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The Faculty of Materials Processing
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SCIENTIFIC RESEARCH ACTIVITY

My field of scientific interests covers the area of materials science and application of numerical methods for modeling the properties of materials and processes of thermo-chemical treatment. Over the entire period of my professional work, as a part of research activities, I have dealt with issues of surface modifications of metallic materials, surface engineering methods, manufacturing of functional materials, studies of the properties of metallic materials, superconductors, metallic glasses, nanomaterials and nanocomposites of polymer matrices.

As for my scientific studies, you can distinguish the following directions:

- research on the use of fluidized centers for structural steel carburizing processes,
- research on surface modification and manufacturing of the surface layer as well as deposition of coatings on metallic materials,
- research on the influence of microstructure changes on mechanical and functional properties of metallic materials,
- studies on the influence of thermo-chemical treatment and the conditions of formation on the physical properties of superconducting materials, development of composition and manufacturing technologies of metallic glasses and a bulk multicomponent functional amorphous and nanocrystalline alloys,
- manufacturing and investigation into the properties of nanocomposites of polymer matrices used in optoelectronics,
- other scientific works, mostly commissioned, which have practical application.

I. The scientific research career before obtaining a Ph.D. degree

In 1991 I graduated from the Technical School in Czestochowa, and got the title of technician specializing in electrical and electronic industrial automation. In the same year I began my studies at the Faculty of Electrical Engineering of the Czestochowa University of Technology.

I graduated from the Faculty of Electrical Engineering of the Czestochowa University of Technology in 1996. My MSc thesis on "Comparative analysis of the efficiency of energy regions serviced by the Polish Energy Facility" consisted of both a theoretical and practical parts. I got the title of MSc in the field of electrical engineering.

In the 1998 year, I started work as a teacher of Information Technology at electronics at Technical School under the patronage of the Gen. Wladyslaw Sikorski in Czestochowa. I taught there subjects such as: Electrical Engineering and Computer Systems Diagnostics. At the same time I was the author of numerous projects relating the following systems: power, automation, optimization, programming, control and security. Moreover I participated in numerous seminars on economics and computer science.

In October 2003, I started PhD daytime studies at my Alma Mater in the field of Materials Science and Engineering. My tutor was Jozef Jasinski Assoc. Prof. of Czestochowa University of Technology. During that period, I was engaged in the scientific operations in both the cognitive and utilitarian aspects, especially concerning at the technology of surface treatment of metallic materials and studies of structures and properties of metallic materials. Among the most important ongoing researches in the cognitive aspect the following can be pointed out:

- research on determining the suitability of the fluidized bed for thermo-chemical treatment of steel and titanium alloys,
- influence of the generated in the fluidized bed of chemically active atmosphere on functional and mechanical properties of workpieces,
- determination of the aerodynamic and chemical characteristics of the fluidized bed,
- modeling of the properties of thermo-chemically processed elements,
- studies on the oxidation and passivation of titanium,
- modeling of structural and mechanical properties of biomaterials,

- modeling of the mechanical properties of diesel engine components.

In addition to the issues presented in the framework of professional activities I was involved in a number of scientific works related to the development technologies of heat treatment and thermo chemical, structural and phase analysis, as well as ad hoc expert opinions on influence of assessment of technological processes on the quality of the products ordered by industrial plants such as: CGR Polska Spółka z O.O. in Częstochowa, Brembo Polska Sp. z O.O. in Częstochowa, Brembo Polska Sp. z O.O. in Dąbrowa Górnicza, Multimetal Spółka z O.O. in Częstochowa, Laksmi Wire Industries Coimbatore India, Huta Częstochowa, „VISTEON” S.A. in Praszka, Guardian Industries Poland, VISTAL S.A. Wrocław. My involvement in the aforementioned problems resulted in many works given to employers and collaborative publications, which were presented in detail in the list of achievements.

In 2007 at The Multimetal Company I had a three-month apprenticeship during which I also dealt with the procedures of implementation of new projects, company structure, developing, manufacturing processes and galvanic processes used in the company.

