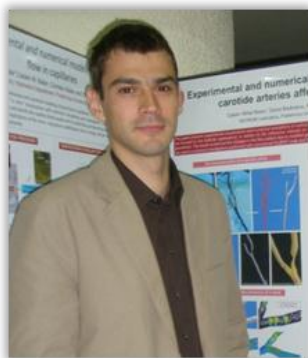


# Europass Curriculum Vitae



## Personal information

First name(s) / Surname

**Cătălin Mihai BĂLAN**

Address(es)

3, Lacul Plolului Street, 051734, Bucharest, ROMANIA

Telephone(s)

+40 212 690 770 (from work);  
+40 212 690 774 (from work);  
+40 212 690 778 (from work);  
+40 212 690 779 (from work).

Mobile: +40 723 195 649 (personal)

Fax(es)

+40 212 690 772 (from work);  
+40 212 690 776 (from work).

E-mail

[balan.catalin.mihai@gmail.com](mailto:balan.catalin.mihai@gmail.com) (personal);  
[catalin.balan@imt.ro](mailto:catalin.balan@imt.ro) (from work).

Nationality

Romanian.

Date of birth

20 November 1982.

Gender

Male.

## Desired employment / Occupational field

**Microfluidic Researcher - Interdisciplinary Engineering**

## Work experience

Oct. 2010 - Present

**National Institute for Research and Development in Microtechnologies – IMT  
Bucharest**

Occupation or position held

Post-Doctoral Position in Laboratory of Micro and Nano Fluidics – L10.

Main activities and responsibilities

Design, model, simulate and test micro scale devices for microfluidic and lab-on-a-chip applications. My interests are also focused on working in microfabrication and clean room environment. As a member of the Micro and Nano Fluidic group I was/am working as a researcher/specialist at the following research grants:

Project **SOP-IEC**, O.2.1.2 No. 209, ID 665, *Microfluidic factory for assisted self-assembly of nanosystems* (MICRONANOFAB), 2010 – 2013, <http://www.imt.ro/MICRONANOFAB>.

Grant **PN2** (Parteneriate) no.12094 *Microfluidic biochip for rheological characterization of non-Newtonian bio fluids with application in diagnostic and medical treatment* (MELANOCHIP) (Biochip microfluidic pentru caracterizarea reologica a fluidelor biologice ne-newtoniene cu aplicatii in diagnoza si tratament medical), 2008 - 2011;

Grant **PN2** (Parteneriate) no. 72160 *Micro-electro-mechanic system with application in microsurgery reconstruction of the peripheral nerves* (RECONNECT), 2008 - 2011;

Grant **PN2** (IDEI) no. 582 *Development of an conceptual model of lab-on-a-chip system for continuous separation of particles by magnetophoresis and dielectrophoresis* (Dezvoltarea unui model conceptual al laboratorului de analiza pe un chip pentru separarea continua a particulelor prin magnetoforeza si dielectroforeza), 2009 - 2011.

Name and address of employer

National Institute for Research and Development in Microtechnologies – IMT Bucharest  
126A, Erou Iancu Nicolae street, 077190, Bucharest, ROMANIA

Type of business or sector

Research and Development

Principal subjects/occupational  
skills covered

Microfluidic applications, Micro-PIV, Rheology, Microfabrication, Numerical Simulations and Modelling.

