

## SCIENTIFIC AND TEACHING ACTIVITY REPORT

(1993-2020)

### Professor Dumitru Nedelcu, Ph.D

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Faculty of Machine Manufacturing and Industrial Management

Department of Machine Manufacturing Technology

The undersigned, Professor Dumitru Nedelcu Ph.D have graduated from “Gh. Asachi” Polytechnic Institute of Iași, Faculty of Machine Manufacturing, Machine Manufacturing Technology specialty, in 1992. I taught in the first semester of the 1992-1993 academic year, being paid at hourly rates, within the Machine Manufacturing Technology Department, where I also held, through open competition, a **junior assistant professor** position between the **1<sup>st</sup> of March 1993** and the **1<sup>st</sup> of October 1995**.

Wishing to enrich my economic management knowledge, in September 1992 I took and passed the admission examination at the Faculty of Economic Sciences of “Al. I. Cuza” University of Iași. In the light of my initial goal, I chose to major in Industrial Management, which I completed in 1998.

Starting with the 1994-1995 academic year, I applied for a doctorate and chose Prof. Ph.D. Eng. Octavian Pruteanu, DHC, as my thesis advisor, with tackled the topic of cold plastic deformation of grooves. During the same period, I applied for a **TEMPUS scholarship** at the European Union offices in Turin, Italy. Further to the analysis of all the applications, I won the scholarship, so that from January 1996 to April 1996 I attended a traineeship at the Polytechnic University of Madrid, Spain. During the traineeship, my work consisted of research on finite element simulation of groove deformation, under the guidance of Professors Jose Rios Chueco and Hassan Al Nakeeb, as part of the research team led by Professor Antonio Vizan Idoipe. This TEMPUS scholarship allowed me to determine the current state of knowledge of cold plastic deformation of grooves for my doctoral thesis.

At the end of the first traineeship, as I fitted in perfectly in the research team and thanks to a new invitation from Professor Antonio Vizan Idoipe, I applied for a new traineeship to continue my research and hence got a second scholarship. Thus, from April 1999 to September 1999 I received a **scholarship from the Romanian Government** to carry out research about increasing the quality and reducing the manufacturing costs of grooves shafts by cold plastic deformation using the Taguchi method, within the same research team. After an exchange of correspondence with the American Supplier Institute (ASI), more precisely with Genichi Taguchi in person, I also obtained the copyright license no. 990802 for orthogonal tables and line graphs. The work that I carried out during my two traineeships at the Polytechnic University of Madrid helped me considerably to draft my doctoral thesis entitled *Contribuții teoretice și experimentale asupra formării prin deformare plastică la rece a canelurilor (Theoretical and Experimental Contributions to the Groove Formation by Cold Plastic Deformation)*, which I publicly defended in December 1998 and for which I was awarded a Ph.D. degree in industrial engineering by the Order of the Minister of National Education no. 3772/05.05.1999. During the

two years I held the position of junior assistant professor, I published **14 papers in national journals and 10 papers in various proceedings of international conferences**, as author or co-author.

Between **1.10.1995-1.03.1999**, I held, through open competition, the **assistant professor** position in charge of laboratory and project activities in the Machine Manufacturing Technology field. Being fully aware of the importance of the links with the business environment, I accepted the invitation to coordinate, from the position of executive advisor, the Iași branch of the General Association of Romanian Industrialists (UGIR1903), between March 1999 and April 2006. This was extremely useful because I was involved in research projects in partnership with various business entities, and I subsequently managed one international project, as project manager, as representative of the Omega is Communications (Leonardo da Vinci project) company including Gheorghe Asachi Technical University of Iasi. Also, the promotion of academic activities in the business environment led to obtaining financial support for the conferences held by the Machine Manufacturing Technology Department, of which I was a member. While holding the assistant professor position, I published 1 paper in a national journal, 4 papers in various international conferences proceedings and I was involved in 5 CNCSIS, Tempus, CNFIS research-development projects. My collaboration with the Polytechnic University of Madrid-Spain also continued in 1999 and materialized in a documentation traineeship between 23.11.1999-12.12.1999, in the field of *Modern control methods in machine manufacturing*, within the CNFIS 86 project, managed by Professor Octavian Pruteanu.