At this time, I carried out the project KBN No. 3565/T02/2006/31 (BG 202-404/2006), connected with my doctoral dissertation ‘Modeling of steel carburization in a fluidized bed using artificial neural networks’, which I defended with honors in 2008. at the Faculty of Engineering, Materials Processing and Applied Physics (Appendix 1).

The dissertation dealt with the issue of enrichment of the surface layer of steel elements during carburizing in a fluidized bed. As a part of the dissertation planned research there were specified the characteristics of aerodynamic, chemical and thermal of the fluidized bed and an analysis of the applicability of artificial neural networks for modeling carburizing process parameters and properties of carbonized elements. The studies conducted during the implementation of the doctoral dissertation were of utilitarian relevance because they concerned the problem that was faced in Praszka VISTEON plant. The use of numerical methods for modeling the properties of the cross drive elements for cars and carburizing process parameters allowed to obtain smaller structural differences in the cross section of a carburized component.

The results of scientific research, particularly concerning the thermo-chemical treatment in the fluidized bed were used in the dissertation and published in national and international

scientific and technical journals, as well as presented as lectures at numerous national and international conferences as well as congresses on heat treatment problems.

In 2008, I was awarded the Rector Prize, for outstanding achievements in research for my doctoral thesis: 'Modeling of steel carburization in a fluidized bed using neural networks'.

In the first stage of my work, outside professional activities, I took active participation in the work of Metalexperts Circles and the Association of Polish Inventors and Rationalizers at the Czestochowa University of Technology. I also actively participated in the organization of the annual conference "Surface processing" and in the organization on the Steelworker occasion, the traditional "Meeting at the ladle".

II. The scientific research work after obtaining Ph.D. degree

After having received the degree of Doctor of Technical Sciences, I was employed in the Czestochowa University of Technology at the Faculty of Engineering, Materials Processing and Applied Physics as an 'adjunct researcher' (and I wasn't assigned any teaching tasks), then "adjunct researcher, adjunct lecturer" (without appointment). In 2009 I took part in the competition for the position of adjunct announced by the Dean of the Faculty of Engineering, Materials Processing and Applied Physics and received a nomination for the position of "adjunct - researcher - lecturer".

Directly after obtaining doctorate, I have participated in the development of technology of heat and thermo-chemical treatment of biomaterials and elements of diesel engines.

In the next stages of my work, the main scientific directions of my research were:

- studies on the modification of superconducting materials, their preparation and improvement of their current parameters as well as operational parameters,
- manufacturing and studies of the properties of thin film, amorphous as well as nanocrystalline functional materials,
- manufacturing and studies of the properties of bulk amorphous as well as nanocrystalline functional materials,
- manufacturing and studies of the properties of polymer matrix nanocomposites for applications in optoelectronics,

- design as well as manufacturing of specialized equipment for the production of multicomponent amorphous and nanocrystalline alloys,
- development of methods and laboratory equipment to investigate superconducting materials,
- modeling of manufacturing processes and properties of produced materials.

The result of these studies were guidelines for technology to produce metallic ribbons as well as multicomponent bulk amorphous and nanocrystalline alloys based on iron. These studies allowed us to develop a method for manufacturing the superconducting ribbons substrates based on Ni-Fe. Studies on the bulk as well as thin films of superconducting materials resulted in the design and building systems for measuring electrical and physical parameters of this group of materials. The use of classical numerical methods as well as neural networks for modeling the forming process parameters allowed the improvement of current parameters, of practically used superconducting ribbon-like thin films. Research into this field is described in the habilitation dissertation: ‘The new high temperature superconductors, research methods and manufacturing technologies’ – (*Appendix 6*).

Among the above-mentioned research works, the most important include:

- works on the application of numerical methods in materials engineering, which represent the possibility of using modern computational tools for modeling and optimization of both material properties and parameters of technological processes,
- works on the development of compositions as well as manufacturing methods of modern functional multicomponent alloys, with the amorphous, nanocrystalline as well as crystalline structure,
- work concerning developing methods for examination of modern functional materials.

The main area of my scientific-research interest is materials science, surface engineering and in particular the methods of modeling, fabrication as well as thermo-chemical modification of materials as well as surface layers and coatings.