Oct. 2007 – May 2010	<b>University Politehnica of Bucharest</b>
Occupation or position held	PhD. Student in the field of Fluid Mechanics and Rheology in Reorom Laboratory.
Main activities and responsibilities	<p><u>2007 – 2010</u> <b>Teaching Assistant for lab courses</b> in Faculty of Power Engineering (Energetica) under the supervision of Professors Corneliu Bălan and Diana Broboană;</p> <p><u>2010 &amp; 2009</u> <b>Research supervision</b> bachelor students groups with the purpose of developing, understanding and presenting specific theme in the scientific manifestation of Fluid Mechanics Department.</p> <p>As a member of the Reorom group I have worked as a researcher/specialist at the following research grants:</p> <p>Grant <b>CNMP</b> (National Centre of Program Management) no. 42 - 149 <i>Diffusion Tensor Imaging integrated within a 3D anatomic model – instrument for diagnostics and treatment (3DDTI)</i> Grant issued by Partnership in Priority Domains Program (Programul Parteneriate in Domeniile Prioritare).</p> <p>Grant <b>CNMP</b> (National Centre of Program Management) no. 42 - 170 <i>LASER confocal endomicroscopy and magnification endoscopy value in the narrow band (NBI) for the diagnostic of the reflux disease gastroesofagian nonerode ENDONERD</i>. Grant issued by Partnership in Priority Domains Program (Programul Parteneriate in Domeniile Prioritare).</p> <p>Grant <b>CNCSIS A</b> 102 / 2007 : <i>The study of boundary conditions applied at the flow of complex fluids in micro and nanochannels</i>, 2007 – 2009.</p> <p>Grant <b>CNCSIS</b> 54 / 2006 <i>Interdisciplinary Platform for research, developement – BIOINGTEH</i> (Platforma interdisciplinara pentru cercetare, dezvoltare si formare profesionala).</p> <p>Grant <b>CEEX</b> 2005 (INFOSOC no. 620/13.10.2005) <i>Research concerning the development of a computerized system for the modeling of the lubricants durability</i>, 2005 – 2008.</p> <p>Grant <b>RESPLATEPE CEEX</b> 2006 (AMTRANS Program) <i>Scientific network and ecological technological platform for electronic packaging</i>, 2006 – 2008.</p> <p>Grant <b>NANOINT CEEX</b> 2006 (AMCSIT Program) <i>The control of human cellular and bacterian interaction with nanostructured surfaces: strategies for the development of „intelligent” biosurfaces</i>, 2006 – 2008.</p> <p>Grant <b>CARDIOCOMP CEEX</b> 2006 (VIASAN no: 81/2006) <i>Computerized optimisation of the diagnostical process, terapeutic intervention and prognosis of cardiovascular disease</i>, 2006 - 2008.</p> <p>Grant <b>DIAPROGENDO CEEX</b> 2006 (VIASAN no: 89/2006) <i>Diagnostically and prognostical implication of the endomicroscopic aspect of the microvascularisation of pre-malign and malign lesions of the superior digestive tube</i>, 2006 – 2008.</p>
Name and address of employer	University Politehnica of Bucharest, Faculty of Power Engineering, Hydraulics Department 313 Splaiul Independentei, 060042, Bucharest, ROMANIA
Type of business or sector	Educational and Research
<b>Education and Training</b>	
Name and type of organisation providing education	<p><u>2007 – 2011</u> University Politehnica of Bucharest, Faculty of Power Engineering, Hydraulics Department, Reorom Group</p> <ul style="list-style-type: none"> <li>■ PhD student in Fluid Mechanics and Rheology (with scholarship)</li> <li>■ Supervisor: Prof. Dr. Eng. Corneliu Balan</li> </ul> <p><b>PhD thesis:</b> <i>Modeling and control of viscous and viscoelastic fluids flows in microchannels.</i></p> <p><u>2006 – 2008</u> University Politehnica of Bucharest, Department of Bioengineering and Biotechnology</p> <ul style="list-style-type: none"> <li>■ MSc in Medical and Clinical Engineering</li> </ul> <p><b>Master's degree thesis:</b> <i>Numerical study on blood flow in carotid arteries affected by stenosis</i></p> <p><u>2001 - 2006</u> University Politehnica of Bucharest, Faculty of Engineering and Management of Technological Systems (IMST)</p> <ul style="list-style-type: none"> <li>■ BEng in Economical Engineering</li> </ul> <p><b>Bachelor degree thesis:</b> <i>Project management, economical analyzes and virtual modeling of the cutting techniques for a hydraulic pump component</i></p>
Summer schools	<p><u>2011</u> Summer school participant of 2<sup>nd</sup> Summer school of Rheology, - Romanian Society of Rheology – Iasi, Romania;</p> <p><u>2011</u> Summer school participant of 5<sup>th</sup> International Summer School on Nanosciences and Nanotechnologies: Organic electronic and Nanomedicine – Thessaloniki, Greece;</p> <p><u>2010</u> Summer school participant and organizer of 1<sup>st</sup> Summer School of Rheology, - Romanian Society of Rheology – Cluj Napoca, Romania;</p>