Between the **1<sup>st</sup> of March 1999 and the 29<sup>th</sup> of September 2003**, I held, through open competition, the **lecturer** position and gave lectures and held project classes within the Precision Mechanics discipline. I also developed, with full dedication, the student's handbook for the course and the project classes. I also set up and developed the Precision Mechanics laboratory, which currently has modern equipment, which allows students to carry out practical work on the latest equipment in the field. For the integration of the laboratory research infrastructure in the national and international research project applications, between **25.06.2008-25.06.2011**, **the laboratory received CertInd certification**, in accordance with the **ISO 9001: 2008** standard requirements related to High precision machining and testing in the field of precision mechanics and microtechnologies, modeling and process simulations. Thus, numerous research projects were carried out within the laboratory, which I coordinated as project manager/partner manager, research was carried out for the drafting of doctoral theses, the activity in the laboratory being highly appreciated within the department/faculty. During this period, I was **project manager** representing the Omega is Communications company and partner manager representing "Gheorghe Asachi" Technical University of Iași, within the **European Leonardo da Vinci project** with partners from France, UK, Netherlands, Romania. As lecturer, I published 9 papers in national journals (Revista Academiei Române (Romanian Academy Journal), Construcții de Mașini - Buletinul Institutului Politehnic din Iași, Revista Meridian Ingineresc etc.), 20 papers in various proceedings of international conferences (DAAAM-Austria, MicroCAD- Hungary, TMCR-Romania, AS RTP-Slovakia), 5 books at publishing houses in Romania, 2 books at publishing houses abroad, I obtained 2 patents, I managed 5 research-development projects as project manager and I was member in 3 other projects.

During my time as assistant professor and lecturer, I attended at international conferences in Slovakia, Slovenia, Austria, Republic of Moldova, and Ukraine.

My academic career was pursued with my participation in the open competition for a vacant position of **associate professor**, which I won and held this position between the **29<sup>th</sup> of**

**September 2003 and the 1<sup>st</sup> of October 2007.** During this time, I gave lectures and held project classes within the Precision Mechanics Technology and Economic-Financial Management disciplines. The development of the Precision Mechanics laboratory allowed the introduction in the curricula of laboratory classes for the Precision Mechanics Technology discipline, and enabled us to draft a first edition of the laboratory handbook. As associate professor, I won through open competition **5 research-development projects as project manager** and member at **5 national/international research projects**. During my time as a associate professor, I published **23 scientific papers, 2 book chapters at foreign publishing houses, and 4 books at national publishing houses**. Between **2004-2008**, I was the **Head of the Programs Department** of “Gheorghe Asachi” Technical University of Iași, and also the **specialization coordinator of the Project Management master’s degree programme**, the students being mostly company employees. The master’s degree programme was recognized, between June 2006-June 2008, by Project Management Romania, affiliated to the International Project Management Association (IPMA) as offering valid training in project management. Within the Project Management master’s degree programme, I taught the National Project Management and Economic-Financial Project Management courses.

I have completed my management expertise due to my involvement in the following activities, as follows: 2000-2003, member of the Board of Directors of SC Agmus SA, 2010-2013; 2005-2008, member of the Board of Directors of AJOFM Iași. The expertise acquired during my time as member of these boards of directors proved extremely useful for my subsequent activity.

In order to complete my training in the field of industrial management and due to the inclusion of some economic disciplines among the faculty specialties, I decided to enrich my knowledge in the field by attending a postgraduate programme from “Politehnica” University of Bucharest, Association of Terotechnics and Terotechnology of Bucharest, Academy of Economic Studies in Bucharest, under the guidance of the late Professor Ph.D. Iulian Ceaușu, in 2002-2003, at the end of which I was awarded a **certificate in general management and consultancy in the fields of industrial management**.

I have been a **professor** within the Machine Manufacturing Technology Department since the **1<sup>st</sup> of October 2007**, a position which I won through open competition and which I still hold. In this capacity, I have been teaching Precision Mechanics Technology and Nanotechnology to Precision Mechanics and Nanotechnology bachelor’s degree students, as well as Management of Industrial Manufacturing Projects and Special Technologies of Plastic Deformation to Technology and Production Management master’s degree students.

As of the 2016-2017 academic year, I have been accepted as **visiting professor** at the **Silesian University of Technology in Gliwice, Poland**, Faculty of Mechanical Engineering, where I have been teaching Composite Material Processing Technologies, Mechanics and the Injection Mold Design project in English to bachelor’s and master’s degree students.

Since 2010, by Order of the Minister of Education, Research, Youth and Sports no. 4631/11.08.2010, I have been granted the right to **supervise doctoral theses** in the field of industrial engineering. In this capacity, I have advised **23 Ph.D. students. 7 Ph.D. theses** have been publicly defended so far. I have been currently advising 8 Ph.D. students, 6 of whom are registered at “Gheorghe Asachi” Technical University of Iași (1 Ph.D. student in **co-supervision with Tor Vergata University in Rome, Italy**, Prof. Fabrizio Quadrini), 1 Ph.D. student registered at Technical University of Moldova, and **1 Ph.D. student in co-supervision with the Constanta Maritime University, Constanța, Romania**. Please note that I have also been

granted the right to supervise doctoral theses in the Doctoral School of Mechanical and Civil Engineering, Specialty 242.05 Processing Technologies, Processes and Equipment at the Technical University of Moldova in Chişinău, Republic of Moldova, according to the Order of the Ministry of Education, Culture and Research of the Republic of Moldova no. 1379/14.09.2018.