Currently I am head of the following research projects:

- No. N N507 284636 ‘The influence of the modification of thermal as well thermo-chemical on electrical properties of superconducting materials’, 2009-2012,

- No. N N508 586639 ‘Development of methods for producing four component bulk amorphous and nanocrystalline alloys based on iron’, 2010-2013.

In previous years, I participated in the following research projects:

- KBN project No. 3565/T02/2006/31 (BG 202-404/2006), ‘Modelling of steel carburization in a fluidized bed using artificial neural networks’, 2006-2008,

- a research project of the Ministry of Science and Information Technology No. 7 T08C 013 30 ‘Investigation of contact interaction of the surface layer of tool steel with light alloys’ implemented in the years 2006 - 2009,

- development project No. R15 035 2 ‘Technology of forming structures of materials for engine components with improved service life’ realized in the years 2007 - 2011,

- research project No. 3 T08C 067 26 ‘Surface modification of titanium and its alloys by nitriding in a fluorescent discharge to improve the performance characteristics of the surface layer’ implemented in the years 2004 - 2007.

- In 2005, I was a contractor of the commissioned project PZ-202-601/2005 ‘Prospective solutions in technology tools for soft and bone surgery’ the task PW-004/ITE/02/2005/8/UW-2005 ‘Manufacturing of modern instruments for the needs of modern surgery, soft and bone surgery’ Within this project, technology selection problem of heat and thermo-chemical treatment for tools used in medical surgery for soft and bone surgery was developed.

Since 2002 have performed of nine research projects at the Institute of Materials Science of the Czestochowa University of Technology (6 research projects, a development project and a supervisor project) and in collaboration with the Institute of Physics of Czestochowa University of Technology (one research project).

Moreover I participated, as a manager or a contractor in many commissioned works and services carried out for the industry in such industrial plants as: CGR Polska Ltd. in Czestochowa, Brembo Polska Sp. z O.O., Guardian Industries Poland, VISTAL S.A. Wroclaw and others.

In addition, in the years 2003-2011 I was actively involved in the implementation of Statutory Research (BS) and Personal Studies (BW) carried out in the Department of Biomaterials and Surface Engineering at Czestochowa University of Technology.

A significant part of the research carried out by the Institute of Materials Engineering at the Czestochowa University of Technology has allowed me to publish 172 articles. A total of

53 articles were presented in international peer-reviewed journals, of which 40 are in journals of so called Philadelphia list and 13 in other journals:

- **16** - *Journal of Alloys and Compounds* (Impact factor for 2011 – **2.135**), (*D.N.D. and O. pos. 1.21, 1.22, 1.23, 1.24, 1.25, 1.26, 1.34, 1.35, 1.40, 1.41, 1.42, 1.43, 1.44, 1.45, 1.46, 1.47,*),
- **2** - *Materials Letters* (Impact factor for 2011 – **2.117**), (*D.N.D. and O. pos. 1.32, 1.36*),
- **1** - *Journal of Magnetism and Magnetics Materials* (Impact factor for 2010 – **1.689**), (*D.N.D. and O. pos. 1.16*),
- **1** - *Journal of Materials Science: Electronics Materials* (Impact factor for 2011 – **0.927**) (*1*), (*D.N.D. and O. pos. 1.37*),
- **1** - *Physica B* (Impact factor for 2011 – **0.856**), (*D.N.D. and O. pos.. 1.27*),
- **3** - *Acta Physica Polonica A* (Impact factor for 2011 – **0.467**) (*3*), (*D.N.D. and O. pos. 1.48, 1.49, 1.50*),
- **2** - *Metalurgija* (Impact factor for 2010 – **0.439**), (*D.N.D. and O. pos. 1.17, 1.20*),
- **2** - *Optica Applicata* (Impact factor for 2010 – **0.347**), (*D.N.D. and O. pos. 1.13, 1.14*),
- **12** - *Archives of Metallurgy and Materials* (Impact factor for 2010 – **0.262**), (*D.N.D. and O. pos. 1.6, 1.7, 1.8, 1.9, 1.28, 1.29, 1.30, 1.31, 1.33, 1.51, 1.52, 1.53*),
- **1** - *Physica Status Solidi (C)*, (*D.N.D. and O. pos. 1.19*),
- **1** – *Materials Science Forum*, (*D.N.D. and O. pos. 1.15*),
- **2** - *Archives of Foundry Engineering*, (*D.N.D. and O. pos. 1.38, 1.39*),
- **3** - *Advances in Materials Science*, (*D.N.D. and O. pos. 1.2, 1.10, 1.11*),
- **1** - *Experimental Analysis of Nano and Engineering Materials and Structure*, (*D.N.D. and O. pos. 1.1*),
- **2** - *Engineering of Biomaterials* (*2*), (*D.N.D. and O. pos.. 1.4, 1.5*),
- **2** - *Archives in Materials Science Engineering* (*1*), (*D.N.D. and O. pos. 1.3, 1.12*),
- **1** - *Journal of Appl. Mech. Eng.* (*1*), (*D.N.D. and O. pos. 1.18*).