Training courses	<u>2008</u>	Summer school participant of <i>Cardiovascular Applications of Molecular Imaging</i> – University Hospital Münster – Germany;																																								
	<u>2010</u>	Participant in the course <i>Microfabrication Processes</i> - organized in the frame of the European <b>FP7</b> project <i>EuroTraining</i> – MST, Swiss Foundation for Research in Microtechnology.																																								
	<u>2008</u>	Advanced Modeling Techniques using FLUENT.																																								
	<u>2007</u> – <u>2010</u>	CNCSIS (The National Council for Scientific Research) BD (young researchers) no.73 Scholarship award holder;																																								
Scholarships	<u>2007</u> – <u>2010</u>	University <i>Politehnica</i> of Bucharest Phd. Scholarship award holder;																																								
	<u>2004</u>	DAAD Scholarship for visiting tehcnical Universities from Dresden, Berlin, Aachen, Weimar, Gottingen and Research Institute: DLR - Deutsche Zentrum fur Luft- und Raumfahrt- Gottingen; BAM Polymertechnik – Berlin (Federal Institute for Materials Research and Testing), RWTH Aerodynamisches Institut und lehrstuhl fur stromungslehre - Aachen (Institute of Aerodynamics and Chair of Fluid Mechanics).																																								
<b>Personal skills and competences</b>																																										
Mother tongue(s)	<b>Romanian</b>																																									
Other language(s)	<b>English, German</b>																																									
Self-assessment																																										
<i>European level (*)</i>																																										
<b>English</b>																																										
<b>German</b>																																										
	<table><tr><th colspan="4">Understanding</th><th colspan="4">Speaking</th><th colspan="2">Writing</th></tr><tr><th colspan="2">Listening</th><th colspan="2">Reading</th><th colspan="2">Spoken interaction</th><th colspan="2">Spoken production</th><th colspan="2"></th></tr><tr><td>C</td><td>2</td><td>C</td><td>2</td><td>C</td><td>2</td><td>C</td><td>2</td><td>C</td><td>2</td></tr><tr><td>B</td><td>1</td><td>A</td><td>2</td><td>A</td><td>2</td><td>A</td><td>2</td><td>A</td><td>1</td></tr></table>		Understanding				Speaking				Writing		Listening		Reading		Spoken interaction		Spoken production				C	2	C	2	C	2	C	2	C	2	B	1	A	2	A	2	A	2	A	1
Understanding				Speaking				Writing																																		
Listening		Reading		Spoken interaction		Spoken production																																				
C	2	C	2	C	2	C	2	C	2																																	
B	1	A	2	A	2	A	2	A	1																																	
	(*) <a href="#">Common European Framework of Reference for Languages</a>																																									
Computer skills and qualifications	CAD software: AutoCAD ( <b>2D &amp; 3D</b> ), <b>Inventor</b> , Catia; Programming language: <b>LabView</b> , Maple, Mathematica, <b>Origin</b> ; Modeling and Simulation Software: <b>FLUENT &amp; Gambit</b> , COMSOL Multiphysics; Other software: Microsoft Office, Microsoft Project, Tecplot, Image-Pro plus, PolyView, GIF Construction set; <u>2004</u> Language proficiency certificate for German beginner level (Recognize by the Minister of Work - Romania); <u>2004</u> Certificate for networking given by CISCO; <u>2003</u> Language proficiency certificate for English (Politehnica University of Bucharest, Foreign Languages Department).																																									
<b>Memberships</b>	From <u>2008</u> Member of the FRANCE SOCIETY OF RHEOLOGY; From <u>2009</u> Member of the ROMANIAN SOCIETY OF RHEOLOGY.																																									
<b>Other information</b>	<u>2007</u> & <u>2005</u> Participant on the program <i>Work and Travel USA</i> – <b>Santa Cruz California</b> ; Visits at the following universities and research institutes: <ul style="list-style-type: none"><li>Uni. Karlsruhe (TH): (Prof. dr. rer. nat. Manfred Wilhelm);</li><li>Uni. Karlsruhe (TH): Institut fur Thermische Verfahrenstechnik (Prof. Dr. Eng. Matthias Kind) Germany <u>2007</u> and <u>2008</u>;</li><li>Stanford University: Chemical Engineering Department (Prof. Dr. Fuller G.), USA <u>2008</u>;</li><li>T.U. Eindhoven: Mathematics for Industry; Physics Department (Prof. Dr. Eng. G.J.F. van Heijst), the Netherlands <u>2007</u>;</li><li>T.U. Darmstadt: Fachbereich Material- und Geowissenschaften, Thermische Verfahrenstechnik (Prof. Dr. Eng. Manfred Hampe), Germany <u>2007</u>;</li><li>Deutsches Kunststoff-Institut, Darmstadt, Germany <u>2007</u>;</li><li>Uni. Karlsruhe (TH): Institut für Mechanische Verfahrenstechnik und Mechanik (Prof. Dr. Norbert Willenbacher), Germany <u>2007</u>.</li></ul>																																									

