# Habilitation Thesis

EVOLUTION OF HABILITATION THESIS IN UPT
2012-2015

Habilitation (from Latin habilis "fit, proper, skillful") is the highest academic qualification a scholar can achieve by his or her own pursuit.

In this chapter we present the habilitation thesis supported by teachers from Politehnica University of Timisoara, both at UPT and, also, at other universities.

The habilitation thesis are presented in alphabetical order, according to institution where they were sustained.

Habilitation Thesis

	2012	2013	2014	2015
	4	2	7	11
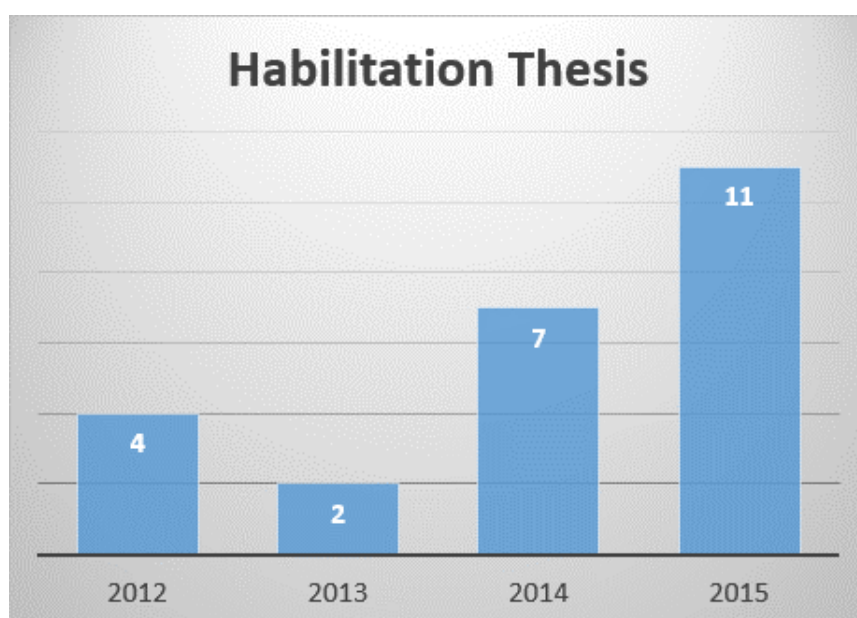
COMPUTATIONAL INTELLIGENCE PARADIGMS WITH APPLICATIONS IN EMBEDDED VISION

Author: Cătălin-Daniel CĂLEANU

Abstract

The first part of the thesis is constituted by the abstract versions. The second part of the thesis refers to the:

• Overview of activity, in which it'a preseted the most prominent research, professional and academic achievements (list of publications and grants classified in four main research topics, newly introduced disciplines, taught courses, contribution to the development of the academic curricula, invited professor, students internship, conducting diploma and dissertation theses, endowed laboratories and library, international cooperation, management activities, etc.).

• The most important mentioned aspects are: a number of 53 research articles published in the above mentioned period, 12 research grants (7 as grant/contract director) and 6 books.

- Technical presentation in which four main research topics are identified:

Computational intelligence in autonomous mobile robotics. First work presented here is interested in environment representation which permits the robot to know if it goes in the right direction by acquiring a spatial models of the robot's physical environment using a non-metric/qualitative approach. Second work presented within the framework of the above mentioned topic deals with genetic algorithm based methods for finding optimal structure for a neural network (weights and biases) and for a fuzzy controller (rule set) to control a group of mobile autonomous robots. The goal of the robots, namely catching the targets, could be fulfilled only trough an emergent social behaviour observed in our experimental results.

Artificial intelligence paradigms for human face identification. Previous works has shown that Gabor feature extraction is one of the most effective techniques employed for the human face recognition problem. The authors propose an alternative feature extraction method - the Interest Operator - to be applied for the facial recognition problem.