Cumulative Impact Factor = 47.983.

As far as the national publications are concerned, I published 22 articles, inter alia, in the following journals:

- 13 - *Inżynieria Materiałowa*, (*D.N.D. and O. pos. 2.1, 2.2, 2.3 2.9, 2.10, 2.11, 2.12, 2.14, 2.15, 2.18, 2.19, 2.20, 2.21*),
- 2 - *Hutnik - Wiadomości Hutnicze*, (*D.N.D. and O. pos. 2.6, 2.7*),
- 2 - *Problemy Eksploatacji*, (*D.N.D. and O. pos. 2.4, 2.8*),
- 1 - *Inżynieria Biomateriałów*, (*D.N.D. and O. pos. 2.5*),
- 3 *Informatyka Automatyka Pomiary w Gospodarce i Ochronie Środowiska*, (*D.N.D. and O. pos. 2.16, 2.17, 2.22*),
- 1 - *Archiwum Przemysłu Okrętowego*, (*D.N.D. and O. pos. 2.13.*).

The results were also published in the form:

- 2 - monographs published abroad (*D.N.D. and O. pos. 3.6, 3.19*),
- 1 - monographs, published in the country (*D.N.D. and O. pos. 3.21*),
- 8 - chapters in foreign monographs (*D.N.D. and O. pos. 3.4, 3.5, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18*),
- 7 - fragments of national monographs (*D.N.D. and O. pos. 3.2, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12*),
- 1 - fragments in the book (*D.N.D. and O. pos. 3.3*),

Moreover, the results of research in which I took an active part were presented in the form of 56 papers at international conferences in Switzerland, Croatia, Czech Republic, Slovakia, Belgium, USA, Russia, Romania, China, Brazil, Australia, Japan, Greece and international conferences in Poland (34).

The summary of my scientific achievements in the field of superconducting materials research is the monograph 'The new high temperature superconductors, research methods and manufacturing technologies' (*Appendix 6*).

The monograph presents the methods of manufacturing and determination of high temperature superconducting materials and methods of modeling parameters and conditions of their formation. The subject of the dissertation is one of the key research topics as superconducting materials in the future may constitute a very important, environmentally friendly way to reduce electricity consumption.

The solutions developed during the implementation of the dissertation work significant contribution to the development of superconductivity are constitute. They include the following:

- development of manufacturing methods of Ni-Fe substrates, for high-temperature superconducting tapes, by regulated strip casting onto the copper cylinder,
- development of models based on neural networks and finite element method to model the formation conditions and critical current of high temperature superconducting tapes,
- improvement of current parameters by optimizing the conditions for the formation of of high temperature superconducting tapes,
- development of methods to obtain monolithic YBCO/BSCCO superconducting materials by injection of molten and mixed oxides.

What is more, in the dissertation a very important and not so far exposed, direction of research was highlighted, which was to improve current parameters by optimizing the conditions for the formation of superconducting materials. It is important, above all, in terms of practical application of superconducting materials, because it can reduce parameters degradation and improve the efficiency of current devices, which are used in superconducting materials.

The first chapters of the dissertation contain a review concerning high-temperature, superconducting materials and technologies currently used in their manufacture. As regards the production technology currently used in the industry, the results of tests of development of their methods for production of high-temperature superconducting materials, ways to improve and modify their properties and modeling and optimization of current parameters were presented.