After having been granted the rank of professor and doctoral theses advisor within “Gheorghe Asachi” Technical University of Iaşi, my research work has focused on mold injection processing and 3D printing of biodegradable and polymeric materials.

Here is a synthetic presentation of my achievements as professor:

-in the **2017-2018** academic year I was **visiting professor** at the Silesian University of Technology in Gliwice, Poland, Faculty of Mechanical Engineering, where I taught the Composite Material Processing course, and coordinated the Injection Mold Design project;

-in the **2018-2019** academic year I was **visiting professor** at the Silesian University of Technology in Gliwice, Poland, Faculty of Mechanical Engineering, where I taught the Composite Material Processing course, and coordinated the Injection Mold Design project;

-in the **2019-2020** academic year I was **visiting professor** at the Silesian University of Technology in Gliwice, Poland, Faculty of Mechanical Engineering, where I taught the Mechanics and Composite Material Processing courses, and coordinated the Injection Mold Design project;

-in May 2016 I was **visiting professor and researcher** in processing of polymeric composite materials at the Institute of Technology in Grenoble, France, at the invitation of Professor Fiqiri Hodaj;

-in July 2015 I was **visiting professor at the Osaka University in Japan**, at the invitation of Professor Maiko Naito, Chairman of the Japan Powder Technology Society;

-in May 2015, I was a **guest professor** for a lecture on Properties of samples obtained by injection moulding of liquid wood at **Alecu Russo University in Balti, Republic of Moldova**, an institution with which the collaboration developed greatly and continued with the invitation during 2017 and with the acceptance of the position of doctoral supervisor in 2020. Also, the team from this institution was perfectly integrated in the activities of the ModTech Professional Association and the ModTech International Conference;

-in December 2017 I was **visiting professor and researcher** at Alecu Russo University of Bălţi, Republic of Moldova, in the Composite material processing field. I would like to mention that in May 2018 I applied for funding of the cross-border project entitled *The Research and Innovation Operational Center in Advanced Fabrication*, with me as project manager from “Gheorghe Asachi” Technical University of Iaşi, in partnership with “Alecu Russo” University of Bălţi, “Dunarea de Jos” University of Galati-Romania and “Dumitru Ghitu” Institute of Engineering and Nanotechnology of Chisinau-Republic of Moldova;

-in July 2013 I received an invitation as a **visiting professor at the University of Michigan, Ann Arbor, USA**, for a period of two weeks in November with the course focus on technologies for obtaining parts from advanced biodegradable materials including liquid wood. For reasons not understood by me, the rector's order was not signed so this trip could not be made on time, but during June of the following year, achieving the objectives initially set. I also had the opportunity to present my accepted paper at the international MSEC conference organized by ASME during one day of the conference;

-in August-September 2012 I was **visiting professor** at TAT, Engineering Institute of Tokyo, Japan, at Professor Hidehiro Kamiya’s invitation;

-the started collaboration with the Silesian University of Technology in Gliwice, Poland, in 2010, experienced a special development on multiple levels, teaching and research, so I received a first invitation as a **visiting professor** in 2012 to support the course Mechanical properties of parts obtained from liquid wood, within the financing from the FSD-76 / RMT-0/2010 project belongs to Faculty of Mechanical Engineering. Impressive for me was the interest shown for this course from a number of over 100 students which attended the course;

-in October-November 2019 I completed an Erasmus **teaching mobility** at the Monterrey University in Mexico;

-in June 2019 I completed an Erasmus **teaching mobility** at the Parma University in Italy;

-in May 2018 I completed an Erasmus **teaching mobility** at the Silesian University of Technology in Gliwice, Poland;

-in May 2017 I completed an Erasmus **teaching mobility** at the Silesian University of Technology in Gliwice, Poland;

-I participated as **member of 30 doctoral boards, and 3** as external reviewer (two at the National Technology Institute of Surat-India and 1 at Tor Vergata University of Rome-Italy); **member of 56 examinations, research projects and research reports;**

-**member of 9 teaching position competition boards** for associate professors and professor positions, among which one competition board for Chairman of the Scientific Council of “Alec Russo” University of Bălți, Republic of Moldova;

-**member of the specialist board** for the award of an **Honorary Degree (Doctor Honoris Causa)** by the Senate of “Gheorghe Asachi” Technical University of Iași;

-**25 papers published in WoS-ranked journals with impact factor, 39 papers published in WoS Proceedings, 17 in others international databases-ranked journals, 2 papers published in other national journals, 18 papers published in the proceedings of other international conferences, 4 book chapters published/accepted for publication by SPRINGER Nature, 7 books and book chapters published by national publishing houses, 10 books as editor of SPRINGER Nature Singapore, Trans Tech Publications Inc., Switzerland, ModTech-Romania,**