Soft computing based face expression recognition. The aim of the first presented work is to identify key representative approaches for facial expression recognition research in the past ten years (2003-2012). The interest in creating such an overview is multifarious. Moreover,

this selection can be a useful indicator of the areas that will constitute the future research trends. The second detailed work concerns a layered fuzzy facial expression generation of a virtual agent. In this model, social, emotional and physiological layers contribute to the fuzzy facial expression generation.

3D biometrics. In the first work, using combined skeletal tracking and depth information, a biometric person identification is performed. All these features are provided by a low cost 3D acquisition system, the Kinect sensor [Kinect12].

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/caleanu/Rezumat_teza_Caleanu_en.pdf

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SUSTAINABLE DESIGN OF SEISMIC RESISTANT STEEL AND COMPOSITE BUILDING STRUCTURES

Author: Adrian Liviu CIUTINA

Abstract

The present thesis summarizes the most important part of the research activity of the candidate after defending the PhD Thesis. The selected activity was considered to be relevant in terms of originality and importance, in order to anticipate an independent development of the further research and teaching career.

The post-doctoral activity is addressed in two main thematic directions developed by the candidate:

- (i) Seismic Behaviour of Steel and Concrete Composite Structures presented in Chapter 2 below and respectively
- (ii) Sustainable Development of Buildings, presented in Chapter 3.

Continuing the main theme of the Ph.D. thesis – seismic behaviour of composite structures, the candidate obtained by competition a research grant (name of the grant: "Numeric and Experimental Study on the Connecting Devices between Steel and Concrete for Composite Buildings" Located in Seismic Zones) soon after his Ph.D. defence, offered by the Romanian Ministry of Education and covering the seismic behaviour of connecting devices between steel and concrete in composite elements.

Following another subject touched in his Ph.D. thesis, the candidate explored the dissipative zones in steel and steel and concrete composite frames. Based on the previous experimental and analytical work, not entirely developed in the Ph.D. thesis, the candidate ublished several papers on the ductility of Column Web Panel Zone, among which two on ISI indexed journals. Other dissipative zones of steel and composite frames included the joint zones for Moment Resisting Frames (MRF) and link elements in case of Eccentrically Braced Frames (EBF). The research was conducted mainly by integration of the candidate into two Romanian research grants.

Following the investigation of the dissipative zones of frames, the implications on the structural response were investigated in a series of studies mainly within the same research grants as mentioned before. The structural response in the case of important seismic motions depends directly on the elasto-plastic behaviour of elements and hinges. The numerical investigation considered elasto-plastic analyses of low and medium height steel frames, considering the interaction of the steel beam with the concrete slab,

The second subject of research covered by the candidates is related to the Sustainable Development of Buildings. The subject as developed by the candidate after his integration in the team of the international grant COST C25 (2006-2010) type TUD COST C25 "Sustainability of Constructions - Integrated Approach to Life-time Structural Engineering". There are two main themes addressed by the candidate in the topic of sustainable development of buildings: (i) approach for new steel-intensive structures and respectively (ii) sustainable retrofitting solutions for existing building stock.

The sustainable retrofitting solutions for existing building stock represents one of the issues of large interest in Romania: in this moment more than one third of the Romanian population lives in about 84000 block of flats (apartment house type) built between 1960 and 1990 with important issues to be reviewed.

The full abstract at:

http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/ciutina/Rezumat_teza_Adrian_Ciutina_EN.pdf

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GEOMATICS - IMPACT ON URBAN PLANNING, ENVIRONMENT AND SOCIETY

Author: Carmen GRECEA

Abstract

Present thesis summarises the main domains for research activity of the candidate after defending the PhD Thesis at Technical University of Civil Engineering in Bucharest, Faculty of Geodesy, in 1999.

On the basis of this diploma I was awarded the scientific title: Doctor of Technical Science, branch Science and Technology, for the doctorate field: Geodesy, Photogrammetry, Cartography and Remote Sensing.

The content of the habilitation thesis is defined on three sections: A. Abstract; B. Scientific, professional and academic achievements; C. Proposal for the future academic, scientific and professional career development.