The research methods proposed in the following chapters allowed to measure the characteristic parameters of monolithic and thin film, high-temperature superconductors. As part of this stage numerous measurement systems dedicated to specific superconductors and

their electrical and magnetic properties was developed and built. There also carried out several studies of structural and mechanical properties.

The results of experiments were extremely important in terms of building computer models, since all obtained measurement data were implemented into the knowledge base, which was used as a source of material data.

In the dissertation, there were also presented a historical outline and theoretical basis for finite element (FEM) and neural networks methods. These data were the basis for the design and construction described in the work examples of models determining the state of stress and strain, and basic current parameters of the high-temperature superconductors.

Most of the research was carried out in collaboration with national and international research institutes and industrial plants:

1. Institute of Precision Mechanics in Warsaw, since 2004, (*D.N.D and O. pos. 16.1*),
2. Institute of Low Temperature and Structure Research PAN in Wroclaw since 2004, (*D.N.D. and O. pos. 16.2*),
3. Visteon Poland S.A. since 2004, (*D.N.D. and O. pos. 16.3*),
4. Institute of Nuclear Physics in Krakow, since 2006, (*D.N.D. and O. pos. 16.4*),
5. National Institute for Sustainable Technologies in Radom, since 2006, (*D.N.D. and O. pos.. 16.5*),
6. ISD Ironworks Czestochowa, since 2006, (*D.N.D. and O. pos. 16.6*),
7. CRG Ltd., Polish company, since 2006, (*D.N.D. and O. pos. 16.7*),
8. Guardian Ltd, Polish company, since 2006 (*D.N.D. and O. pos. 16.8*),
9. BREMBO Ltd, Polish company, since 2006 (*D.N.D. and O. pos. 16.9*),
10. TEDRIVE Ltd, Polish company, since 2006 Praszka (*D.N.D. and O. pos. 16.10*),
11. Lakshmi Wire Industries Coimbatore, Indie, since 2006, (*D.N.D. and O. pos. 16.11*),
12. Transylvania University of Brasov, 2007, (*D.N.D. and O. pos. 16.12*),
13. Louisiana University, Lafayette, 2007, (*D.N.D. and O. pos. 16.13*),
14. Military University of Technology Warsaw, since 2007, (*D.N.D. and O. pos. 16.14*),
15. BREMBO Ltd, Polish company, since 2008 Dąbrowa Górnicza (*D.N.D. and O. pos. 16.15*),
16. Vistal Ltd, Polish company, since 2009, (*D.N.D. and O. pos. 16.16*),
17. Zilina Technical University, 2009, (*D.N.D. and O. pos. 16.17*), (*Appendix 8.1*),
18. Birmingan University, 2009, (*D.N.D. and O. pos. 16.18*), (*Appendix 8.2*),

19. Cambridge University since 2010, (*D.N.D. and O. pos. 16.19*),
20. Instytut Europejski, Centre of Excellence in Knowledge-based Economy since 2010, (*D.N.D. and O. pos. 16.20*),
21. Institute for Research on Entrepreneurship and Economic Development at Academy in Lodz since 2010, (*D.N.D. and O. pos. 16.21*),
22. POLBRUK Company Warszawa, (*D.N.D. and O. pos. 16.22*),
23. Politecnico Torino, Włochy, 2010, (*D.N.D. and O. pos. 16.23*), (*Appendix 8.3*),
24. Institute of Physics, University of Tartu, Estonia, 2010, (*D.N.D. and O. pos. 16.24*), (*Appendix 8.4*),
25. Physics Instrumentation Center, Prokhorov General Physics Institute, Russia, 2010, (*D.N.D. and O. pos. 16.25*), (*Appendix 8.5*),
26. Institute of Microengineering and Nanoelectronics, University Kebangsaan Malasia, 2010, (*D.N.D. and O. pos. 16.26*), (*Appendix 8.6*),
27. Laser, Spectroscopy, Laser Scanning Microscopy Laboratory and Computational Work Group Laboratory, Jihoceska Univerzita v Ceskych Budejovicich, Czechy, 2011, (*D.N.D. and O. pos. 16.27*), (*Appendix 8.7*),
28. Laboratoire de Micro-spectroscopies Raman et FTIR, Universite de Moncton, campus de Shippagan, Canada, 2011, (*D.N.D. i O. poz. 16.28*), (*Appendix 8.8*),
29. R&D Institute for Materials, SRC "CARAT" Department of Crystal Physics and Technology, Ukraine, 2011, (*D.N.D. i O. poz. 16.29*), (*Appendix 8.9*).