-**one patent, 4 research-development projects as project manager/responsible/coordinator and member of other 3 research projects with national funding, CNFIS-FDI, PCCDI and FP7 European funding;**

-**coordination of 2 publications as Editor in chief** of international journals: Journal of Modern Manufacturing Technologies (indexed in Scopus, Google Scholar, Index Copernicus, CNKI etc., <https://www.ijmmt.ro>) and Advanced Engineering Forum-Switzerland (indexed in Inspec (IET, Institution of Engineering Technology), Chemical Abstracts Service (CAS), Google Scholar, Cambridge Scientific Abstracts (CSA), ProQuest, Ulrichsweb, EBSCOhost Research Databases, Index Copernicus Journals Master List, WorldCat (OCLC), <https://www.scientific.net/AEF/Editors>);

-**9 positions as editor and 8 as guest editor** (WoS or databases-ranked journals, WoS Proceedings), **member of 27 scientific boards** of scientific journals and events and **reviewer of 9 WoS-ranked journals, 9 databases-ranked journals and 8 specialized books;**

-I was invited to have **22 lectures as plenary/ keynote/ invited speaker** at various prestigious international conferences in Romania (5), Malaysia (1), Japan (3), Israel (1), South Korea (2), Spain (1), Serbia (2), China (1), Ukraine (1), Poland (3), India (2).

-I attended 65 international conferences held by prestigious universities/institutes of: Romania, Spain, USA, Japan, China, Poland, Germany, Serbia, Ukraine, Montenegro, Republic of Moldova, Greece, Slovakia, Croatia, Malaysia, Austria, Slovenia, Belgium, France, Netherlands, Denmark, Great Britain, Israel, South Korea, Ireland, India.

-founding member and Chairman of the Professional Association for Modern Manufacturing Technologies, ModTech, which currently has 403 members and 12 branches abroad;

**-member of other 9 national or international professional associations;**

**-member of the Honorary Council of Europe-research committee;**

**-I won 10 awards for my papers and other 10 national or international awards.**

As far as my managerial expertise is concerned, I have held the following positions in my capacity of professor:

March 2018- to date	Manager of the Doctoral School of “Gheorghe Asachi” Technical University of Iași
2018- to date	Chairman of the Organizing Committee of the TUIASI Doctoral School Conference
2018- to date	Doctoral theses advisor at the Technical University of Moldova, Chișinău, Republic of Moldova
2009-2012	Chairman of the Organizing Committee of the ModTech-New face of TMCR international conference, an WoS-ranked conference
2013- to date	Chairman, ModTech International Conference on Modern Technologies in Industrial Engineering, an WoS-ranked conference
2019-to date	Laboratory of Precision Mechanics and Nanotechnology, Mechanical Engineering Department, Faculty of Mechanical Engineering and Industrial Management, and Tribology Lab, Engineering Department, University of Monterrey, Mexico.
2019-to date	Laboratory of Precision Mechanics and Nanotechnology, Mechanical Engineering Department, Faculty of Mechanical Engineering and Industrial Management, and Laboratories of Ma.Te.R.G. (Manufacturing Technology Research Group), Department of Industrial Engineering, Tor Vergata University of Rome, Italy
2019-to date	Laboratory of Precision Mechanics and Nanotechnology, Mechanical Engineering Department, Faculty of Mechanical Engineering and Industrial Management, and Materials Research Laboratory, Faculty of Mechanical Engineering, Silesian University of Technology, Gliwice, Poland
2015-to date	Engineering Laboratory of the University of Ulsan, Korea and Laboratory of Precision Mechanics and Nanotechnology, TUIASI
2018-to date	TUIASI and SUT (Silesian University of Technology, Gliwice, Poland)
2012-to date	OMCO Romania and Laboratory of Fine Mechanics and Nanotechnology, Mechanical Engineering Department, Faculty of Mechanical Engineering and Industrial Management, ‘Gheorghe Asachi’ Technical University of Iași
2019-to date	Bilateral cooperation agreement, Professional Association for Modern Manufacturing Technologies (ModTech) and Academy of Technical Sciences of Romania (ASTR)
2019-to date	Bilateral cooperation agreement, Professional Association for Modern Manufacturing Technologies (ModTech) and Academy of Scientists of Romania (AOSR)

