



**NATIONAL
COHESION STRATEGY**
for Poland's development

WCAT, Poznań

June 16-17, 2010



INNOVATIVE ECONOMY
NATIONAL COHESION STRATEGY



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND



***Wielkopolska Centre of Advanced
Technologies in Poznań (WCAT)***
***- Multidisciplinary Research Centre and the basis
of Technology and Knowledge Transfer***



Prof. Bogdan Marciniec
Adam Mickiewicz University, Poznań
Poznań Science and Technology Park –
Adam Mickiewicz University Foundation

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Wielkopolska Centre of Advanced Technologies in Poznan (WCAT) -Consortium

WCAT Consortium Agreement of December 22nd, 2006
(extended by annex in February 2008) signed by:

- **5 Poznań State Universities**
Adam Mickiewicz University, University of Technology, University of Life Sciences,
University of Medical Sciences, University of Economics
- **4 Institutes of the Polish Academy of Sciences:**
Bioorganic Chemistry, Genetics of Plants, Genetics of Man, Molecular Physics,
- **2 R&D Institutes:**
Institute of Natural Fibres and Institute of Plants and Herbal Products
- **Poznan Science and Technology Park** – Adam Mickiewicz University Foundation
- **City of Poznań**

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Main objectives

- **Create a multidisciplinary research centre** combining the best experts in exact, natural and technical sciences who would work on design and development of **unique (nano)materials and biomaterials** of wide use.
- **Integration of the Poznan scientific community** of high intellectual potential to bring into a centre of high impact on the **regional and international economy**.

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The Consortium activity concerns:
Synthesis and development of technologies of low-tonnage manufacturing

Fine chemicals

Biochemicals (agrochemicals)

*Intelligent materials,
nanomaterials*

Design the properties of many materials on molecular level

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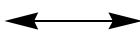


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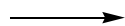
The aims of WCAT are: realisation of original ideas in chemistry formulated in cooperation between the chemists specialising in synthesis and **the recipients commissioning the target products of specific properties along with design and development of technologies of their manufacturing and selection of the optimum products for their commercialization under conditions of Polish economy.**

**CHEMICAL AND
BIOCHEMICAL
SYNTHESIS**



TARGET PROPERTIES

Advanced
technologies and
biotechnologies



Fine chemicals, chemical
specialties, nanomaterials,
precursors of materials

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Advanced chemical technologies

- **Design and development of original syntheses** of chemicals and biochemicals (also agrochemicals) - fine chemicals and chemical specialties
- **Synthesis of monomers and additives to polymer materials**, modification of natural origin polymers and synthetic polymers
- **New generation of bio- and nano- materials** and their precursors

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- **Functional materials** (bio-compatible and bio-degradable with tailored properties)
 - thin films and surface coatings
 - materials for therapeutic and diagnostic application
 - agrochemicals
 - pharmaceuticals
- **Polymer and carbon nanocomposites** and composites in the areas of energy creation storage and fuel cell technologies
- **Intelligent materials with tailored optoelectronic, mechanical and magnetic properties** to application to electronic devices (organic electronics)

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- **Advanced technologies** of their manufacturing for the needs of optoelectronics, ceramics, medicine, pharmacy, agriculture and many other areas
- **Formulation of the technological backgrounds for a wide range of applications of bioorganic chemistry, molecular biology and biotechnology in health protection** (in molecular and cellular therapy and medical diagnostics), agriculture and food industry (DNA tests in plant cultivation and animal breeding, food product and fodder additives, biodegradable packing materials, etc.)
- **New technologies nad biotechnologies** for multicomponent products for agriculture

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Industrial biotechnology

- Conversion of plant biomass into new generation of biofuels and bulk & fine chemicals
- Novel microorganisms and enzymes for industrial bioprocesses
- Metabolic and genetic engineering for improvement of industrial microorganisms
- New robust strains resistant to stress under process conditions
- New bioreactors and technological devices for bioprocessing
- Bioprocess engineering, modelling and scale-up of biotechnological processes
- Innovative downstream processes for separation, purification and concentration of biological substances
- Development of new technologies for biosynthesis, biodegradation and biotransformation processes using microorganism, tissue cultures and enzymes