The research activity and achievements presented are developed in two main thematic directions:

• Implementation of new technologies and techniques for Cadastral applications with geo-information support in relation with environment protection, which continues and diversify with new subjects, the topic of the PhD Thesis.

• Implementation of geo-information bases for Urban Planning purposes, society needs and sustainable geodesy, being rather a new field of research.

My activity in this field is related to the research of the National Geodetic School correlated with the national policies in the domain, and lately, connected also to European trends.

The results of my scientific research are materialized mainly in specialty scientific articles and books. Therefore, I have always focused on this aspect, considering that not only the quantitative aspect of the work is important, but also the quality and the value of the material published.

Another challenge was the decision of choosing the correct research directions in correlation with the existent financial, materials and mainly human resources. At present time, my research activity tends to be multidisciplinary, involving specialists in civil engineering, environment, architects, experts in information technology, researchers in the field of geosciences, etc.

This multidisciplinary cooperation, the contact with specialists from different research fields within the research teams I was a member of, have represented for me an important qualitative improvement.

The collaboration has contributed to my training and my development from the professional and scientific point of view.

For future activities I intend to develop researches in new fields of activities which require geodetic support, such as:
- application of the terrestrial laser scanning for environmental processes and changes
- geodetic facilities to investigate the Earth's crust movements
- creating 3D models of heritage objects using image processing
- using geographic information system and spatial database technology in analysis and management of risk areas
- challenges in implementing the systematic land registration in Romania in relation with European standards

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/grecea/3_Rezumat_teza_abilitare_Carmen_Grecea_en.pdf

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RESEARCH AND ACHIEVEMENTS IN REAL-TIME AND EMBEDDED SYSTEMS, INTELLIGENT SENSOR NETWORKS AND ROBOTIC ENVIRONMENTS

Author: Mihai Victor MICEA

Abstract

During over 17 years of academic and research activity, the author has gained a rich expertise in the following fields of interest: real-time and embedded hardware/software systems, digital measurement and instrumentation, digital signal processing and multimedia, wireless sensor networks, digital telecommunication systems, collaborative robotic environments, and energy-efficiency and power management mechanisms. In these fields, he published over 89 scientific works, out of which, 8 articles appeared in high ranked journals indexed by the Thomson ISI database with impact factors, 20 papers in ISI-indexed proceedings of international conferences, and 22 works are indexed in other international scientific databases. The ISI-indexed papers cumulate a total impact factor of 11.978. The published works are cited by more than 62 papers published by other authors, out of which 28 are ISI-indexed. The activity has been recognized by the academic and scientific community through several awards, distinctions and prizes, such as the Eminent Young Researcher of Timisoara Prize and Medal, from the National Authority for Scientific Research (ANCS), Romania, the Eminent Researcher Prize, from the Orizonturi Universitare Association, Timisoara, and a total of 8 prizes, won at 11 editions of the International Computers Contest for Students, "Hard&Soft" Suceava, as coach or advisor of the teams of students.

In Chapter 2 are presented some of the most relevant post-doctoral contributions to the field of real-time and embedded systems are presented. Advances and results, obtained by the research team in the field of intelligent sensor networks, are described in Chapter 3. The CORE-TX (Collaborative Robotic Environments – The Timisoara Experiment) platform has been designed and implemented at prototype level, for the study and development of real-time systems, distributed artificial perception applications, intelligent sensor networks and collaborative robotic environments

In the field of collaborative robotic environments, several important contributions of the research team are discussed in Chapter 4.