2018-to date	Bilateral cooperation agreement, Professional Association for Modern Manufacturing Technologies (ModTech) and General Association of Engineers of Romania (AGIR)
2009-to date	Chairman of the Professional Association for Modern Manufacturing Technologies, ModTech
April 2019/to date	Associate member of The Academy of Scientists of Romania (AOSR)
2018-to date	Member of the Honorary Council of Europe – Research Committee
2018-to date	Member of the General Association of Engineers of Romania (AGIR)
2015-to date	Member of the American Association for Science and Technology (AASCIT), USA
2013-to date	Member of the Serbian Ceramic Society – Composite Materials Section
2014-to date	Member of IFToMM (International Federation for the Promotion of Mechanism and Machine Science)
2005-to date	Member of Manufacturing Engineering University Association (AUIF), Cluj-Napoca, Romania
2004-to date	Member of Project Management Romania
2011-to date	Member of International Union of Machine Building-Ukraine
2020-2024	Member of the Engineering and Production Management Board, National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU)
2016-2020	Member of the Appeal Committee of the Industrial Engineering and Management Board, National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU)
April 2011-September 2012	Member of the Industrial Engineering and Management Board, National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU)
2010	Member of the national board for ongoing project assessment
2012-to date	Member of the Senate of “Gheorghe Asachi” Technical University of Iași (TUIASI)
2007-2008	Member of the Academic Council of “Gheorghe Asachi” Technical University of Iași
2004-2008	Permanent guest of the “Gheorghe Asachi” Technical University of Iași Senate
2005-2008 2010-2013	Member of the Board of Directors of AJOFM Iași

### Teaching activity

During the 27 years of my academic career, I taught several disciplines, mentioned at each stage of my career, as tenured teacher of courses and applications, whether they were laboratory classes or project development activities. Throughout my career, I have advised over 80 students for their bachelor’s and master’s degree graduation theses. Also, the students that I coordinated won various awards at scientific events held within our faculty or within other faculties in the country.

I have been the author and co-author of 8 books, lectures and laboratory or project guides, published by well-known national and international publishing houses and designed for 4<sup>th</sup> year (bachelor's degree) and 5<sup>th</sup> and 6<sup>th</sup> (master's degree) students.

Throughout my teaching career I have always strived to develop a stimulating relationship between teacher and student, by getting students involved during lectures and by encouraging their actual participation in laboratory activities through effective use of the material base (acquired from the budgets of the research projects that I managed). I have always thought that only thorough student training, along with the passion for research that I have tried to convey, make up the grounds for their future remarkable results. I was greatly satisfied to learn that some of my students won various awards in students' scientific events, wanted to work for the research projects that I managed and pursued doctorates under my supervision or that of my department colleagues. Some of my Ph.D. students have done research traineeships abroad and have demonstrated proper professional training, which has earned them the appreciation of the teaching staff in those institutions.

### **Scientific activity**

My research activity has been carried out mainly in the laboratories of the Machine Manufacturing Technology Department first as a young junior researcher, then in the research laboratory that I founded and endowed with state-of-the-art equipment. The interdisciplinarity required to explain certain phenomena that occur in manufacturing technologies, and the need to approach in-depth research in the field, have determined me to conclude cooperation agreements between the materials laboratory of the Faculty of Mechanical Engineering of "Gheorghe Asachi" Technical University of Iași, the production engineering laboratory of the Ulsan University in South Korea under the guidance of Professor Hong-Seok Park, the Tribology Laboratory of the University of Monterrey-Mexico under the guidance of Professor Demofilo Maldonado Cortes, the Materials Laboratory of the Silesian University of Technology of Gliwice-Poland under the guidance of Professor Marcin Adamiak and the Machining laboratory of Tor Vergata University in Rome, Italy, under the guidance of Professor Fabrizio Quadrini. All these cooperation agreements have resulted in the joint development of complex research materialized in published papers or parts of doctoral theses, in applications for research projects on European research directions such as Manunet and Horizon 2020 and in improved visibility of the research work of the research team that I manage.

The main research topics were:

- cold plastic deformation processes;
- mold injection processing of parts made of biodegradable and polymeric materials;
- additive manufacturing (AM) of biodegradable and polymeric materials.

**Research in the field of cold plastic deformation processing processes** has been aimed at obtaining grooves for removable assemblies, given the undeniable advantages of cold plastic deformation processes, of which: increasing surface hardness, which sometimes makes heat treatments redundant; the cold plastic deformation of the surface layer does not destroy surface fibers, as it happens with chipping; on the contrary, it preserves it, improving the structure of the metal and the quality of the machined surface; low tool consumption and up to 5-10 times higher productivity. Our research has led to the production of grooves shafts and grooves shaft ends, and the research results were materialized in my own doctoral thesis and the winning, through open competition, of two research projects. My research results were implemented in production

by the SC ASAM SA company in Iași. The originality of my research results was also acknowledged by their publication in prestigious national and international journals of that time: Construcții de Mașini, Revista Academiei Române, DAAAM International Conference proceedings that were among the first to be indexed as WoS Proceedings, etc. My research was also carried out at the Polytechnic University of Madrid-Spain (during the two scholarships awarded by Tempus and the Government of Romania) in the field of cold plastic deformation modeling and simulation of grooves by the finite element method, under the guidance of professors Jose Rios Chueco and Hassan Al-Nakeeb. The research also materialized in two patents.