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Medical Biotechnology with animal facility

- Analyses of cancer genetic background
- Development of molecular targeting and cellular therapies of cancer, cardiovascular and neurodegenerative diseases
- Construction of innovative genes encoding therapeutic anticancer proteins
- Preclinical research (GLP)
- Manufacture of biotherapeutics (GMP)

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Projects in progress:

There is well-developed cooperation between research groups of all consortium members illustrating the really multidisciplinary character of WCAT in the future operational phase (after 2013), e.g. current projects realized by at least 3 WCAT Consortium Members and co-financed from European Regional Development Found carry out within the confines of Operational Programme Innovative Economy 2007-2013:

- *Silsesquioxanes as nanofillers and modifiers of polymer compositions,*
- *Biotechnological tools for obtaining varieties of cereals of enhanced resistance to drought,*
- *Biotechnology conversion of glycerol to the polyols and dicarboxylic acids,*
- *New bioactive food products of programmed health promoting effects.*
New bioactive food with healthy properties programed

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Why Poznań

The city of Poznań is classified as **the third strongest centre of scientific research and education in Poland** with the number of research workers reaching a 16 thousands, while the number of students - over 140 thousands.



WCAT in Poznań is the first centre integrating the whole scientific community in the Wielkopolska District basing on excellent research in the field of advanced technologies of (nano)materials and biomaterials.

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WIELKOPOLSKA REGION Poznań – the third largest university centre in Poland

- **26** university level schools (8 state universities)
- **19** Institutes of the Polish Academy of Sciences
- **23** Research and Development Institutes
- In total **16** thousand employees working in research institutions and **145** thousand students

New status of research centres

- | | |
|--|--------|
| • Centres of Advanced Technologies | 3 |
| • Centres of Excellence (KBN status) | 11 |
| • Centres of Excellence (UE) | 9 |
| • Polish Technological Platforms | 1 (+3) |
| • Research and Technology Parks and Industrial Parks | 4 |

- Poznań Research and Technology Park of the AMU Foundation
- Nickel Technology Park
- Poznań Industrial Technology Park
- Luboń Industrial Park

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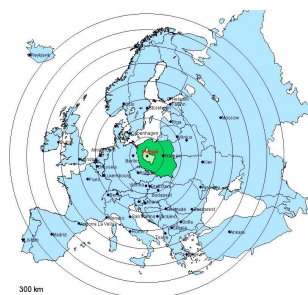


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Wielkopolska – some data

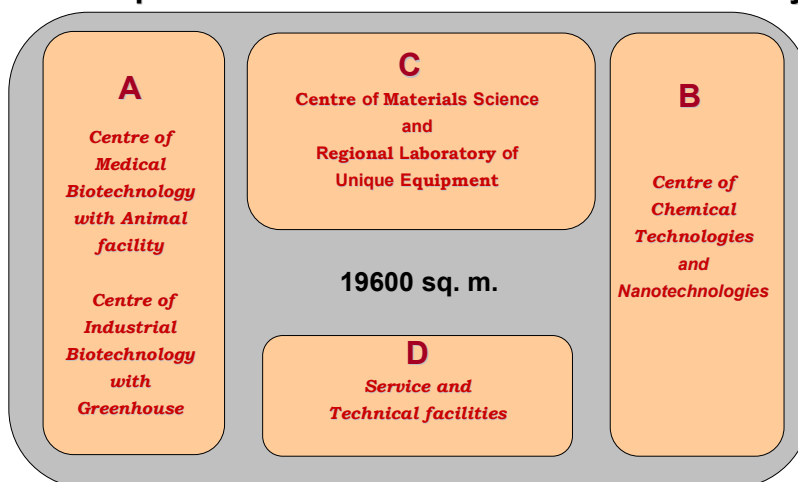
- Mid west of Poland
- Historical region of Poland (*Poland's beginnings are here*)
- Wealthy region of Poland, not so much of the EU
(*but PL GDP grows in 2009*)
- Population of 3.4 million
- 29,825 sq. km
- GDP per capita (2006) – 7300 € (9800 \$)
- Employment (2008) – 51,6 %
- Unemployment (2008) – 6,4%
- Region capital – Poznań
 - 600 thousand population
 - Midway between Berlin and Warsaw
 - Important R&D and economy centre



