTP



services to promote entrepreneurship among scientists and residents of the city, and to support businesses - both those operating in the Park and throughout the region of Wielkopolska.

The other element of the presented model is Incubator of Chemical Technologies which offers the infrastructures to carry out technological studies on an enlarged bench scale and to work on the development of various industrial processes. Moreover, a wide range of services is offered for fundamental technological processes, syntheses under atmospheric and reduced pressures, simple and fractional distillations, concentration, drying and grinding of precipitates, preparation of solutions of specified concentrations, etc..

Incubator of Chemical Technologies is a spectacular example of successful commercialization of technologies in UNISIL (abbreviation of "university silanes - organosilicon compounds) - the first in Poland university spin-off company, established in 1989 and started operations in production premises leased from the Tarnow-Moscice big chemical factory on the South of Poland. UNISIL is the innovative firm in which Adam Mickiewicz University Foundation has main shares.

The latest initiative of PSTP is the implementation of the Complex of High Technology Incubators (HTI), i.e. is the largest laboratory complex in Poznań

intended primarily for the spin-offs that deal with materials and biomaterials as well as information and communication technologies project under the Innovative Economy Operation Program of EU.

The Complex of HTI provides entrepreneurs, on preferential terms, with professional laboratory and office space equipped with advanced IT facilities. Along with the complex of incubators, PSTP is an entity that plays a key role in the transfer and commercialization of technologies developed in the Greater Poland Centre for Advanced Technology.

PSTP – SCIENCE – BUSINESS COOPERATION

Turning ideas into business reality for over 18 years, the Poznań Science and Technology Park (PSTP) has actively worked to facilitate the process of commercialization of knowledge and to support the development of innovative companies, including spin-offs. An important element in creating the Poznań model for the transfer and commercialization of knowledge is the city's centuries-long tradition of private enterprise and small business, and the 90-year history of Poznań International Fairs, which have been a genuine forum, in different political periods, for international trade and a place where one could get familiar with the European model for relationship among science, innovation and business.



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Technopark Lodz main objective is committed to facilitating advanced technology transfer from science to business and creating the most growth-conducive environment for local entrepreneurs involved with innovation and new technologies. An important aspect is the building of a knowledge-based economy through strengthening the cooperation of science and business.

Lodz Regional Science and Technology Park Ltd. formally has been existed since 2003, but the intensification of its activities took place in 2007. In September 2007, on the 14 acres of green area on Dubois Street its first investment was activated - a technology incubator, where company's registered office was transferred.



Bogdan Wasilewski,
PhD.MBA.BM.Msc.Eng - CEO





Technopark Lodz is a limited liability company, which shareholders are the most important institutions of Lodz city: City of Lodz, Lodz Province, three biggest public universities: Technical University, University of Lodz and Medical University, as well as business representatives: Lodz Chamber of Commerce and Lodz Wholesale Marketplace „Zjazdowa”.

Multi-activity of Technopark Lodz is based on several pillars. Currently, a key role is played by the implementation center for business BioNanoPark and Łódź Technology Incubator. In addition, Technopark has got an attractive investment areas for the high-tech companies and modern conference background.

BIONANOPARK:

is the most modern development centre for business in this part of Europe. The ceremonial opening took place in mid-October 2012 and the President of

the Republic of Poland, Mr. Bronisław Komorowski featuring this event.

It consists of:

- Extended Lodz Technology Incubator with another office spaces for 50 new companies, 4 office-laboratory modules for spin-off and spin-out companies, conference room for 300 participants equipped with simultaneous translation system, allows to organize the event for up to 300 people.
- The following laboratories:

THE MOLECULAR AND NANOSTRUCTURAL BIOPHYSICS LABORATORY, which conduct research about the influence of nanomaterials on human health and the environment. The laboratory investigate also new, inexpensive generic drugs and therapeutic agents, as well as determine the biocompatibility of materials for biomedical applications.

THE INDUSTRIAL BIOTECHNOLOGY LABORATORY, where technology solutions being developed for the production of new or refined unique enzymes, as useful instruments for food, textile, chemical, pharmaceutical, paper industry, as well as, biofuel production. In addition to this laboratory test new products such as: biomaterials, enantio-selective chemicals, nutraceuticals, pre-biotics and cosmeceutics..

Appliance profile of laboratories was selected so the entrepreneurs can order researches at every stage of development of their product or technology. Some units are currently the subject of

the applying procedure for certification of Good Laboratory Practice (GLP).

INDYVIDUAL MEDICAL IMPLANTS

LAB:

It is a part of Molecular and Nanostructural Biophysics Laboratory. It provides medical consulting services and offers image processing in the field of diagnostic imaging (computed tomography, magnetic resonance imaging) and the creation of virtual models of various anatomical structures and pathological changes.

This process can included such pathology as bone tissue defects, tumors and





vascular anomalies (aneurysms, vascular malformations). Next, on the basis of these virtual models three-dimensional physical models can be built using a precision rapid prototyping technique.

This operating method is clinically more effective, while significantly reducing the need for reoperation, and considerably reduces recovery time and largely eliminate the risk of any complications.

LODZ TECHNOLOGY INCUBATOR:

Its offer is addressed to newly established high-tech companies. Lodz Technology Incubator was created in order to give them the best conditions for development. Here they can reduce their initial costs and focus their activities exclusively on creating business solutions, improving services and searching for clients.

The company shall receive, thanks to the de minimis aid, favourable conditions of rental a modern equipped office with Internet access. Companies that join incubator will have also legal, including patent, as well as accounting and marketing consultancy, promotion on the Technopark website and PR activities related to dissemination of infor-

mation about company's products and services.

AN OFFER FOR INVESTORS:

Innovative companies can commercially build in Technopark's area their own headquarters. The property owned by the Lodz Technopark has been divided into 22 commercial lots of different sizes. All the lots are included in the local land development plan, in accordance with which they are zoned for low impact commercial and industrial development (light manufacturing and services) and hotel infrastructure.

An undoubted advantage of this location is a central location on the map of Poland, proximity to the international Wladyslaw Reymont Airport with CARGO terminal and highways. What is more, the whole area is covered by the local development plan. The offer is particularly attractive to companies that do not want to invest in their own R & D units and then they can at favorable conditions tests their products in the BioNanoPark development center.

PLANS:

Currently Technopark Łódź is intensifying an efforts leading up with the launching the BioNanoPark + project, which will be an extension of the BioNanoPark development center. The project involves the creation of a new, specialized building area of about 4 000 sq.m. It will include laboratories such as: biosensors, food authentication, biotechnology, physico-chemical characterization of nanomaterials, personalized medicine and the Analyzer Real Complex Systems (ARUZ).

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POLISH CHAMBER OF COMMERCE
FOR HIGH TECHNOLOGY



The National Centre
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