

PERSONAL INFORMATION

Marius Sorin PUSTAN



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Sex M | Date of birth 02/09/1973 | Nationality Romanian

JOB APPLIED FOR POSITION

University Professor, Department of Mechanical Systems Engineering, Faculty of Machine Building, Technical University of Cluj-Napoca, Romania

WORK EXPERIENCE

October 2013 – and currently

University Professor

Technical University of Cluj-Napoca, Faculty of Machine Building, Department of Mechanical System Engineering, Muncii Street no. 103 – 105, 400641 Cluj-Napoca, Romania

<http://cm.utcluj.ro/facultate--departamentul-ingineria-sistemelor-mecanice,2,5,ro.html>

- Main activities and responsibilities:
 - Educational activities in machine elements, mechanisms and tribology;
 - Research activities in tribological and mechanical characterizations of micro/nano systems;
 - Head of the Micro and Nano Systems Laboratory from Technical University of Cluj-Napoca (<http://research.utcluj.ro/index.php/industrial-engineering-and-management-140.html>).
- Kind of activities: Educational and research in Mechanical Engineering.

October 2008 – September 2013

Associate Professor

Technical University of Cluj-Napoca, Faculty of Machine Building, Department of Mechanical System Engineering, Muncii Street no. 103 – 105, 400641 Cluj-Napoca, Romania

<http://cm.utcluj.ro/facultate--departamentul-ingineria-sistemelor-mecanice,2,5,ro.html>

- Main activities and responsibilities:
 - Educational activities in machine elements, mechanisms and tribology;
 - Research activities in tribological and mechanical characterizations of micro/nano systems;
 - Head of the Micro and Nano Systems Laboratory from Technical University of Cluj-Napoca (<http://research.utcluj.ro/index.php/industrial-engineering-and-management-140.html>).
- Kind of activities: Educational and research in Mechanical Engineering.

September 2009 - June 2011 -

Researcher of the Wallonia Region from Belgium

University of Liege, Faculty of Applied Science, Department of Aerospace and Mechanical Engineering, Chemin des Chevreuils 1, B-4000 Liege, Belgium

<http://www.ulg.ac.be>

- Main activities and responsibilities:
 - Activities within the Research Group of Structures Dynamics LTAS (<http://www.ltas-vis.ulg.ac.be/cmsms/>), Laboratory of Mechanical Vibrations, supervisor Prof. Jean-Claude Golinval PhD Eng. (jc.golinval@ulg.ac.be);
 - Theoretical analysis and mathematical models development about the dynamical behaviour of vibrating mechanical micro-systems;
 - Experimental investigations on the dynamical response of mechanical micro-systems by using a Polytec Vibrometer and an Atomic Force Microscope;
 - Stress analysis and fatigue.
- Kind of activities: Educational and research in design and testing of mechanical micro-components from aerospace applications considering different operating conditions.

June 2006 - July 2007 -

Experienced Researcher of European Commission

Warsaw University of Technology, Faculty of Micromechanics and Photonics, ul. Sw. A. Boboli 8, 02-525 Warsaw, Poland

<http://imif.mchtr.pw.edu.pl/>

- Main activities and responsibilities:
 - Activities in the Laboratory of Microsystems, supervisor Prof. Zygmunt Rymuza PhD Hb. Eng. (z.rymuza@mchtr.pw.edu.pl);
 - Mechanical investigations on flexible mechanical structures;
 - Tribological investigations at micro and nano-scale;
- Kind of activities: Research in mechanical and tribological characterizations of macro-micro-nano structures.

February 2005 - September 2008

Senior Lecturer

Technical University of Cluj-Napoca, Faculty of Machine Building, Department of Machine Elements and Tribology, Muncii Street no. 103 – 105, 400641 Cluj-Napoca, Romania

<http://catomt.utcluj.ro/>

- Main activities and responsibilities:
 - Teaching of Machine Elements and Mechanisms;
 - Design activities with students in Machine elements domain;
 - Laboratory activities with student in Machine elements and Mechanisms domains;
 - Industrial practice activities with students;
 - Research activities in Machine elements – Mechanical seals;
 - Research activities in the Optimal Design Centrum from Technical University of Cluj-Napoca, Romania.
- Kind of activities: Educational and research in Mechanical Engineering – computation and design of machine elements and mechanisms, tribology and microlubrication.