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Wielkopolska Centre of Advanced Technology Materials and Biomaterials Campus Morasko of Adam Mickiewicz University



*Collegium Chemicum
Adam Mickiewicz University*





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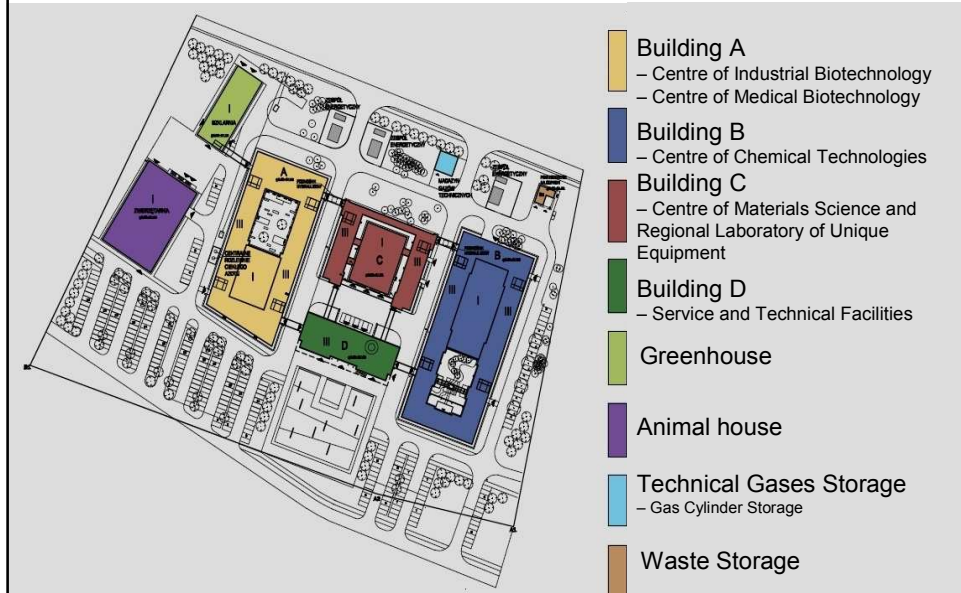
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Milestones of the project

Budget 63 mln euro

**Preparation of feasibility study and necessary
documentation and final application: 2007-2008**

Legal tender and choice of contractor: 2009

**Building of infrastructure and supplies of equipment:
2010-2013**

Starting of operation: 2013



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RAMIRI 2

– Realising and Managing International Research Infrastructures (RAMIRI 2)

7TH FRAMEWORK PROGRAMME

List of participants:

Participant no.	Participant organisation name	Country
1 (Coordinator)	Imperial College London (Imperial)	UK
2	Adam Mickiewicz University (AMU)	Poland
3	Collegium Budapest (CollBu)	Hungary
4	Deutsches Elektronen-Synchrotron (DESY)	Germany
5	Sincrotrone Trieste (Elettra)	Italy
6	Institute of Physics (IoP)	Czech Republic
7	Lund University	Sweden
8	University of Amsterdam (UvA)	Netherlands

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RAMIRI 2

- It responds to a number of developments in European research infrastructure (RI) management, including the ESFRI Roadmap, the ESFRI regional issues working group, the ECRI conferences and the European Research Area (ERA) Board.
- The principal aims of this proposal are to train a group of new RI-managers (with a particular emphasis on managers from the new member states) in a number of key practical areas relevant to establishing and managing RIs of pan-European and international importance, including both single-sited and distributed infrastructures in both the physical/natural and social sciences.

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RAMIRI 2

- Topics covered will include: determining socio-economic impact, site-selection, legal and governance issues, financing, project planning and construction, recruiting specialised staff, and strategic planning (upgrades, partnerships, technology transfer).