As tribute to my scientific research, teaching, organizational and inventive work I received, Knight's Cross – Chevalier MERITES DE L'INNOVATION LABOR IMPRODUS OMNIA VINCIT, No 10415 from the Belgian Royal Chapter. (*Appendix 7.1*)

In addition, I was awarded many other prizes and awards which include:

- Prize of the Minister of Science and Higher Education (*Appendixes 7.2, 7.3, 7.21, 7.22*),
- Diplomas, Minister of Science and Higher Education (*Appendixes 7.4÷7.19*),
- Congratulatory letters of Minister of Science and Higher Education (*Appendixes 7.23÷7.25*),
- Rector's Prize of the Czestochowa University of Technology (*Appendixes 7.26÷7.29*),
- International Awards (*Appendixes 7.30÷7.44*),

- National Awards (*Appendixes 7.47÷7.62*),
- Medals, trophies and statuettes (*Appendixes 7.45, 7.46, 7.20*).

Since 2008 I have been a reviewer for The Journal of Materials Engineering and Performance (over a dozen reviews) (*D.N.D. and O. pos. 24.2, 24.3, 24.5, 24.6, 24.7, 24.10, 24.11*), and external expert in Foresight Innovative Economy - development trends (*D.N.D. i O. poz 28.8*) (*Appendix 8.10*) and an industry expert for PO IG FORSURF (*D.N.D. and O. pos 28.9*) (*Appendix 8.11*).

III. Educational activities

Apart from my innovation and research activities, I consider my educational activities equally important. I was involved in many form of these such as:

- laboratory courses of subjects: Metallography, Fundamentals of Science of Materials, Materials Science, Surface Engineering, Heat Treatment Technologies, Heat and Surface Treatment, Heat Treatment and Surface Engineering, Investigation Methods of Materials, Unconventional Methods of Heat Treatment,

- classes: Fundamentals of Materials Science and Engineering Materials, Durability and strength of construction materials and Computer methods supporting heat treatment,

- seminar: Introduction to Contemporary Materials Science and Engineering,

- lectures: Science of Materials, Fundamentals of Materials Science, Heat and Surface Treatment, Surface Engineering, Heat Treatment Technologies, Engineering Materials. At present I give lectures on the following subjects: Heat Treatment Technology, Fundamentals of Materials Science and Engineering Materials.

- I supervise Metallography Scientific Circle at the Czestochowa University of Technology,

- Promotion of Master theses and Engineering theses.

Most of my taught courses were related to the following topics: metallography , materials science, theory and technology of heat treatment and thermo-chemical treatment as well as surface engineering methods.

Until now, I have been teaching daily and part-time students at Master and Engineer level at the faculties of: Faculty of Materials Processing Technology and Applied Physics as well as Faculty of Management of the Czestochowa University of Technology

I was a supervisor and reviewer of several Master and Engineering theses.

Throughout the whole period of my work I have been also involved in improvement of the laboratory base in the Institute of Materials Science by organizing, inter alia, the following laboratories: ceramic materials and non-destructive testing and examination and modification of electrical and physical properties. Currently, I am a supervisor of laboratories: Ceramic Materials and Non-destructive Testing, Research and Modification of Physical and Electric Properties, Surface Engineering and Tribological Research of Surface Layers.

Throughout the entire period of my scientific activity I have tried to use all possible opportunities to broaden my knowledge and professional skills by participating in numerous training-courses and seminars (*Appendixes 8.12÷8.27*).