## Conference participation



- 2011 (July) *8<sup>th</sup> International Conference on Nanosciences and Nanotechnologies, NN11, Thessaloniki, Greece* – posters and open presentation
- **Poster title:** Melanoma cells apoptosis induced by magnetic hyperthermia
  - **Presentation title:** Experimental and numerical flow characterization of microfluidic hydrodynamic focusing of liposomes
- 2011 (June) *22<sup>nd</sup> Micromechanics and Micro Systems, Europe Workshop, Toensberg, Norway* – poster
- **Poster title:** A 3D chaotic microfluidic mixer
- 2010 (May) *Dorin Pavel Conference, Bucharest, Romania* – presentation
- Presentation title:** Micro-PIV measurement and numerical computation of the velocity profiles in micro-channels
- 2010 (Apr.) *6<sup>th</sup> Annual European Rheology Conference, Goteborg, Sweden* – poster and open presentation
- **Poster title:** The influence of fluid shear thinning behaviour on the diffusion process in micro-channels
  - **Presentation title:** Influence of elasticity on the vortical structures formed in micro-channels geometries
- 2009 (Nov) *44<sup>ème</sup> colloque du Groupement Français Rhéologie, Strasbourg, France* – poster
- **Poster title:** Onse of elastic instabilities in micro-channels flows
- 2009 (Oct.) *The XXXII-nd "Caius Iacob" Conference on Fluid Mechanics and its Technical Applications, Bucharest, Romania* – open presentation
- **Presentation title:** Visualization and numerical computation in fluid mechanics used as training method for Phd students
- 2009 (Sep.) *The 14<sup>th</sup> International Conference on Fluid Flow Technologies, Budapest, Hungary, Conference on Modelling Fluid Flow (CMFF'09)* – open presentation
- **Presentation title:** Mixing process of immiscible fluids in micro-channels
- 2008 (Sep.) *VIASAN-CEEX National Symposium (Module 1), Sinaia, Romania* – poster
- **Poster title:** Experimental and numerical studies of blood in carotid arteries affected by stenosis
- 2008 (Sep.) *Exploratory Workshop – BIOINGTEH Poiana Brasov, Romania* – open presentation
- **Presentation title:** Rheological investigations and modeling of biofluids
- 2008 (Aug.) *International Congress on Rheology, Monterey CA, United States of America* – poster and open presentation
- **Poster title:** Investigation of Vortical Structures in Bifurcations
  - **Presentation title:** Modeling the vertical structures in hemodynamic of small vessels and capillaries
- 2007 (Feb.) *Uni. Karlsruhe: Institut für Mechanische Verfahrenstechnik und Mechanik (Prof. Dr. Norbert Willenbacher), Germany.*

## List of publications

### ISI Publications:

- Broboană D., **C. M. Bălan**, T. Wohland, C. Bălan., 2011, *Investigations of the unsteady diffusion process in microchannels*. J. Chem. Eng. Sci., vol. 66, pp. 1962-1972.
- Bălan C. M.**, Broboană D. and Bălan C., 2010, *Mixing process of immiscible fluids in microchannels*. Int. J. of Heat and Fluid Flow, vol 31, pp. 1125-1133.

### Publications in Specialty Journals:

- Bălan C. M.**, Bălan C., 2010,  *$\mu$ PIV measurement and numerical computation of the velocity profiles in micro-channels*. U.P.B. Sci. Bull., Series D, vol. 72, pp. 121-128 (ISSN: 2068-276X).
- Bălan C. M.**, Broboană D., Bălan C., 2011, *Influence of elasticity on the vortical structures formed in micro-channels geometries*. Scientific Journal of the Technical University of Civil Engineering, vol. 7, Nr. 1-2, pp. 9-22 (ISSN 2066-6926).
- Broboană D., Călin A., Ou Yang T., **Bălan C. M.**, Kadar R., Mărculescu C., Bălan C., 2008, *Visualizations and numerical techniques in the complex flows analysis*. U.P.B. Sci. Bull., Series D, vol. 70, No. 4. pp. 23-34, (ISSN 1454-2358).

Bălan C., Broboană D., **Bălan C. M.**, Kadar R., 2007, *On the Stick - slip Boundary Conditions at the Wall of Microchannels*, Sci. Bul. PU Timisoara, Ed. by Bernad S. et al., Tom 52(66), pp. 109-114, (ISSN 1224-6077).