**Research in the field of injection moulding processing** of parts made of plastic and biodegradable materials is a modern European research topic, as it has known a constant development from the point of view of technology, equipment (from hydraulic drive to fully electric drive) and range of materials used. In order to mitigate the negative effects of the use of plastics, major research institutes have developed, in recent decades, a number of biodegradable plastics with functional characteristics comparable to those of conventional plastics. The laboratory that I manage purchased a SZ800H injection machine with the corresponding cooling system and an Akira Seiki processing device. The following results were obtained using this high-performance piece of equipment:

- execution of molds with active plates for injection at 0° and 90° of specimens specific to tensile testing;

- execution of other parts, which were subsequently coated with metal powders and ceramic powders in order to increase their functional characteristics;

- execution of parts for coating with silver nanoparticles by the PVD (Physical vapor deposition) method of biodegradable plastic granules and injecting them into the mold in order to obtain specimens specific to tensile testing;

- execution of parts made of biodegradable materials in order to study their machinability by water jet cutting;

- execution of parts made of reinforced materials like: 6.6 polyamide with glass microspheres, LV3 Nature arboform with aramid fibers, Fichte arbofill with glass microspheres.

The results of the research work described above materialized in:

- 1 completed doctoral thesis about plastic material injection moulding, 2 completed doctoral theses about biodegradable material injection moulding and 3 almost completed doctoral theses about biodegradable material injection moulding, respectively;

- 13 papers published in WoS-ranked journals with impact factor about plastic and biodegradable materials using injection moulding;

- 8 papers published in WoS Proceedings about plastic material injection, 3 papers published in databases journals and 8 papers published in WoS Proceedings about biodegradable materials and other publications;

- funding for FP6, PNIII, H2020, bilateral Romania-China cooperation research projects has been applied for;

- plenary lectures have been given at prestigious worldwide conferences: ICCCI Japan, ICMTE South Korea, MMT Israel, AMPT Spain, MSE Romania, SATEE Romania, ACA Serbia, PCM China.

**Research in the field of 3D printing (additive manufacturing-AM)** of parts made of plastic and biodegradable materials has also been a modern European research approach. The laboratory that I manage has three 3D printers, one of which is a Raise Pro2 Plus printer based

on the Fused Deposition Modeling (FDM) process, the most common 3D printing procedure. Here are the results that I have achieved:

- printing of parts from 10 biodegradable materials and studying their properties in order to make some recommendations for the replacement of some plastic materials;
- 1 completed doctoral thesis;
- 4 papers published in WoS journals with impact factor;
- 2 papers accepted by WoS Proceedings;
- 2 papers accepted as book chapters of *Advances in Manufacturing Processes*, Springer Nature Singapore and *Fused Deposition Modeling based 3D printing*, Springer Nature Switzerland;
- H2020, PED, PNIII project applications;
- 8 plenary lectures at prestigious international conferences: RAM2020 India, NewTech2020 Galați-Romania, ICMTE2020 South Korea, ICAME2E Langkawi-Malaysia, ICCCI2018 Kurashiki-Japan.

In the last 10-12 years, taking into account the increasing demand of the developing society for the implementation of new materials and the extent to which they meet the requirements imposed by the use of modern manufacturing technologies, I have initiated the formation of a multidisciplinary research team, as the two research directions mentioned above require a fundamental and multidisciplinary approach. This team allowed our colleagues to get trained for a rigorous scientific approach, both in terms of documentation for the achievement of the scientific grounding of their work, and in terms of development and conduct of experimental research.

The research carried out in the projects that I implemented as project manager or partner manager, and also in the research projects applied for, or only research development, I worked with many national and international research teams:

- “Gheorghe Asachi” Technical University of Iași, Faculty of Mechanical Engineering (Professor Corneliu Munteanu, Lecturer Bogdan Istrati);
- Silesian University of Technology, Gliwice, Faculty of Mechanical Engineering (Professors: Anna Timofiejczuk, Marcin Adamiak, Marek Placzek, Andrzej Wrobel etc);
- SC ICEFS COM SRL Săvinești-Piatra Neamț, Romania (Doina Constantinescu, Ph.D.);
- SC Tehnoton SA Iași, Romania (Cristian Badea, Ph.D.);
- SC ItalTex Iași, Romania;
- Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia (Professor Olivera Milosevic);
- Tor Vergata University in Rome, Italy (Professor Loredana Santo, Professor Fabrizio Quadrini);
- Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart (Professor Rainer Gadow);
- University of Linköping, Sweden & SKF Netherlands (Professor Esteban Broitman);
- “Alec Russo” University of Bălți, Republic of Moldova (Professor Pavel Topala);
- Atılım University, Ankara, Turkey (professor Hilal Turkoglu Sasmazel);
- “Dunarea de Jos” University of Galați, Romania (Professor Viorel Păunoiu);
- Incek NanoTech Ltd., Ankara, Turkey (Goksel Durkaya, Ph.D.);
- Polytechnica University of Bucharest-CCEEM (Professor Cristian Predescu);
- Ovidius University of Constanța (Professor Remus Zăgan);
- “Stefan cel Mare” University of Suceava (senior lecturer Petru Cobzaru);
- Technical Military Academy of Bucharest, Romania (professor Tudor Cherecheș);