A collaborative robotic alignment algorithm has been developed as the first stage of some more complex robotic location management procedures. Chapter 5 covers some of the main contributions to the field of energy efficiency and power management techniques

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/micea/Habilitation_Thesis-Abstract_Micea.pdf

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DEVELOPMENT OF SIMULATION TOOLS FOR DISTRIBUTED ENERGY CONVERSION SYSTEMS TOWARDS SMART GRIDS

Author: Nicolae Lucian MIHEȚ-POPA

Abstract

The Habilitation Thesis points out the main research that the author has been performed, during the last ten years, in the area of Energy Conversion Systems with Renewable Energy Resources and Battery Storage Solutions. It is based on original contributions performed during the research activities financed by POLITEHNICA University of Timisoara, Aalborg University-Denmark, Siegen University-Germany, The Danish National Laboratory-RISO and Technical University of Denmark (DTU). The work made in this thesis has been funded by 7 international grants/projects and by 4 national (CNCSIS) grants, as well. Based on the obtained results have also been published more than 70 papers, in national and international journals and conference proceedings, 10 books and 6 research reports.

The first part of the Habilitation Thesis, regarding scientific and professional achievements, contains 5 chapters. The first chapter gives an overview of the research roadmap of the thesis, pointing out the objectives, the main contributions, research grants and awards. The aim of the second chapter was to develop simulation models of DER components in Power System, using two dedicated software packages MATLAB/Simulink and DIgSILENT PowerFactory. The third chapter is dedicated to control strategies developed for renewable energy systems in a distribution network. The Chapter four is focuses on testing of Distributed Energy Resources (DER) components and systems with storage devices and actively controlled loads and also on electric vehicle batteries testing to study the impact of smart charging and fast charging on the power system and on the battery degradation. Two different types of EV battery packs have been tested. The purpose of the Chapter 5 was to design a distribution network with different DER Components connected along the feeders and to identify limitations of existing simulation and planning tools, with a particular focus on the challenges imposed by the introduction of Smart Grid technologies.

The second part of the Thesis, regarding to future plans for advancement and career development, is based on the proven skills to conduct and coordinate high-level research and teaching activities at academic level and to initiate successful international collaborations in the field of renewable conversion systems

The full abstract at:

http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/mihet/Rezumatul_Tezei_abilitare_engleza_LucianMihet.pdf

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Universitatea Tehnică din Cluj-Napoca.

BEARING STRUCTURES IN ARCHITECTURE. PAST, PRESENT AND FUTURE

Author: Marius MOŞOARCĂ

Abstract

The author began his research activity with the elaboration of the diploma work in 1994, under the scientific coordination of Prof. Valeriu Stoian in the domain of anti-seismic design of structures with reinforced concrete walls.

In 1998, the author started his collaboration with Prof. Dr. H.C. Victor Gioncu, as an assistant within the Faculty of Architecture and Urbanism from Timisoara. Under the scientific coordination of Prof. V. Gioncu, the author performed research, design and didactic activities in the design and consolidation domain of reinforced concrete, steel, masonry and timber bearing structures subjected to different types of actions.

Research domains in which the author brought innovative theoretical contributions after the completion of his PhD thesis:

Reinforced concrete structural walls. Personal contributions: explanation of the brittle failure mechanisms developed by the walls with ordered vertical openings based on recordings of the acceleration component and speed of the seismic waves measured in the field and in buildings;

Historic masonry bearing structures. Personal contributions: development of calculation methodologies specific for the failure modes of mosques, synagogues and orthodox churches, within the PROHITECH research program, based on the theory of failure blocks;

Reinforced concrete frame structures with masonry infills. Personal contributions within the INSYSME research program: identification of the failure modes of these structures and the proposal of new technologies for the increase of the bearing capacity of these infill walls subjected to out-of-plane solicitations;

Timber framing systems. Personal contributions within the COST FP1101 research program: identification of new types of timber framing systems, consolidation solutions, in-situ investigations, failure mechanisms and development of a methodology for their vulnerability assessment;

Steel bearing structures. Personal contributions: investigation of the influence of the cyclic loading type and of the loading speed on the local and global ductility of steel frames as well as on the steel elements and connections;

Seismic vulnerability of historic centres. Personal contributions: studies performed on individual buildings and aggregates of buildings from Timisoara;

Research and development of new ways of teaching structural design in architectural schools.