April 1999 - February 2005

Assistant Professor

Technical University of Cluj-Napoca, Faculty of Machine Building, Department of Machine Elements and Tribology, Muncii Street no. 103 – 105, 400641 Cluj-Napoca, Romania

<http://catomt.utcluj.ro/>

- Main activities and responsibilities:
 - Attendance of the Machine elements and Mechanisms courses;
 - Laboratory and design activities with students in Machine elements domain;
 - Industrial practice activities with students;
 - Research activities in Machine elements – Lubrication of mechanical seals;
 - Manager of two research national projects and member in the others national CNCSIS projects.
- Kind of activities: Educational and research in Mechanical Engineering – computation and design of machine elements and mechanisms, tribology and microlubrication.

EDUCATION AND TRAINING

October 1998 – May 2006

PhD student in Mechanical Engineering

Technical University of Cluj-Napoca, Romania

- PhD Thesis: Contributions to the mechanical seals with impulses

October 1996 – June 1997

Master student in Mechanical Engineering, Specialization - Tribology

Technical University of Cluj-Napoca, Romania

- Principal subjects: Surface Engineering, Tribology, Quality Engineering, Reliability in Machine Building.
- Skills acquired: tribological characterization of friction joints under different lubrication conditions; wear analysis of surfaces; topographical and morphological characterizations of surfaces; reliability design in machines building.

October 1991 – June 1996

Engineer in Mechanical Engineering, Specialization – Machines Building Technology

Technical University of Cluj-Napoca, Romania

- Principal subjects: are conforming to the educational plan corresponding to the I – V cycles of studies
- Skills acquired: are orientated to design, manufacturing and testing of equipment and industrial machines.

22 - 23 February 2010

Training: Particle Size Analysis

University of Liege, Belgium

- Principal subjects: Experimental analysis of micro and nano-particles using AFM, SEM, TEM; Microlubrication and microsuspensions analysis.
- Skills acquired: characterization of micro and nano particle and microlubrication analysis.

17 - 19 April 2007

Training: Metrology and Testing Techniques for Reliable Microsystems

Swiss Foundation for Research in Microtechnology (FSRM), Neuchatel

- Principal subjects: Aspects related to the reliability design of flexible mechanical microstructures; Experimental techniques for nanomechanical and nanotribological characterizations.
- Skills acquired: capacity to analyse the mechanical and tribological properties of flexible micro and nano - structures.

29 - 31 August 2006

Training: Micro - Robotics

Swiss Foundation for Research in Microtechnology (FSRM), Neuchatel

- Principal subjects: Fundamental aspects related to the design and fabrication of microrobotics; Design of flexible microjoints with high degree of mobility; Acting methods for microrobotics.
- Skills acquired: capacity to design and fabricate acting systems for microrobotics; reliability design of microrobotics.

September 2005

Training (on-line): Mechanical Seals Principles I

Training Centrum from Groveland, USA

- Principal subjects: Materials for mechanical seal rings; Losing of fluid in mechanical seals; Design solutions of mechanical seals; Maintenance of mechanical seals.
- Skills acquired: capacity to design and fabricate seal systems for different sealing mediums; maintenance improvement of mechanical seals.

26 – 27 Iunie 1997

Training: Composite Materials

Technical University of Cluj-Napoca, Romania, in collaboration with I.N.S.S. Toulouse, France

- Principal subjects: Fabrication and utilization of composite materials; composite materials characterization.
- Skills acquired: capacity to design and fabricate machine elements and systems from composite materials.

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B1	B1	B1	B1
Russian	A1	A1	A1	A1	A1
French	A1	A1	A1	A1	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Educational communication skills acquired through didactic activities;
- Scientific communication skills acquired through participation in international conferences and presentations at scientific seminars;
- Managerial communication skills through the coordination and involvement in national and international projects.

Organisational / managerial skills

- Member of the Machine Building Faculty Council since 2012;
- Currently, partner coordinator in a European FP7 Project type ERA.Net involving 6 European partners from Belgium, Poland and Romania;
- Currently, manager of a National Project UEFISCDI -TE from 2011 with a research team composed from 5 researchers;
- Currently, manager of a research project financed by Romania Space Agency within the Research-Development-Innovation Programme for Advance Research and Space Technology (STAR) with a research team composed from 5 researchers;
- Manager at two National Research Projects CNCSIS in 2002 and 2003;
- Partner coordinator of a National Research Project – PNII Partners (ended in 2011);
- Head of the Micro and Nano System Laboratory from Technical University of Cluj-Napoca, Romania
- Coordinator of design educational activities with students.