- University of Monterrey, Mexico (Professor Demofilo Maldonado Cortes);
- Groupement de l'Académie de Grenoble, France (professor Jean Noel Pachoud);
- Pro Job, Wageningen, the Netherlands (Rita Naloo, Ph.D.);
- SC Omega is Communications, Iași, Romania (Cristian Badea, Ph.D.);
- Centre for Learning Development, University of Wales, UK (professor James Dawson),
- “Petru Poni” Institute of Iași, Romania (Geta Cazacu, Ph.D.);
- Pilot Arm Company, Bucharest, Romania (Professor Tudor Cherecheș);
- Ghitu Institute of Electronic Engineering and Nanotechnology, Chișinău, Republic of Moldova (Sidorenko Anatolie, manager);
- University of Sfax, Tunisia (Professor Abdel Wahed Mokni);
- SVNIT Surat, Gurajat, India (Assoc. professor Harshit Dave);
- Solid Mechanics Institute of the Romanian Academy (Professor Luige Vladareanu);
- Institute of Materials of Ningbo-China (Professor Zi Ge);
- Grenoble Institute of technology, France (Professor Fiqiri Hodaj);
- Osaka University, Japan (Professor Makio Naito);
- TAT, Insitute of Engineering, Tokyo, Japan (Professor Hodehiro Kamyia);

I have been project manager or coordinator of 14 national and international projects and I was a member of 16 projects. Moreover, I submitted eligible research projects (without funding or under ongoing assessment), such as: MANUNET (winner after the first stage, but the withdrawal of the company from Ankara, Turkey made it impossible to access stage two), Horizon 2020, Erasmus EAC 2019 CALL (ongoing assessment), GIAN MHRD Government of India (ongoing assessment), PNIII P4-ID-PCE2016, PNIII PED-2-2019, Cross-Border RO-MD.

### **Overall activity assessment indicators**

In my opinion, the following items may provide quantifiable information for the overall assessment of my whole professional activity:

#### **A. Education and training**

-Engineer/Engineer Degree in Mechanics, Machine Manufacturing Technology specialty, Series K, No. 14026, issued by “Gh. Asachi” Polytechnic Institute of Iași, Faculty of Machine Manufacturing;

-Economist/Bachelor's Degree in Economics, Industrial Management specialty, Series R, No. 0020558, issued by “Al. I. Cuza” University of Iași, Faculty of Economic Sciences;

-Ph.D. in Industrial Engineering/Ph.D. Degree, Series R No. 0002626, issued further to the Order of the Minister of National Education no. 3772/05.05.1999

-Expert in general management and consultancy in industrial management, Certificate Series 945/36/11.06.2003;

#### **B. Teaching and research results**

-Ph.D thesis *Contribuții teoretice și experimentale asupra formării prin deformare plastică la rece a canelurilor (Theoretical and Experimental Contributions to the Groove Formation by Cold Plastic Deformation);*

-Scientific papers: 180

Papers published in WoS ranked journals - 25

Papers published in WoS Proceedings - 41

Papers published in databases journals - 22

Papers published in national/international journals with peer review – 34

Papers published in Proceedings of international conferences – 58

-Books/Book chapters/Books as editor: 35

Books and book chapters published by foreign publishing houses -9

Books and book chapters published by national publishing houses – 16

Books as editor – 8

-Patents – 4;

-Patent applications - 1

-Research-development projects: 30

Manager/Head/Coordinator - 14

Member of research teams, based on contract/grant – 16

### **C. Results obtained in the doctoral management activity and the management of the didactic and research activity**

-between 1999-2007 I was granted all teaching grades;

**-Ph.D Supervisor at I.O.S.U.D. of “Gheorghe Asachi” Technical University of Iași**, industrial engineering field, according to the Order of the Minister of Education, Research, Youth and Sports No. 4631/11.08.2010;

**-Ph.D Supervisor at the Technical University of Moldova, Chișinău, Republic of Moldova**, Doctoral School of Mechanical and Civil Engineering, 242.05. specialty: Processing Technologies, Processes and Equipment, according to the Order of the Ministry of Education, Culture and Research of the Republic of Moldova no. 1379/14.09.2018;

**-Ph.D supervisor**, Alecu Russo State University of Balti, Republic of Moldova, Senate Decision no 2/09.09.2020

-23 coordinated Ph.D students: 8 PhD students in internships or extensions / 7 doctors (6 PhD students registered at TUIASI (1 doctoral student co-supervised with "Tor Vergata" University of Rome, Italy); 1 doctoral student in co-supervision at the Maritime University of Constanta; 1 PhD student at the Technical University of Moldova, Chisinau, Republic of Moldova.