Published articles by the author: 103; 12 in ISI journals, 14 ISI proceedings, having 18 citations in ISI journals and 12 in ISI conferences; 1 published book, co-author for 3 international books, associate editor for 1 international book; 2 courses and 2 practical guides. The author has participated in 3 international research grants, among which 2 as coordinating director for Romania, and in 4 national research grants.

The ful abstract at:

http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/mosoarca/01_Habilitation_Thesis_Marius_Mosoarca.pdf

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CONTRIBUTIONS TO THE OPTIMAL STRUCTURES OF THE ELECTROMECHANICAL SYSTEMS AND THE ELECTRIC POWER QUALITY

Author: Sorin MUȘUROI

Abstract

The habilitation thesis presents the most important professional and scientific results obtained by the author during 2001-2014. This period follows the public presentation of his doctoral thesis, which took place in 2000.

Three main research areas have been addressed: The optimal design of AC motors, the optimal control of electrical drives with AC motors and Single-phase power factor correction converters.
The thesis is structured in five sections.

The first section presents the achievements and results in the author's career.

The second section is devoted to the optimal design of AC motors. The first part of this section presents a selection of results obtained by the author in the study of skin effect that manifests in the high rectangular rotor bars of the induction motor fed by a voltage inverter. This study aims to develop a theory of asynchronous motor, under non-sinusoidal power regime, leading to the optimization of the methodology of the constructive / technologic design, under favorable economic conditions.

The second part of this section is devoted to promote a new concept of an economically advantageous design of the synchronous motors. For this purpose, the paper proposes three new topologies of rotors for the synchronous machine. All the solutions studied aim a much cheaper alternative to the synchronous motors with rare earth permanent magnets.

The third section is devoted to the Optimal control of electrical drives with AC motors. The first part of this section presents the results obtained from the implementation of vector control directly in torque and flux for the electric drive systems of marine mechanisms. The second section presents the results of the practical implementation of the algorithms for controlling the AC motors fitting the reversible driving systems, characterized by a wide range of speeds.

The fourth section presents a summary of the research results obtained in the field of single-phase power factor correction converters.

The study analyzed the following power factor correction converters: the boost converter, the interleaved boost converter, the bridgeless converter and the bridgeless interleaved converter.

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/musuroi/Abstract_teza_Musuroi_Sorin.pdf

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Universitatea Tehnică din Cluj-Napoca.

HABILITATION THESIS

Author: Corina-Alda Naforniţă

Abstract

My activity is carried out in the framework of the Intelligent Signal Processing Adelaida Mateescu Research Centre. My research interests include: signal & image processing, statistical signal processing, watermarking, wavelets, radar signal processing. This thesis covers the research activities published in the period 2008-2014. My research efforts in image watermarking, my PhD thesis field, were continued. I have co-authored a paper that presents the implementation of a new transform, the Hyperanalytic wavelet transform, HWT, used for watermarking and denoising with a better performance than other quasi shift-invariant complex transforms. A research preoccupation was the statistical analysis of wavelet transforms. I improved the directional selectivity of the HWT using Hyperanalytic Wavelet Packets Transform. I have improved the Hurst exponent estimation techniques by applying a LASSO based regularization in the wavelet domain and I applied this estimation method to solve an image denoising problem where the regularity is considered to vary piecewise.

We have considered the HWT coefficients being circularly distributed, with complex Gaussian distribution. We computed a closed form for the Kullback-Leibler divergence for the Complex Generalized Gaussian Distribution (CGGD).

A new method for texture clustering based on the barycentric distribution is proposed. These activities were carried out in the framework of an international research project Brancusi, funded by UEFISCDI and EGIDE, for which I was grant director on the Romanian side. The grant director on the French side was Professor Yannick Berthoumieu, ENSEIRB MATMECA, Bordeaux, France.
Recently, in the framework of an European Project (FP7-ARTRAC), I have worked in the field of RADAR signal processing, proposing denoising to improve the probability of detection for the envelope detector; as well as a method to build the range-Doppler map for multiple targets in the automotive field.