IV. Organizational activity

Between 2002 - 2008 I was a member, at first, of the National Organizing Committee later - International Scientific Conference 'Surface treatment' (in 2008 - Secretary of the VII Conference 'Surface Engineering - INPO2008'). In February 2007 I was a member of the Technical Committee of Symposium: Technical TMS 2007, Orlando, Florida, USA, and in subsequent years, the Technical Committees of TMS Computational Materials Science and Engineering Committee, Louisiana, New Orleans, USA, January 2008 - March 2009, TMS Process Technology and Modeling Committee, Louisiana, New Orleans, USA, January 2008 - March 2009 and TMS Biomaterials Committee, Louisiana, New Orleans, USA, January 2008 - March 2009. Currently, I am actively participating in the organization, and was appointed Secretary of the International Conference of the AMT in 2013.

In addition, I took an active role and participated in the organization:

- Final of the International Competition "ECO 2005", Czestochowa, 2005,
- International Competition "ECO 2007", Kosice, 2007,
- Polish exhibition stand at the International Invention Show Eureka 2007, Brussels, 22-25 November 2007,
- Together with the Polish Consulate, Polish Days in Brussels, 22-25 November 2007,
- ECO 2009 International Competition.

acting as:

- Member of the Jury, International Competition, "ECO 2007", Kosice, 2007,
- Commissioner of International Invention Show Eureka 2007, Brussels, 22-25 November 2007,
- Member of the Jury of the International Student Session X International Scientific Conference 'New Technologies and Developments in the Metallurgy and Materials Science', Czestochowa 2009,
- Member of the Jury the International Competition ECO 2009,
- Commissioner of International Invention Show Inova Brussels Eureka 2010, Brussels, 17-21 November 2010,
- Member of the Organizing Committee of the International Competition ECO 2011,
- Auditor of projects in a competition Innovator of Silesia, organized by the Upper Silesian, Silesian Agency for Enterprises Restructuring, Regional Center of Innovation and Technology Transfer, Enterprise Europe Network South Poland, 2011.

I am a member of:

- University of Czestochowa Alumni Association, (since 2002),
- Association of Polish Inventors and Rationalizers (since 2004),
- Polish Committee for Standardization - Metallurgy and Mining Group (since 2006),
- Association of Engineers and Technicians of Metallurgical Industry in Poland (since 2007),
- National Council of SPWiR in Warsaw (since 2007),
- Technology TMS Minerals, Metals & Materials Society, USA (since 2007),
- National Scientific and Technical Committee for Standardization FSNT-NOT,
- 2008-2012,
- FSNT-NOT Team for amendment of the law and ownership transformation of PKN,
- Polish Society of Metallography (since 2009),

- President of Association of Polish Inventors and Rationalizers, Department of Czestochowa (since 2011).

From 2007 to the present, Vice President of the Presidium of the National Association of Polish Inventors and Rationalizers in Warsaw.

Since 2009 I have been a participant in a project funded by the European Union Social Fund Entrepreneur Scientist as an Opportunity for the Development of the Czestochowa University of Technology, Human Capital - National Cohesion Strategy.

In 2009 I was appointed as external examiner in the Operational Programme "Innovative Economy" - "Advanced industrial technologies and environmentally sustainable development of the country" - "Advanced Materials Technologies and Nanotechnologies as well as technical systems supporting their design and applications",

In 2009 I was appointed as an external expert of the project Advanced Industrial Technologies and Ecological for Sustainable Development of the Country '(PO Innovative Economy, Sub-activity 1.1.1: Research projects using the method of foresight). (*D.N.D. and O. pos 28.8*).

In recognition of the knowledge associated with professional practice in the thematic areas of materials science, engineering, manufacturing and surface engineering, based on the opinions of Key Experts and Members of the International of the Monitoring Committee in 2010 I was appointed as Industry PO IG FORSURF Expert, in the project "Foresight leading technologies shaping the surface properties of materials and biomedical engineering," based on "Sub-task 1.1.1. Research projects using the method of foresight "Operational Programme Innovative Economy 2007-2013 (*D.N.D. and O. pos 28.9*).

In 2010 I was a member of the team preparing the documentation for the field of study - Materials Engineering for the National Accreditation Commission.

An many occasions I was involved with the preparation of major events important for the Faculty of Engineering, Materials Processing and Applied Physics, Czestochowa University of Technology and organizational work in the Institute of Materials Science and Engineering.

Michał Srota