Job-related skills

- Skills acquired during more than 10 years of teaching the discipline of Machine Elements within the Department of Machine Elements and Tribology from the Technical University of Cluj-Napoca;
- Expertise in mechanical and tribological properties analysis of micro and nano structures achieved during one postdoctoral position of University of Technology from Warsaw (2006-2007) and the other at University of Liege (2009-2011);
- Advanced competence in experimental investigations at the micro and nano systems by using atomic force microscope, nanoindentation devices and the equipment for dynamical characterization - Polytec Vibrometer.

Computer skills

- Good knowledge of Microsoft Office Tools TM- knowledge gained over 20 years of use of this software package;
- User of design software of machine elements (SolidWorks, CosmoWorks) applied in the doctoral activities and in design teaching activities with students;
- User of SAMCEF Field Oofelie – software for simulation and finite element analysis of micro and nano structures – knowledge acquired through collaboration with Open Engineering S.A. Company from Belgium.

Other skills

- Aeromodels and micromodels - over 18 years of model aircraft Club A.S. Gloria Dej

Driving licence

Driving licence category B

 ADDITIONAL INFORMATION

 Selected
publications

Pustan M., Dudescu C., Birleanu C. (2015) The effect of sensing area position on the mechanical response of mass-detecting cantilever sensor, **Microsystems Technologies**, 21 (9), ISSN: 0946-7076, 1827-1834, DOI: 10.1007/s00542-015-2536-1.

Pustan M., Dudescu C., Birleanu C. (2015) Nanomechanical and nanotribological characterization of a MEMS micromembrane supported by two folded hinges, **Analog Integrated Circuits and Signal Processing**, ISSN: 0925-1030 (Print), Volume 82, Issue 3, 2015, Pages 627-635, DOI 10.1007/s10470-014-0482-y

Pustan M., Dudescu C., Birleanu C. (2014) Reliability Design Based on Experimental Investigations of Paddle MEMS Cantilevers Used in Mass Sensing Applications, **Sensor Letters**, 12 (11), (2014) ISSN: 1546-198X (Print), 1600-1606, DOI: <http://dx.doi.org/10.1166/sl.2014.3371>.

Pustan M., Dudescu C., Birleanu C., Rymuza Z (2013) Nanomechanical studies and material characterization of metal/polymer bilayer cantilevers MEMS Structures, **International Journal of Materials Research**, 104 (4), ISSN 1862-5282, 408-414, DOI: 110.3139/146.110879.

Pustan, M., Birleanu, C., Dudescu, C. (2013) Simulation and experimental analysis of thermo-mechanical behaviour of microresonators under dynamic loading, **Microsystem Tehnologies**, 19 (6), ISSN 1432-1858, 915-922, DOI: 10.1007/s00542-012-1728-1.

Pustan M., Belcin, O., Birleanu, C. (2013) Mechanical seals with oscillating stator, **Meccanica**, 48 (5) Print ISSN 0025-6455, On-line ISSN 1572-9648, 1191-1200, DOI: 10.1007/s11012-012-9660-0.

Pustan M., Rochus V, Golinval J-C. (2012) Mechanical and tribological characterization of a thermally actuated MEMS cantilever, **Microsystem Technologies**, 18 (3), ISSN 1432-1858, 246-250 DOI: 10.1007/s00542-011-1423-7.

Pustan M., Paquay S, Rochus V, Golinval J-C. (2011) Modeling and finite element analysis of mechanical behavior of flexible MEMS components, **Microsystem Technologies**, 17 (4), ISSN 1432-1858, 553-562, DOI: 10.1007/s00542-011-1232-z.

Pustan, M., Rymuza, Z. (2007) Mechanical Properties of Flexible Microcomponents with movable load, **Journal of Micromechanics and Microengineering**, 17 (8), ISSN 0960-1317, 1611-1617, DOI: 10.1088/0960-1317/17/8/026.