I am reviewer and TPC member for prestigious journals and international conferences. In April-June 2011 I was invited researcher at Lab. Intégration du Mátériau au Système, Bordeaux and in Sept-Oct. 2009 I was Invited Professor, at the same laboratory, where I was awarded an EGIDE scholarship for research (Oct. 2009).

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abili-tare/nafornita/6Teza_abilitare_cu_coperta_NafornitaCorinaAlda.pdf

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Universitatea Politehnica Timişoara.

OPTIMIZING THE PROJECTS AND PROCESSES MANAGEMENT IN THE FIELD OF INDUSTRIAL ENGINEERING. USING ARTIFICIAL INTELLIGENCE METHODS

Author: Titus SLAVICI

Abstract

The habilitation thesis reflects the activity of the author, performed after graduated the both PhD and 2014. It is based on original contributions performed during research activities at Politehnica University of Timisoara, West University of Timisoara, "Ioan Slavici" University of Timisoara, and also in other universities (inside the partnership and stages in Szeged, Novi-Sad and Nyregyhaza).

The thesis combines the two fields of expertise (engineering and inside computers aplied in industrial engineering and economic and inside management and finance), mainly concerned by graduating from more specializations .

1. Industrial engineering (machine buiding technology) license – Politehnica Timisoara University 1983

2. Automatics and computer license –Politehnica Timisoara University1994

3. Finances license – West University Timisoara -2000

4. Management license – West University Timisoara 2001

5. Industrial engineering doctorate – Politehnica Timisoara University –"Contribution to computer aided design of machine-tools with numerical control in order to manufacturing complex geometrical entities" PhD Thesis 1994

6. Finance doctorate – West University Timisoara – „Financial management optimization using artificial intelligence methods", PhD Thesis, Timisoara, 2006.

These are part of the fundamental basic training, continuously improved through complementary trainings and educational programs.

The plan for advancement and career development is based on the proven skills to conduct and coordinate high-level research and teaching activities at academic level and to initiate successful international collaborations in the field of using computers tools in economic.

A complex educational and research system, developed based on national and international research grants will provide an ideal platform to train and educate graduate as well as undergraduate students in an almost unique multidisciplinary exploration topic, involving computer science and also economic field, creation of sustainable collaborative mechanisms with national and international partners in the field of decision is a priority of the research group. The results are planned to be valorized in the scientific community, but also to be oriented towards the public interested in the subjects of the research activity.

In summary, based on the activity developed so far, an extended set of activities at local, national and international level are foreseen; the results could be significantly enhanced if the research team will be enlarged with doctoral students, coordinated as a result of the habilitation thesis.

The full abstract at:

http://www.upt.ro/img/files/2014-2015/ doctorat/abilitare/slavici/Teza_abilitare_Titus_Slavici.pdf

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OPTIMAL DESIGN AND CONTROL OF ELECTRICAL MACHINES FOR MORE EFFICIENT ENERGY CONVERSION

Author: Lucian Nicolae TUTELEA

Abstract

The habilitation thesis presents personal work and research results between August 1997 after Ph.D. thesis defended and November 2014. The habilitation thesis contains the following chapters: motivation, research directions, scientific and professional achievements, professional and academic development plan and the references chapter.

The motivation chapter briefly presents the research activities linked to the energy conversion, the cooperation with the other universities and the desire to continue the research and academic activities at superior level as a PhD supervisor in Electrical Engineering field.

In the second chapter, the main research directions such as: induction machine design, biaxial excited synchronous generator, permanent magnet machine, reluctance PM assisted motor, linear oscillatory motors, two rotors, single stator axial air-gap permanent magnet machine and complementary research directions such power electronics converters, are presented. For the each direction, only the main results are presented.

The "Scientific and professional achievements" are presenting in more details the activities from the main research direction.

The research direction on the induction machine design is reflected in five paragraphs. The induction machine design for flywheel energy storage project was developed during a post doc stay at Allborg University. A design of outer rotor induction machine software was produced and optimal flux control to reduce the losses at low load.