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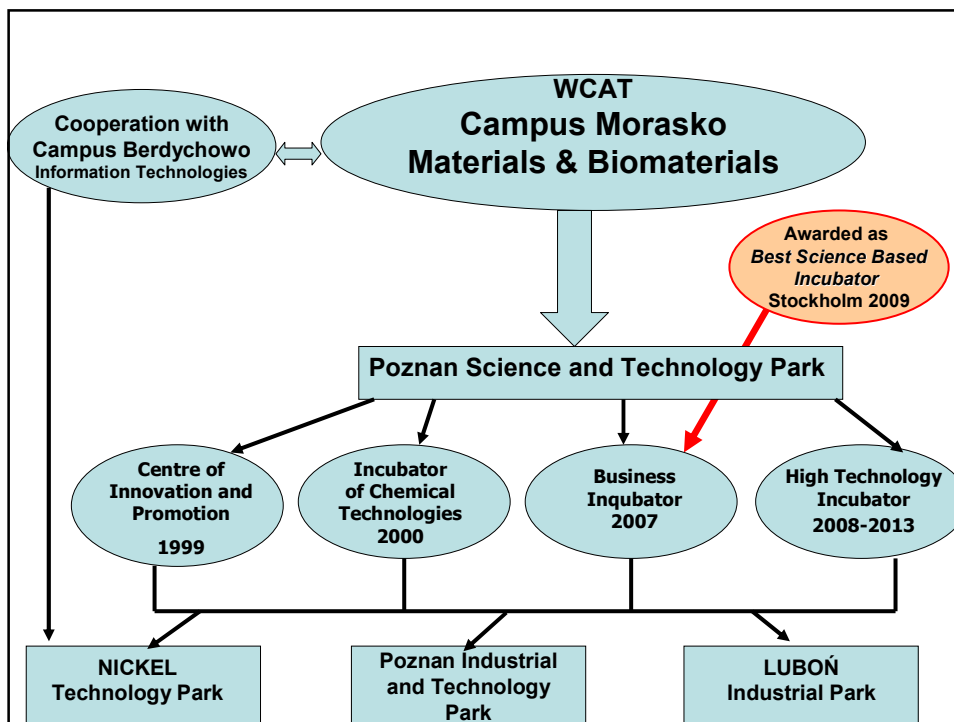


Technology Transfer

Center will cooperate with the R&D centres of the Polish and European Concerns, but of key importance for the transfer and commercialisation of the new technologies is localisation in the neighbourhood **Poznan 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 effective transfer of the technologies of new materials to technology-industrial parks and high-tech industry.**

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Poznań Science and Technology Park - Main activities

- **Research and development services**
- **Science – economy relations**
- **Business entrepreneurship, including supporting and giving space to innovative companies**
- **Consulting, information and training services for enterprises and intermediary institutions**
- **Cooperation and consultancy connected to construction of strategy and development documents on**
 - innovation policy
 - research results commercialization
 - parks activities (on local, regional and domestic level)
- **Databases creation (companies and R&D institutions)**



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High Technology Incubator „Materials and Biomaterials” „Information and Communication Technologies”

Place

Poznan Science and Technology Park
The first in Poland (1995)

Budget

- 46,5 mln PLN (11,5 mln euro), of which:
 - 15% - own contribution (7 mln PLN)



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Project objectives

- creation „entrepreneurship friendly” environment for young researchers
- creation facilities adapted for high technology spin offs /start ups
- decreasing financial risk of starting new business
- promotion entrepreneurship among young researchers

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Summary of project's objectives:

- **Integration of Wielkopolska scientific community** in the field of advanced technologies – (nano)materials and biomaterials
- **Multidisciplinary research** in the field of chemistry, physics, biology, biotechnology and materials science focused on new technologies of materials and biomaterials
- **Transfer of technology** to industry and support of incubation process of knowledge based spin-off's.

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Science of future proposed

The design and work of the Centre of Advanced Technologies proposed has every chance to realise its mission at the high international level on the basis of recent technologies in the fields of key importance for sustainable development of the region and the country.

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Thank you for your attention.

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