Pustan M., Ekwinski G, Rymuza Z (2007) Nanomechanical studies of MEMS Structures, **International Journal of Materials Research**, 98 (5), ISSN 1862-5282, 384-388.

 Selected
books

Pustan, M., Belcin, O., Birleanu, C. (2013) – ORGANE DE MAȘINI - Asamblări demontabile, Osii și arbori drepți, Arcuri metalice, Ed. UTPRESS, Cluj-Napoca, ISBN 978-973-662-821-4.

Belcin O., Birleanu C., **Pustan M** (2011) ELEMENTE CONSTRUCTIVE ÎN CONSTRUCȚIA DE MAȘINI, Ed. Risoprint, Cluj-Napoca, ISBN 978-973-751-871-2.

Belcin, O., **Pustan, M.** (2009) ORGANE DE MAȘINI. CUPLAJE – Probleme rezolvate, Ed. Risoprint, Cluj-Napoca, ISBN 978-973-53-0107-1.

Sucală, F., **Pustan, M.**, ș.a. (2008)- ORGANE DE MAȘINI, MECANISME ȘI TRIBOLOGIE - Studii de caz, Ed. Todesco, Cluj Napoca, ISBN 978-973-7695-65-9.

Belcin, O., **Pustan, M.** (2008) ORGANE DE MAȘINI. RULMENȚI. ANGRENAJE –Probleme rezolvate. Ed. Risoprint, Cluj-Napoca, ISBN 978-973-751-871-2.

Pustan, M., Rymuza, Z., (2007) MECHANICAL AND TRIBOLOGICAL CHARACTERIZATION OF MEMS STRUCTURES, Ed. Risoprint, Cluj-Napoca, ISBN 978-973-751-641-1 (in english).

Belcin, O., **Pustan, M.**, (2006) ORGANE DE MAȘINI. RULMENȚI, FUSURI ȘI PIVOȚI – Probleme rezolvate, Ed. Risoprint, Cluj-Napoca, ISBN 973-751-118-2.

Belcin, O., **Pustan, M.**, Turcu, I., (2005) ORGANE DE MAȘINI. OSII ȘI ARBORI DREPTI – Probleme rezolvate, Ed. Risoprint, Cluj-Napoca, ISBN 973-656-971-3.

Belcin, O., Turcu, I., **Pustan, M.**, (2004) ORGANE DE MAȘINI. ASAMBLĂRI DEMONTABILE – Probleme rezolvate, Ed. Risoprint, Cluj-Napoca, ISBN 973-656-552-1.

Pop, D., Tudose, L., Popa, C., **Pustan, M.**, Haragas S., (2003)- REDUCTOARE CU DOUĂ TREPTE. CALCULUL ANGRENAJELOR , Editura TODESCO, ISBN 973-8198-56-9.