Broboană D., Călin A., Muntean T., **Bălan C. M.**, Bălan C., 2005, *Is the vorticity number a possible quantification of a vortex?* Sci. Bul. PU Timișoara, Ed. by Bernad S. et al., Tom 50 (64), pp. 155-160, (ISSN 1224-6077).

#### Proceedings from national and international conferences:

Avram M., Petrescu I., Volmer M., **Bălan C. M.**, Mărculescu C., Avram. A., *Cellular uptake of gold covered maghemite superparamagnetic nanoparticles and their effects on mouse melanoma B16 cells*, Euromat 2011, Montpellier, France, September 12-15. A 24- O - pm 1 – 3.

Avram M., Petrescu I., Rădoi A., Avram A., **Bălan C.M.**, Popescu A., 2011, *Gold nanoparticle uptake by tumor cells of melanoma B16*, International Conference on Nanosciences and Nanotechnologies, NN11, Thessaloniki, Greece, July 12-15, pp. 87.

Mărculescu C., **Bălan C. M.**, Avram A., Avram M., 2011, *Experimental and numerical flow characterization of microfluidic hydrodynamic focusing of liposomes*, International Conference on Nanosciences and Nanotechnologies, NN11, Thessaloniki, Greece, July 12-15, pp. 459.

Avram M., Schiopu V., Avram A., Mărculescu C., **Bălan C.M.**, Popescu A., Volmer M., 2011, *Melanoma cells apoptosis induced by magnetic hyperthermia*. International Conference on Nanosciences and Nanotechnologies, NN11, Thessaloniki, Greece, July 12-15, pp. 453.

**Bălan C. M.**, Avram M., Avram A., Guolin Xu, Rhensheng Deng, Iliescu C., 2011, *A 3D chaotic microfluidic mixer*, Conference on Micromechanics and Micro Systems, Europe Workshop, Toensberg, Norway, June 19-22, 2011, pp. 268-271, ISBN 978-82-7860-224-9.

**Bălan C. M.**, Broboană D., Bălan C., 2009, *Mixing process at the interface between immiscible fluids in micro-channels*. Conference on Modelling Fluid Flow (CMFF'09), the 14th International Conference on Fluid Flow Technologies Budapest, Hungary, September 9-12, 2009, pp. 427-435.

Broboană D., **Bălan C. M.**, Bălan C., 2009, *Onset of elastic instabilities in micro-channels flows*. 44<sup>eme</sup> Colloque du Groupement Francais de Rheologie, Strasbourg, 4-6 novembre, pp. 283-286.

Broboană D., **Bălan C. M.**, Morega Al., Bălan C., Gheorghe C., Iacob R., 2008, *Modeling the vortical structures in hemodynamics of small vessels and capillaries*. in Proc. AIP - The XVth Int. Congress Rheology - Monterey, Edit. by Co A., Leal I.G., Colby R.H. and Giacomini A.J., pp. 594-596.

Kadar R., Bălan C., Broboană D., **Bălan C. M.**, 2008, *Experimental and numerical modeling of blood flow in capillaries*. Proceeding of the National Symposium VIASAN-CEEX (Module 1) 91-93, Edited by the National Authority for Scientific Research and the Academy of Medical Sciences (ISSN 978-973-708-341-8).

**Bălan C. M.**, Broboana D., Bălan C., Kadar R., (2008), *Experimental and numerical study on blood flow in carotid affected by stenosis*, Proceeding of the National Symposium VIASAN-CEEX (Module 1), Edited by the National Authority for Scientific Research and the Academy of Medical Sciences.

**Bălan C. M.**, Kádár R., Bălan C., 2009, *Visualization of vortical structures in weakly elastic polymer solutions*, New Trends in Complex Fluids Modeling, CFD 2009 Proceedings, Editura Politehnica Press, Bucharest, pp. 66-68.

#### Books or books chapters

Broboană D., **Bălan C.M.**, Bălan C., *Fluid Mechanics with FLUENT (Mecanica fluidelor cu FLUENT) - Vol II. Chapter Numerical study of blood flow in carotid artery (Studiul numeric al curgerii sangvine în artera carotidă)*. Editura Politehnica Press. 2010, ISBN: 973-7838-06-8.

Interests Scuba diving, fishing, travels, hiking, cooking and skiing.

Driving licence Driving licence – B category.