The research on permanent magnet directions is reflected in the following chapters: optimal design of surface permanent magnet machine, internal permanent magnet machine but also in induction machine and surface permanent magnet machine design for in-wheel mounted drive for electric car. The optimal design software considering analytical models based on magnetic equivalent circuit, validated by finite element was developed for the surface permanent machine in two versions: with factionary tooth wound windings and for distributed winding.

The two rotors, one stator axial air-gap permanent magnet machine was another major research project in cooperation with Casino University, Italy. The main idea was to boost the hybrid vehicle development by some original contribution on electrical machines topology by combining the requested two machines in a single dual port machine.

The bi-excited generator for automobiles (BEGA) research project has been focused on the efficiency of the automotive generators improvements by new generators topologies. We cooperate in this project with Aalborg University and Grundfos.

The powers electronics and control of the wind turbine generators are complementary subjects in a tight relation with electrical machines and energy conversion.

In the chapter "professional and the academic development plan" two future projects already started are described briefly with a short presentation of the main problems that will be solved. It is also presented the cooperation's strategy with the futures PhD students and a strategy to attracting them through research results at the highest level.

The full abstract at:
http://www.upt.ro/img/files/2014-2015/doctorat/abilitare/tutelea/1_T_abilitare_Tutelea.pdf

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GRAPHITE-BASED COMPOSITE ELECTRODE MATERIALS FOR THE ELECTROANALYSIS

Author: Florica MANEA

Abstract

In this habilitation thesis that represents a sum of more than 25 ISI-ranked papers as principal author and about 7 PhD thesis for which the candidate activated as daily PhD upervisor, Florica MANEA's research activity is briefly presented and structured based on the research themes and chronological evolution.

The first part consisted of the main research activity already performed linked to the published results. Graphite-based composite electrode materials for the electroanalysis, graphite-epoxy composite microelectrode for biosensing, nanostructured-carbon composite elecctrode materials for electroanalysis and advanced water treatment using electrochemical, photocatalysis-assisted electrochemical and photoelectrocatalytical processes are the main research themes initiated and developed by the candidate after PhD completing and defending.

The results presented in Graphite-based composite electrode materials for the electroanalysis were obtained mainly in the framework of a CEEX-ET Romanian excellence research project developed and managed in the period of 2005-2007 by the candidate.

Graphite-epoxy composite microelectrode for biosensing represents an approach that considered the properties of the graphite composite macroelectrode and its miniaturization possibility to be able to use it for in-vivo detection of dopamine (DA) and molecular O2 at the brain level. This study was developed by cooperation with the University of Sassary, Italy with the main idea to find an easy method to construct a graphite-composite microsensor suitable for the implantation in brain.

In the framework of Romanian exploratory research project PNII Ideas 165/2011, our research group has been investigated the synthesis, characterization and application of the unmodified/modified nanostructured carbon composite electrode in the electroanalysis, in order to improve the electrodetection performance. Carbon nanotubes (CNTs) and carbon nanofibers (CNFs) as nanostructured carbon were used also as substrate for the electrodeposition of metallic nanoparticles, Ag and Cu.

In Advanced water treatment using electrochemical, photocatalysis-assisted electrochemical and photoelectrocatalytical processes, three types of advanced oxidation processes (AOPs) have been developed in our group based on the electrochemical oxidation, i.e., photocatalitically-assisted electrooxidation and photoelectrocatalysis. This study represents a part of research activity of a Romanian collaborative project WATUSER 60/2012.

The second part consisted of the future research activity that will be focused on:

i. new and advanced electrode materials characterized by the enhanced properties in relation with sensing applications;

ii. new and advanced electrode materials characterized by the enhanced properties for energy storage;

iii. developing new electrochemically-based advanced processes for water/wastewater treatment technology at pilot-scale;

The full abstract at:
http://www.tuiasi.ro/uploads/files/Abstarct_F_Manea.pdf

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