- Presentation s**
- Invited Lecturer - **Pustan M.**, Muller R., Golinval J.C., Nanomechanical and nanotribological characterization of microelectromechanical system, The 12th International Balkan Workshop on Applied Physics, Constanta, 6-8 July 2011.
- Pustan M.**, “Nanomechanical and Nanotribological Characterizations of MEMS” International Exploratory Workshop “Nanomechanics and nanotribology for reliability design of micro- and nano systems”, Cluj-Napoca, October 2012.
- Pustan M.**, “AFM research activities in MiNaS Laboratory” International Exploratory Workshop “Atomic Force Microscopy for Nanotribological Characterization of Thin Films”, Cluj-Napoca, September 2015.
- Projects**
- FP7 MNT ERA.Net, project no. 7-064/ 4.09.2012: 3- Scale modelling for robus - design of vibrating micro sensors, duration of project 2012 - 2015, budget 120.000 Euro.
- „Space Technology and Advance Research – STAR” Programme, project no. 32/19.11.2012: Reliability design of RF-MEMS switches for space applications, duration of project 2012-2015, budget 820000 Lei.
- National Research Project UEFISCDI PN-II-RU-TE-2011-3-0106: Nanomechanical and nanotribological characterizations for reliability design of MEMS resonators, duration of project 2011-2013, budget 909450 Lei.
- National Research Project UEFISCDI PNII - Partnerships in priority areas, project no. 72-2012/2008: Advance microsystems based on microcantilevers fabricated with MEMS techniques, budget 51097 Lei.
- International Exploratory Workshop CNCS-UEFISCDI project number PN II-ID-WE-2012-4-063/2012: Nanomechanics and nanotribology for reliability design of micro- and nano systems, budget 25580 Lei.
- National Research Project no. 547/ 2002 AT, Theme 24, CNCSIS Code 547: Mechanical seals with impulses, budget 55000 Lei.
- National Research Project no. 33532/ 2003 AT, Theme 14, CNCSIS Code 156: Pilot instalation for experimental studies of mechanical seals with impulses, budget 36000 Lei.
- Selected conferences**
- Pustan M.**, Chiorean R., Birleanu C., Dudescu C. (2015) Reliability design of thermally actuated MEMS switches supported by V -Beams, IEEE Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS (DTIP) 2015, Montpellier, 27-30 April 2015, ISBN 978-1-4799-8627-9.
- Pustan M.**, Birleanu C., Rusu F., Dudescu C., Belcin O. (2014) Size effect on the microbridges quality factor tested in free air space, 15th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2014, Gent, Belgium – April 7-8-9, 2014, 978-1-4799-4790-4/14/\$31.00 ©2014 IEEE.
- Pustan, M.**, Dudescu, C., Birleanu, C. (2013) Measurement of energy loss coefficient of electrostatically actuated MEMS resonators, 4th International Conference on Integrity, Reliability and Failure, Funchal, Portugal, 23-27 June 2013, IRF 2013, TRACK_J: NANOTECHNOLOGIES AND NANOMATERIALS ISBN: 978-972-8826-27-7, 305-307.
- Pustan, M.**, Dudescu, C., Birleanu, C. (2013) The effect of sensing area position on the mechanical response of mass - detecting cantilever sensor, DTIP, Design, Test, Integration & Packaging of MEMS/MOEMS 16-18 April 2013, Barcelona, Spain, 87-92, ISBN: 978-2-35500-020-1, IEEE Catalog Number: CFP12DTI-PRT.
- Pustan, M.**, Birleanu, C., Dudescu, C., Belcin, O. (2013) - Temperature Effect on Tribological and Mechanical Properties of MEMS, 978-1-4673-6139-2/13/©2013 IEEE 2013 14th International Conference on EuroSimE 14-16 April 2013, Wroclaw, Poland.
- Pustan, M.**, Birleanu, C., Dudescu, C., Belcin, O. (2012) - Mechanical and tribological characterizations for reliability design of micromembranes, 13th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2012, Cascais, Portugal – April 16-18, paper 132, ISBN 978-1-4673-1511-1, IEEE Catalog Number: CFP12566-CDR.
- Pustan M.**, Paquay S., Rochus V., Golinval J-C, (2011) Effects of the electrode position on the dynamical behaviour of electrostatically actuated MEMS resonators, IEEE Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro/Nanoelectronics and Systems, EuroSimE 2011, Lintz, Austria.
- Pustan, M.**, Paquay S., Rochus V., Golinval J-C, (2010) Modeling and finite element analysis of mechanical behavior of flexible MEMS components, IEEE Symposium on Design, Test, Integration & Packaging of MEMS/MOEMS, DTIP 2010, Seville, Spain, 171-176.
- Pustan, M.**, Rymuza, Z., Schneider, A., Serra, S.G., and Huq, S.E. (2007) Mechanical characteristics of multilayer MEMS components, 20th IEEE International Microprocesses and Nanotechnology Conference, November 5-8, 2007, Kyoto, Japan, Digest of Papers: Japan Society of Applied Physics, Tokyo 2007, 360-361.

- Honours and awards** Honour from Warsaw University of Technology for the best research activities during 2006-2007.
Honour for the best young researchs in 2007 provided by the Romanian Association of Mechanical Transmissions (ROAMET).
4 Award from the National Programme for Development, Research and Innovation, Awarding of research results – articles (1 – in 2011; 2- in 2013; 1 in 2014)
- Memberships** Membership of Romanian Association of Mechanical Transmissions (ROAMET)
Membership of Romanian Association of Tribology (ART)
Trender of European Space Agency
- Reviewer** Microsystem Technologies (MITE) Journal
Analog Integrated Circuits & Signal Processing (ALOG) Journal
Microelectronics Journal
Sensors Journal

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