-activity within the doctoral school or in projects to support their activity: elaboration of 7 procedures / revisions within the TUIASI Doctoral school; 4 verifications of procedures / revisions within the TUIASI Doctoral school; Chairman of the organizing committee for the two editions of the TUIASI Doctoral School International Conference; creation of the internal evaluation file of the TUIASI Doctoral School for accreditation; member of the doctoral admission commissions at university and faculty level;

-involvement in the organization of scientific events: 10 editions of WoS indexed international conferences; 3 editions of conferences indexed in different international databases; 5 national / international seminars;

**-Extent of compliance with the minimal CNATDCU standards:** Industrial Engineering field, minimum professor score: 530 points, achieved score: 4954.3 points;

-Director of the TUIASI Doctoral School;

-Head of the Programs Department within the “Gheorghe Asachi” Technical University of Iași;

-Coordinator of specialization of the master's program in Project Management within the Programs Department of TUIASI, master recognized by Project Management Romania as providing advanced training in project management;

-Founder and coordinator of the Laboratory of Fine Mechanics and Nanotechnologies, with ISO9001 CertInd accreditation and Esyd Greece recertification.

#### **D. Acknowledgement by the academic community**

-Visiting professor -14: Poland, Japan, Mexico, Italy, France, Republic of Moldova, SUA;

-Papers/lectures at conferences (Keynote/Plenary/Invited speaker) – 22: Romania (5), Malaysia (1), Japan (3), Israel (1), South Korea (2), Spain (1), Serbia (2), China (1), Ukraine (1), Poland (3), India (2).

-Citations in WoS-ranked journals (except for self-citations)-66

Hirsh index WoS – 7; Hirsh index Scopus – 8; Hirsh index Google Scholar – 8;

-Associate member of the The Academy of Romanian Scientists;

-Member of national committees – 4 (CNATDCU, National Project Assessment Committee)

-Member in 30 commissions for analysis and defense of doctoral theses

-External reviewer Ph.D thesis, 3 positions in India and Italy;

-Member of doctoral boards – examinations, research projects, reports – 56;

-Member of teaching position competition boards for senior lecturer and professor positions – 10;

-Member of DHC commission -1;

-Coordinator: 8 MOU (Memorandum of understanding);

-Member of the Honorary Council of Europe – Research Committee, from 2018;

-Member of national and international professional associations – 9;

-Editor in chief-2: databases journals, Romania and Switzerland;

-Editor-9: WoS-ranked journals, databases journals, WoS Proceedings;

-Guest editor-8: WoS-ranked journals, databases journals, WoS Proceedings;

-Scientific reviewer 8 books;

-Expert assessor: CNCSIS; CEEEX, INTAS (European Union) – ERA NET

-Section chairman: over 30 international conferences;

-Scientific boards of various journals and scientific events – 27;

-Tempus and Romanian Government fellow at the Polytechnic University of Madrid, Spain;

-Member of the Boards of Directors: AJOFM Iași, AGMUS SA Iași;

-Papers/patents with CNCSIS/Conference awards – 10;

-Awards from Invention Exhibitions/International Conferences – 10.

#### **E). Managerial experience**

-Manager of the TUIASI Doctoral School;

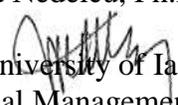
-Chairman of the organizing committee of the TUIASI Doctoral School Conference;

-Member of the TUIASI Senate;

- Member of the Council of the Faculty of Mechanical Engineering and Industrial Management;
- Member of the Council of the Mechanical Engineering Department;
- Head of the TUIASI Programme Department;
- Member of the TUIASI Academic Council;
- Chairman of the bachelor's degree graduation examination board in the Welding Engineering field;
- Member of bachelor's and master's degree graduation examination boards;
- Chairman of the Professional Association for Modern Manufacturing Technologies, ModTech, with 403 members and 12 branches abroad;
- Chairman of the ModTech International Conference;
- Founder and coordinator of the Precision Mechanics and Nanotechnology Laboratory with ISO 9001 certification and ESYPD Greece recertification between 2008-2011, with 4 cooperation agreements with similar laboratories in Mexico, Poland, South Korea, Italy.

September 14<sup>th</sup>, 2020

Professor Dumitru Nedelcu, Ph.D

  
„Gheorghe Asachi” Technical University of Iasi  
Faculty of Machine Manufacturing and Industrial Management  
Department of Machine Manufacturing Technology